

U.S. Department of Justice
Bureau of Alcohol, Tobacco, Firearms and Explosives

Federal Explosives License/Permit
(18 U.S.C. Chapter 40)

U.S. GOVERNMENT PRINTING OFFICE: 2009 O 440014

In accordance with the provisions of Title XI, Organized Crime Control Act of 1970, and the regulations issued thereunder (27 CFR Part 555), you may engage in the activity specified in this license or permit within the limitations of Chapter 40, Title 18, United States Code and the regulations issued thereunder, until the expiration date shown. **THIS LICENSE IS NOT TRANSFERABLE UNDER 27 CFR 555.53.** See "WARNINGS" and "NOTICES" on reverse.

Director, ATF Correspondence To ATF - Chief, FELC 244 Needy Road Martinsburg, WV 25405-9431	License/Permit Number 5-AR-103-20-5E-00139
Chief, Federal Explosives Licensing Center (FELC) <i>Christopher R. Reers</i>	Expiration Date May 1, 2015

Name
AUSTIN POWDER COMPANY

Premises Address (Changes? Notify the FELC at least 10 days before the move.)

7-LC-10 BLANDY RD
EAST CAMDEN, AR 71701-0000

Type of License or Permit

20-MANUFACTURER OF EXPLOSIVES

Purchasing Certification Statement

The licensee or permittee named above shall use a copy of this license or permit to assist a transferor of explosives to verify the identity and the licensed status of the licensee or permittee as provided by 27 CFR Part 555. The signature on each copy must be an original signature. A faxed, scanned or e-mailed copy of the license or permit with a signature intended to be an original signature is acceptable. The signature must be that of the Federal Explosives Licensee (FEL) or a responsible person of the FEL. I certify that this is a true copy of a license or permit issued to the licensee or permittee named above to engage in the business or operations specified above under "Type of License or Permit."

Mailing Address (Changes? Notify the FELC of any changes.)

AUSTIN POWDER COMPANY
ATTN: PROPERTIES DEPT 25800 SCIENCE PARK DR
CLEVELAND, OH 44122-0000

Larry P. King
Licensee/Permittee Responsible Person Signature

Regulatory Manager
Position Title

L. King
Printed Name

10-29-2012
Date

ATF Form 5400.14/5400.15 Part I

Report of Violations

EXP_000002

Instructions

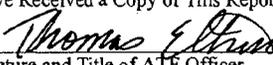
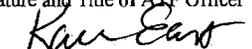
Please write firmly with a ball point pen when completing this form. ATF officers will prepare this form in triplicate. The original copy will be given to the proprietor or a responsible representative. The remaining copies will be submitted with the completed inspection report. Supervisors will detach one copy from the completed report for their files.

Name of Proprietor	Street Address	City	State	ZIP Code	County	Page <u>1</u> of <u>1</u> Pages
Austin Powder	7LC10- Blandy Road	East Camden	AR	71701	Ouachita	
License/Permit/Registry Number (if any)		Expiration Date	Date(s) or Period of Inspection			
5-AR-103-20-2E-00139		5/1/2012	11/14/2011 - 11/16/2011			

Inspection Results

An examination of your premises, records and operations has disclosed the following violations which have been explained to you:

Number	USC or CFR Citation	Nature of Violation	Corrective Action to be Taken <i>(If not corrected immediately)</i>	Date Corrections to be Made <i>(If not corrected immediately)</i>
1	27 CFR 555.207(a)(8)	Licensee failed to have doors installed on the magazines in which the hinges are attached to the doors by welding, riveting or bolting. The pin in the hinge was removable. This problem involves the LC magazines	Licensee must correct the hinge system of the doors.	to be determined in conjunction with Austin's Safety Regulatory Manager
2	27 CFR 555.207(a)(9)	Licensee failed to have doors equipped with hoods constructed in a manner as to prevent sawing or lever action on the hasps. When locked, the hood allows 1/2" to 1 1/2" in which to access the hasp. This problem exists with both the LC magazines and the AT magazines.	Licensee must correct the hood system on the doors by ensuring that no space exists for access to the hasps.	to be determined in conjunction with Austin's Safety Regulatory Manager
3	27 CFR 555.207	Licensee failed to have a Type 1 magazines that are fire-resistant, weather-resistant, theft resistant, and ventilated. This problem involves the LC magazines. The problem is associated with the bolt system on the doors that are not holding the door flush in place. There is a gap at the top of the door that creates a 3-6 inch opening to the interior of the magazine.	Licensee must correct the door system to ensure the magazine is fire resistant, weather-resistant, theft resistant, and ventilated.	to be determined in conjunction with Austin's Safety Regulatory Manager

I Have Received a Copy of This Report of Violations <i>(Proprietor's signature and title)</i> <input checked="" type="checkbox"/>  Plant Manager	Date 11-16-11
Signature and Title of ATF Officer  IOF	Date 11-16-11

Copy 1 - Proprietor's Copy

ATF E-Form 5030.5
Revised April 2005

AUSTIN POWDER COMPANY



July 9,2012

Karen East
Industry Operations Investigator
425 W. Capitol Suite 775
Little Rock, AR 72201

Karen

In reference to the inspection of the magazines at Austin Powder East Camden Plant on November 16,2011. The following citations have been corrected.

1. 27 CFR 555.207(a)(8) All explosive magazines in the LC area have had the hinges welded or bolted.
2. 27 CFR 555.207(a)(9) All explosive magazines have had additional metal welded around the hoods, to prevent access to the hasp.
3. 27 CFR 555.207 All explosive magazines in the LC area have had additional drop pins installed on the doors to insure doors remain closed.

If you have any questions or need additional information please contact me at 870-574-0580.

Sincerely,

A handwritten signature in black ink, appearing to read "Thomas Ethridge". The signature is stylized with a large, sweeping initial "T" and "E".

Thomas Ethridge
Plant Manager
Austin Powder Company
7-LC-10 Blandy Rd.
East Camden, AR 71701

P.O. BOX 3500 * 7 LC 10 BLANDY RD. * EAST CAMDEN, AR 71701
PH:870-574-0580 * FX:870-574-2060

Report of Violations

Instructions

Please write firmly with a ball point pen when completing this form. ATF officers will prepare this form in triplicate. The original copy will be given to the proprietor or a responsible representative. The remaining copies will be submitted with the completed inspection report. Supervisors will detach one copy from the completed report for their files.

Name of Proprietor Austin Powder	Street Address 7LC10- Blandy Road	City East Camden	State AR	ZIP Code 71701	County Ouachita	Page <u>2</u> of <u>2</u> Pages
License/Permit/Registry Number (if any) 5-AR-103-20-2E-00139		Expiration Date 5/1/2012	Date(s) or Period of Inspection 11/14/2011 - 11/16/2011 and 12/7/2011			

Inspection Results

An examination of your premises, records and operations has disclosed the following violations which have been explained to you:

Number	USC or CFR Citation	Nature of Violation	Corrective Action to be Taken (If not corrected immediately)	Date Corrections to be Made (If not corrected immediately)
4	27 CFR 555.215	Licensee failed to maintain magazines clear of rubbish. In at least three of the magazines, rats had eaten into the cardboard boxes containing explosives material. In one instance, the rodent had penetrated the inner wrapping and eaten into the explosives material and there was spillage of the material around the box.	Licensee will repackage any box that has been eaten into and will clean up all rubbish and spillage of material. Licensee will re-weigh the case whose inner lining has been compromised to ensure an accurate explosives weight is recorded. Licensee will work to ensure that product is inspected more carefully and rodent infestation is caught earlier.	12/7/2011
5	27 CFR 555.127	Failure to maintain an accurate daily summary of magazine transactions. In three instances, the entries into the computerized DSMT (LINUS) were incorrect. In one instance, a deduction from the wrong date shift code was shown. In one instance, production papers verified the amount of product produced was not properly recorded. In one instance, a case count was incorrectly recorded.	All corrections were made to the DSMT during the inspection. Licensee will work to ensure that future mistakes are not made.	12/7/2011

I Have Received a Copy of This Report of Violations (Proprietor's signature and title)

Thomas Etheridge Thomas Etheridge Plant Manager

Signature and Title of ATF Officer

Date
2-8-12

Date

Copy 1 - Proprietor's Copy

ATF E-Form 5030.5
Rev. 11/2005

Report of Violations

Instructions

Please write firmly with a ball point pen when completing this form. ATF officers will prepare this form in triplicate. The original copy will be given to the proprietor or a responsible representative. The remaining copies will be submitted with the completed inspection report. Supervisors will detach one copy from the completed report for their files.

Name of Proprietor	Street Address	City	State	ZIP Code	County	Page <u>1</u> of _____
Austin Powder	7LC10- Blandy Road	East Camden	AR	71701	Ouachita	2 Pages
License/Permit/Registry Number (if any)		Expiration Date	Date(s) or Period of Inspection			
5-AR-103-20-2E-00139		5/1/2012	11/14/2011 - 11/16/2011 and 12/7/2011			

Inspection Results

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2	27 CFR 555.207(a)(9)	Licensee failed to have doors equipped with hoods constructed in a manner as to prevent sawing or lever action on the hasps. When locked, the hood allows 1/2" to 1 1/2" in which to access the hasp. This problem exists with both the LC magazines and the AT magazines.	Licensee must correct the hood system on the doors by ensuring that no space exists for access to the hasps.	to be determined in conjunction with Austin's Safety Regulatory Manager
3	27 CFR.555.207	Licensee failed to have a Type I magazines that are fire-resistant, weather-resistant, theft resistant, and ventilated. This problem involves the LC magazines. The problem is associated with the bolt system on the doors that are not holding the door flush in place. There is a gap at the top of the door that creates a 3-6 inch opening to the interior of the magazine.	Licensee must correct the door system to ensure the magazine is fire resistant, weather-resistant, theft resistant, and ventilated.	to be determined in conjunction with Austin's Safety Regulatory Manager

I Have Received a Copy of This Report of Violations *(Proprietor's signature and title)*

X Thomas Ethridge Thomas Ethridge Plant Manager

Signature and Title of ATF Officer

Date

X 2-8-12

Date

Copy 1 - Proprietor's Copy

ATF E-Form 5030.5
Rev. _____ til 2005

AINI37RG

10/02/13
14:28:22

02 - Austin Powder Company
Austin Powder Form 51 - Storage of Non- in Powder Owned Explosives

PAGE 1

Location: EC-APC-East Camden, AR

ATF License - 5AR00139

Product Description: Powder, Smokeless 6LC44

UOM: LB

Size/Delay: N/A

Date Code: N/A

Storage Magazine: 6LC44

Reason: Regulatory issues for an APC supplier

Contact Company/Org: Explo Systems, Inc.

Contact Name: Terry Wright, V.P.

Contact Number: 318-382-8700

Date	Trans._Type	Trans._Description	Trans._ID	Qty_Out	Qty_In	Balance
04/10/13	Acquisition	Smokeless Powder received from Explo	2913		35,280.00	35,280.00
04/10/13	Acquisition	Smokeless Powder received from Explo	2916		35,280.00	70,560.00
05/16/13	Disposition	Smokeless Powder shipped to Explo	2925	35,280.00	.00	35,280.00
05/16/13	Disposition	Smokeless Powder shipped to Explo	2926	35,280.00	.00	.00

APC APPROVED: Dave True

*** This Record Must Be Retained For 5 Years From Date of Entry. ***

EXP_000006

018372

AINI37RG

10/02/13
14:28:22

02 - Austin Powder Company
Austin Powder Form 51 - Storage of Non-' in Powder Owned Explosives

PAGE 2

Location: EC-APC-East Camden, AR

ATF License - 5AR00139

Product Description: Powder, Smokeless 17AT27

UOM: LB

Size/Delay: N/A

Date Code: N/A

Storage Magazine: 17AT27

Reason: Regulatory issues for an APC supplier

Contact Company/Org: Explo Systems, Inc.

Contact Name: Terry Wright, V.P.

Contact Number: 318-382-8700

Date	Trans._Type	Trans._Description	Trans._ID	Qty_Out	Qty_In	Balance
03/19/13	Acquisition	Smokeless Powder received from Explo	2868		35,280.00	35,280.00
03/19/13	Acquisition	Smokeless Powder received from Explo	2867		35,280.00	70,560.00
03/19/13	Acquisition	Smokeless Powder received from Explo	2865		35,280.00	105,840.00
03/20/13	Acquisition	Smokeless Powder received from Explo	2870		35,280.00	141,120.00
04/15/13	Disposition	Smokeless Powder shipped to Explo	2918	1,680.00	.00	139,440.00

APC APPROVED: Dave True

*** This Record Must Be Retained For 5 Years From Date of Entry. ***

EXP_000007

018373

AINI37RG

10/02/13
14:28:22

02 - Austin Powder Company
Austin Powder Form 51 - Storage of Non- in Powder Owned Explosives

PAGE 3

Location: EC-APC-East Camden, AR

ATF License - 5AR00139

Product Description: Powder, Smokeless 17AT17

UOM: LB

Size/Delay: N/A

Date Code: N/A

Storage Magazine: 17AT17

Reason: Regulatory issues for an APC supplier

Contact Company/Org: Explo Systems, Inc.

Contact Name: Terry Wright, V.P.

Contact Number: 318-382-8700

Date	Trans._Type	Trans._Description	Trans._ID	Qty_Out	Qty_In	Balance
01/03/13	Acquisition	Smokeless Powder received from Explo	2826		35,280.00	35,280.00
01/09/13	Acquisition	Smokeless Powder received from Explo	2829		34,760.00	70,040.00
01/10/13	Acquisition	Smokeless Powder received from Explo	2827		35,280.00	105,320.00

APC APPROVED: Dave True

*** This Record Must Be Retained For 5 Years From Date of Entry. ***

EXP_000008

018374

AINI37RG

10/02/13
14:28:22

02 - Austin Powder Company
Austin Powder Form 51 - Storage of Non- in Powder Owned Explosives

PAGE 4

Location: EC-APC-East Camden, AR

ATF License - 5AR00139

Product Description: Powder, Smokeless 17AT08

UOM: LB

Size/Delay: N/A

Date Code: N/A

Storage Magazine: 17AT08

Reason: Regulatory issues for an APC supplier.

Contact Company/Org: Explo Systems, Inc.

Contact Name: Terry Wright, V.P.

Contact Number: 318-382-8700

Date	Trans._Type	Trans._Description	Trans._ID	Qty_Out	Qty_In	Balance
11/29/12	Acquisition	Smokeless Powder received from Explo	2807		37,686.00	37,686.00
11/29/12	Acquisition	Smokeless Powder received from Explo	2806		37,230.00	74,916.00
11/29/12	Acquisition	Smokeless Powder received from Explo	2809		36,618.00	111,534.00

APC APPROVED: Dave True

*** This Record Must Be Retained For 5 Years From Date of Entry. ***

EXP_000009

018375

AINI37RG

10/02/13
14:28:22

02 -- Austin Powder Company
Austin Powder Form 51 - Storage of Non- in Powder Owned Explosives

PAGE 5

Location: EC-APC-East Camden, AR

ATF License - 5AR00139

Product Description: Powder, Smokeless 17AT10

UCM: LB

Size/Delay: N/A

Date Code: N/A

Storage Magazine: 17AT10

Reason: Regulatory issues for an APC supplier.

Contact Company/Org: Explo Systems, Inc.

Contact Name: Terry Wright, V.P.

Contact Number: 318-382-8700

Date	Trans._Type	Trans._Description	Trans._ID	Qty_Out	Qty_In	Balance
12/06/12	Acquisition	Smokeless Powder received from Explo	2812		35,280.00	35,280.00
12/06/12	Acquisition	Smokeless Powder received from Explo	2810		35,280.00	70,560.00
12/06/12	Acquisition	Smokeless Powder received from Explo	2814		35,280.00	105,840.00

APC APPROVED: Dave True

*** This Record Must Be Retained For 5 Years From Date of Entry. ***

EXP_000010

018376

AINI37RG

10/02/13
14:28:22

02 - Austin Powder Company
Austin Powder Form 51 - Storage of Non- in Powder Owned Explosives

PAGE 6

Location: EC-APC-East Camden, AR

ATF License - 5AR00139

Product Description: Powder, Smokeless 6LC30

UOM: LB

Size/Delay: N/A

Date Code: N/A

Storage Magazine: 6LC30

Reason: Regulatory issues for an APC supplier

Contact Company/Org: Explo Systems, Inc.

Contact Name: Terry Wright, V.P.

Contact Number: 318-382-8700

Date	Trans._Type	Trans._Description	Trans._ID	Qty_Out	Qty_In	Balance
04/08/13	Acquisition	Smokeless Powder received from Explo	2908		35,280.00	35,280.00
04/09/13	Acquisition	Smokeless Powder received from Explo	2910		35,280.00	70,560.00
04/09/13	Acquisition	Smokeless Powder received from Explo	2911		35,280.00	105,840.00
04/09/13	Acquisition	Smokeless Powder received from Explo	2912		35,280.00	141,120.00
04/10/13	Acquisition	Smokeless Powder received from Explo	2915		35,280.00	176,400.00

APC APPROVED: Dave True

*** This Record Must Be Retained For 5 Years From Date of Entry. ***

EXP_000011

018377

AFNI37RG

10/02/13
14:28:22

02 - Austin Powder Company
Austin Powder Form 51 - Storage of Non- in Powder Owned Explosives

PAGE 7

Location: EC-APC-East Camden, AR

ATF License - 5AR00139

Product Description: Powder, Smokeless 17AT05

UOM: LB

Size/Delay: N/A

Date Code: N/A

Storage Magazine: 17AT05

Reason: Regulatory issues for an APC supplier.

Contact Company/Org: Explo Systems, Inc.

Contact Name: Terry Wright, V.P.

Contact Number: 318-382-8700

Date	Trans._Type	Trans._Description	Trans._ID	Qty_Out	Qty_In	Balance
11/28/12	Acquisition	Smokeless Powder received from Explo	2801		37,230.00	37,230.00
11/29/12	Acquisition	Smokeless Powder received from Explo	2802		36,660.00	73,890.00
11/29/12	Acquisition	Smokeless Powder received from Explo	2808		37,800.00	111,690.00

APC APPROVED: Dave True

*** This Record Must Be Retained For 5 Years From Date of Entry. ***

EXP_000012

018378

AINI37RG

10/02/13
14:28:22

02 - Austin Powder Company
Austin Powder Form 51 - Storage of Non- in Powder Owned Explosives

PAGE 8

Location: EC-APC-East Camden, AR ATF License - 5AR00139

Product Description: Powder, Smokeless 6LC28
UOM: LB
Size/Delay: N/A
Date Code: N/A
Storage Magazine: 6LC28
Reason: Regulatory issues for an APC supplier

Contact Company/Org: Explo Systems, Inc.
Contact Name: Terry Wright, V.P.
Contact Number: 318-382-8700

Date	Trans._Type	Trans._Description	Trans._ID	Qty_Out	Qty_In	Balance
04/05/13	Acquisition	Smokeless Powder received from Explo	2903		35,280.00	35,280.00
04/05/13	Acquisition	Smokeless Powder received from Explo	2904		35,280.00	70,560.00
04/05/13	Acquisition	Smokeless Powder received from Explo	2905		35,280.00	105,840.00
04/08/13	Acquisition	Smokeless Powder received from Explo	2906		35,280.00	141,120.00
04/08/13	Acquisition	Smokeless Powder received from Explo	2907		35,280.00	176,400.00

APC APPROVED: Dave True

*** This Record Must Be Retained For 5 Years From Date of Entry. ***

EXP_000013

AINI37RG

10/02/13
14:28:22

02 - Austin Powder Company
Austin Powder Form 51 - Storage of Non- in Powder Owned Explosives

PAGE 9

Location: EC-APC-East Camden, AR ATF License - 5AR00139

Product Description: Powder, Smokeless 17AT25
 UOM: LB
 Size/Delay: N/A
 Date Code: N/A
Storage Magazine: 17AT25
 Reason: Regulatory issues for an APC supplier

Contact Company/Org: Explo Systems, Inc.
 Contact Name: Terry Wright
 Contact Number: 318-382-8700

Date	Trans._Type	Trans._Description	Trans._ID	Qty_Out	Qty_In	Balance
03/14/13	Acquisition	Smokeless Powder received from Explo	2856		35,280.00	35,280.00
03/15/13	Acquisition	Smokeless Powder received from Explo	2861		35,280.00	70,560.00
03/18/13	Acquisition	Smokeless Powder received from Explo	2859		35,280.00	105,840.00
03/18/13	Acquisition	Smokeless Powder received from Explo	2866		35,280.00	141,120.00
04/15/13	Disposition	Smokeless Powder shipped to Explo	2918	840.00	.00	140,280.00

APC APPROVED: Dave True

*** This Record Must Be Retained For 5 Years From Date of Entry. ***

EXP_000014

018380

AINI37RG

10/02/13
14:28:22

02 - Austin Powder Company
Austin Powder Form 51 - Storage of Non- in Powder Owned Explosives

PAGE 10

Location: EC-APC-East Camden, AR

ATF License - 5AR00139

Product Description: Powder, Smokeless 6LC18

UOM: LB

Size/Delay: N/A

Date Code: N/A

Storage Magazine: 6LC18

Reason: Regulatory issues for an APC supplier

Contact Company/Org: Explo Systems, Inc.

Contact Name: Terry Wright, V.P.

Contact Number: 318-382-8700

Date	Trans._Type	Trans._Description	Trans._ID	Qty_Out	Qty_In	Balance
04/03/13	Acquisition	Smokeless Powder received from Explo	2899		35,280.00	35,280.00
04/03/13	Acquisition	Smokeless Powder received from Explo	2897		35,280.00	70,560.00
04/04/13	Acquisition	Smokeless Powder received from Explo	2900		35,280.00	105,840.00
04/04/13	Acquisition	Smokeless Powder received from Explo	2901		35,280.00	141,120.00
04/04/13	Acquisition	Smokeless Powder received from Explo	2902		35,280.00	176,400.00

APC APPROVED: Dave True

*** This Record Must Be Retained For 5 Years From Date of Entry. ***

EXP_000015

018381

AINI37RG

10/02/13
14:28:22

02 - Austin Powder Company
Austin Powder Form 51 - Storage of Non- in Powder Owned Explosives

PAGE 11

Location: EC-APC-East Camden, AR ATF License - 5AR00139

Product Description: Powder, Smokeless 6LC08
 UOM: LB
 Size/Delay: N/A
 Date Code: N/A
Storage Magazine: 6LC08
 Reason: Regulatory issues for an APC supplier

Contact Company/Org: Explo Systems, Inc.
 Contact Name: Terry Wright
 Contact Number: 318-382-8700

Date	Trans._Type	Trans._Description	Trans._ID	Qty_Out	Qty_In	Balance
03/22/13	Acquisition	Smokeless Powder received from Explo	2875		35,280.00	35,280.00
03/25/13	Acquisition	Smokeless Powder received from Explo	2876		35,280.00	70,560.00
03/25/13	Acquisition	Smokeless Powder received from Explo	2877		35,280.00	105,840.00
03/26/13	Acquisition	Smokeless Powder received from Explo	2878		35,280.00	141,120.00
03/26/13	Acquisition	Smokeless Powder received from Explo	2879		35,280.00	176,400.00

APC APPROVED: Dave True

*** This Record Must Be Retained For 5 Years From Date of Entry. ***

EXP_000016

AINI37RG

10/02/13
14:28:22

02 - Austin Powder Company
Austin Powder Form 51 - Storage of Non- in Powder Owned Explosives

PAGE 12

Location: EC-APC-East Camden, AR

ATF License - 5AR00139

Product Description: Powder, Smokeless 17AT21

UOM: LB

Size/Delay: N/A

Date Code: N/A

Storage Magazine: 17AT21

Reason: Regulatory issues for an APC supplier

Contact Company/Org: Explo Systems, Inc

Contact Name: Terry Wright

Contact Number: 318-382-8700

Date	Trans._Type	Trans._Description	Trans._ID	Qty_Out	Qty_In	Balance
01/11/13	Acquisition	Smokeless Powder received from Explo	2831		35,280.00	35,280.00
01/16/13	Acquisition	Smokeless Powder received from Explo	2834		27,720.00	63,000.00
01/22/13	Acquisition	Smokeless Powder received from Explo	2835		35,280.00	98,280.00
01/23/13	Acquisition	Smokeless Powder received from Explo	2832		35,280.00	133,560.00

APC APPROVED: Dave True

*** This Record Must Be Retained For 5 Years From Date of Entry. ***

EXP_000017

018383

AINI37RG

10/02/13
14:28:22

02 - Austin Powder Company
Austin Powder Form 51 - Storage of Non- in Powder Owned Explosives

PAGE 13

Location: EC-APC-East Camden, AR

ATF License - 5AR00139

Product Description: Powder, Smokeless 17AT14

UOM: LB

Size/Delay: N/A

Date Code: N/A

Storage Magazine: 17AT14

Reason: Regulatory issues for an APC supplier

Contact Company/Org: Explo Systems, Inc.

Contact Name: Terry Wright, V.P.

Contact Number: 318-382-8700

Date	Trans._Type	Trans._Description	Trans._ID	Qty_Out	Qty_In	Balance
12/12/12	Acquisition	Smokeless Powder received from Explo	2819		35,280.00	35,280.00
12/18/12	Acquisition	Smokeless Powder received from Explo	2821		35,160.00	70,440.00
01/25/13	Acquisition	Smokeless Powder received from Explo	2841		36,120.00	106,560.00

APC APPROVED: Dave True

*** This Record Must Be Retained For 5 Years From Date of Entry. ***

EXP_000018

018384

AINI37RG

10/02/13
14:28:22

02 - Austin Powder Company
Austin Powder Form 51 - Storage of Non- in Powder Owned Explosives

PAGE 14

Location: EC-APC-East Camden, AR

ATF License - 5AR00139

Product Description: Powder, Smokeless 17AT13

UOM: LB

Size/Delay: N/A

Date Code: N/A

Storage Magazine: 17AT13

Reason: Regulatory issues for an APC supplier

Contact Company/Org: Explo Systems, Inc.

Contact Name: Terry Wright, V.P.

Contact Number: 318-382-8700

Date	Trans._Type	Trans._Description	Trans._ID	Qty_Out	Qty_In	Balance
03/13/13	Acquisition	Smokeless Powder received from Explo	2853		35,280.00	35,280.00
03/13/13	Acquisition	Smokeless Powder received from Explo	2855		35,280.00	70,560.00
03/14/13	Acquisition	Smokeless Powder received from Explo	2858		35,280.00	105,840.00
03/14/13	Acquisition	Smokeless Powder received from Explo	2857		35,280.00	141,120.00

APC APPROVED: Dave True

*** This Record Must Be Retained For 5 Years From Date of Entry. ***

EXP_000019

018385

AINI37RG

10/02/13
14:28:22

02 - Austin Powder Company
Austin Powder Form 51 - Storage of Non- in Powder Owned Explosives

PAGE 15

Location: EC-APC-East Camden, AR

ATF License - 5AR00139

Product Description: Powder, Smokeless 17AT28

UOM: LB

Size/Delay: N/A

Date Code: N/A

Storage Magazine: 17AT28

Reason: Regulatory issues for an APC supplier

Contact Company/Org: Explo Systems, Inc.

Contact Name: Terry Wright, V.P.

Contact Number: 318-382-8700

Date	Trans._Type	Trans._Description	Trans._ID	Qty_Out	Qty_In	Balance
03/20/13	Acquisition	Smokeless Powder received from Explo	2872		35,280.00	35,280.00
03/21/13	Acquisition	Smokeless Powder received from Explo	2871		35,280.00	70,560.00
03/21/13	Acquisition	Smokeless Powder received from Explo	2862		35,280.00	105,840.00
03/31/13	Acquisition	Smokeless Powder received from Explo	2854		35,280.00	141,120.00

APC APPROVED: Dave True

*** This Record Must Be Retained For 5 Years From Date of Entry. ***

EXP_000020

018386

AINI37RG

10/02/13
14:28:22

02 - Austin Powder Company
Austin Powder Form 51 - Storage of Non- in Powder Owned Explosives

PAGE 16

Location: EC-APC-East Camden, AR

ATF License - 5AR00139

Product Description: Powder, Smokeless 6LC13

UOM: LB

Size/Delay: N/A

Date Code: N/A

Storage Magazine: 6LC13

Reason: Regulatory issues for an APC supplier

Contact Company/Org: Explo Systems, Inc.

Contact Name: Terry Wright, V.P.

Contact Number: 318-382-8700

Date	Trans._Type	Trans._Description	Trans._ID	Qty_Out	Qty_In	Balance
03/26/13	Acquisition	Smokeless Powder received from Explo	2881		35,280.00	35,280.00
03/27/13	Acquisition	Smokeless Powder received from Explo	2882		35,280.00	70,560.00
03/27/13	Acquisition	Smokeless Powder received from Explo	2880		35,280.00	105,840.00
03/28/13	Acquisition	Smokeless Powder received from Explo	2884		35,280.00	141,120.00
03/28/13	Acquisition	Smokeless Powder received from Explo	2885		35,280.00	176,400.00
07/23/13	Acquisition	Smokeless Powder moved from 6LC14 to 6LC13	072313 APC		35,280.00	211,680.00
07/29/13	Disposition	Smokeless Powder moved from 6LC13 to 6LC01	072913 APC	35,280.00	.00	176,400.00

APC APPROVED: Dave True

*** This Record Must Be Retained For 5 Years From Date of Entry. ***

EXP_000021

018387

Location: EC-APC-East Camden, AR ATF License - 5AR00139

Product Description: Powder, Smokeless 6LC14
 UOM: LB
 Size/Delay: N/A
 Date Code: N/A
 Storage Magazine: 6LC14
 Reason: Regulatory issues for an APC supplier

Contact Company/Org: Explo Systems, Inc.
 Contact Name: Terry Wright, V.P.
 Contact Number: 318-382-8700

Date	Trans._Type	Trans._Description	Trans._ID	Qty_Out	Qty_In	Balance
03/28/13	Acquisition	Smokeless Powder received from Explo	2888		35,280.00	35,280.00
03/28/13	Acquisition	Smokeless Powder received from Explo	2889		35,280.00	70,560.00
04/01/13	Acquisition	Smokeless Powder received from Explo	2893		35,280.00	105,840.00
04/01/13	Acquisition	Smokeless Powder received from Explo	2891		35,280.00	141,120.00
04/01/13	Acquisition	Smokeless Powder received from Explo	2892		35,280.00	176,400.00
07/09/13	Disposition	Smokeless Powder shipped to BEQ	2933	35,280.00	.00	141,120.00
07/09/13	Disposition	Smokeless Powder shipped to BEQ	2934	35,280.00	.00	105,840.00
07/09/13	Disposition	Smokeless Powder shipped to BEQ	2935	35,280.00	.00	70,560.00
07/09/13	Disposition	Smokeless Powder shipped to BEQ	2936	35,280.00	.00	35,280.00
07/23/13	Disposition	Smokeless Powder moved 6LC13 to 6LC01	072313 APC	35,280.00	.00	.00

APC APPROVED: Dave True

*** This Record Must Be Retained For 5 Years From Date of Entry. ***

EXP_000022

AINI37RG

10/02/13
14:28:22

02 - Austin Powder Company
Austin Powder Form 51 - Storage of Non- in Powder Owned Explosives

Location: EC-APC-East Camden, AR

ATF License - 5AR00139

Product Description: Powder, Smokeless 17AT30

UOM: LB

Size/Delay: N/A

Date Code: N/A

Storage Magazine: 17AT30

Reason: Regulatory issues for an APC supplier

Contact Company/Org: Explo Systems, Inc.

Contact Name: Terry Wright, V.P.

Contact Number: 318-382-8700

Date	Trans._Type	Trans._Description	Trans._ID	Qty_Out	Qty_In	Balance
03/21/13	Acquisition	Smokeless Powder received from Explo	2869		35,280.00	35,280.00
03/21/13	Acquisition	Smokeless Powder received from Explo	2863		35,280.00	70,560.00
03/21/13	Acquisition	Smokeless Powder received from Explo	2860		35,280.00	105,840.00
03/22/13	Acquisition	Smokeless Powder received from Explo	2874		35,280.00	141,120.00

APC APPROVED: Dave True

*** This Record Must Be Retained For 5 Years From Date of Entry. ***

EXP_000023

AINI37RG

10/02/13
14:28:22

02 - Austin Powder Company
Austin Powder Form 51 - Storage of Non- in Powder Owned Explosives

PAGE 19

Location: EC-APC-East Camden, AR

ATF License - 5AR00139

Product Description: Powder, Smokeless 17AT26

UOM: LB

Size/Delay: N/A

Date Code: N/A

Storage Magazine: 17AT26

Reason: Regulatory issues for an APC supplier

Contact Company/Org: Explo Systems, Inc.

Contact Name: Terry Wright

Contact Number: 318-382-8700

Date	Trans._Type	Trans._Description	Trans._ID	Qty_Out	Qty_In	Balance
01/23/13	Acquisition	Smokeless Powder received from Explo	2836		36,960.00	36,960.00
01/24/13	Acquisition	Smokeless Powder received from Explo	2837		36,120.00	73,080.00
01/24/13	Acquisition	Smokeless Powder received from Explo	2839		36,120.00	109,200.00
01/25/13	Acquisition	Smokeless Powder received from Explo	2840		36,120.00	145,320.00

EXP_000024

APC APPROVED: Terry Wright

*** This Record Must Be Retained For 5 Years From Date of Entry. ***

018390

AINI37RG

10/02/13
14:28:22

02 - Austin Powder Company
Austin Powder Form 51 - Storage of Non- in Powder Owned Explosives

PAGE 20

Location: EC-APC-East Camden, AR

ATF License - 5AR00139

Product Description: Powder, Smokeless 6LC01

UOM: LB

Size/Delay: N/A

Date Code: N/A

Storage Magazine: 6LC01

Reason: Regulatory issues for an APC supplier

Contact Company/Org: Explo Systems, Inc.

Contact Name: Terry Wright, V.P.

Contact Number: 318-382-8700

Date	Trans._Type	Trans._Description	Trans._ID	Qty_Out	Qty_In	Balance
07/29/13	Acquisition	Smokeless Powder moved from 6LC14	072913 APC		35,280.00	35,280.00

APC APPROVED: Dave True

*** This Record Must Be Retained For 5 Years From Date of Entry. ***

EXP_000025

018391

AINI37RG

10/02/13
14:28:22

02 - Austin Powder Company
Austin Powder Form 51 - Storage of Non- in Powder Owned Explosives

PAGE 21

Location: EC-APC-East Camden, AR

ATF License - 5AR00139

Product Description: Powder, Smokeless 17AT16

UOM: LB

Size/Delay: N/A

Date Code: N/A

Storage Magazine: 17AT16

Reason: Regulatory issues for an APC supplier

Contact Company/Org: Explo Systems, Inc.

Contact Name: Terry Wright, V.P.

Contact Number: 318-382-8700

Date	Trans._Type	Trans._Description	Trans._ID	Qty_Out	Qty_In	Balance
12/18/12	Acquisition	Smokeless Powder received from Explo	2822		35,280.00	35,280.00
12/19/12	Acquisition	Smokeless Powder received from Explo	2824		35,166.00	70,446.00
12/19/12	Acquisition	Smokeless Powder received from Explo	2823		35,280.00	105,726.00

APC APPROVED: Dave True

*** This Record Must Be Retained For 5 Years From Date of Entry. ***

EXP_000026

018392

AINI37RG

10/02/13
14:28:22

02 - Austin Powder Company
Austin Powder Form 51 - Storage of Non- in Powder Owned Explosives

PAGE 22

Location: EC-APC-East Camden, AR

ATF License - 5AR00139

Product Description: Powder, Smokeless 6LC16

UOM: LB

Size/Delay: N/A

Date Code: N/A

Storage Magazine: 6LC16

Reason: Regulatory issues or an APC supplier

Contact Company/Org: Explo Systems, Inc.

Contact Name: Terry Wright, V.P.

Contact Number: 318-382-8700

Date	Trans._Type	Trans._Description	Trans._ID	Qty_Out	Qty_In	Balance
04/02/13	Acquisition	Smokeless Powder received from Explo	2895		35,280.00	35,280.00
04/02/13	Acquisition	Smokeless Powder received from Explo	2894		35,280.00	70,560.00
04/02/13	Acquisition	Smokeless Powder received from Explo	2896		35,280.00	105,840.00
04/02/13	Acquisition	Smokeless Powder received from Explo	2890		35,280.00	141,120.00
04/03/13	Acquisition	Smokeless Powder received from Explo	2898		35,280.00	176,400.00

APC APPROVED: Dave True

*** This Record Must Be Retained For 5 Years From Date of Entry. ***

EXP_000027

018393

AINI37RG

10/02/13
14:28:22

02 - Austin Powder Company
Austin Powder Form 51 - Storage of Non- in Powder Owned Explosives

PAGE 23

Location: EC-APC-East Camden, AR

ATF License - 5AR00139

Product Description: Powder, Smokeless 17AT11

UOM: LB

Size/Delay: N/A

Date Code: N/A

Storage Magazine: 17AT11

Reason: Regulatory issues for an APC supplier.

Contact Company/Org: Explo Systems, Inc.

Contact Name: Terry Wright, V.P.

Contact Number: 318-382-8700

Date	Trans._Type	Trans._Description	Trans._ID	Qty_Out	Qty_In	Balance
12/06/12	Acquisition	Smokeless Powder received from Explo	2815		35,280.00	35,280.00
12/11/12	Acquisition	Smokeless Powder received from Explo	2816		36,960.00	72,240.00
12/12/12	Acquisition	Smokeless Powder received from Explo	2817		36,960.00	109,200.00

APC APPROVED: Dave True

*** This Record Must Be Retained For 5 Years From Date of Entry. ***

EXP_000028

018394

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND84J070447 **D533 / M6 propellant**

Date of analysis: **Date: 1 FEB 2011**

Other Information M6 Propellant	Sample Data #1 0.5000 g 100 ml Solvent ACN
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Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	4.156	1116	2364.2	0.212
2,4-DNDPA	50.0	9.388	1191.2	27845.2	2.338
2,2' DNDPA	50.0	10.987	1694.7	98.8	0.000
2,4' DNDPA	50.0	11.73	1272.3	112.7	0.009
4NDPA	50.0	12.459	2443.3	0	0.000
2NDPA	50.0	13.939	5852.1	542.3	0.009
DPA	200.0	15.022	1753.1	0	0.000
N-NitrosoDPA	75.0	18.932	2535.1	419	0.000

	2.568
Avg. % Stabilizer for Lot	2.568

0.30% or more is Stability Code A
 0.20% -0.29% is Stability Code C
 Less than 0.20% is Stability Code D

Analyst Mike Kile **Avg. Tot. Stabilizers 2.57 %**

Analyst Signature Stable YES | Unstable

Lab. Supervisor Signature **Comments**
CATEGORY: A

Actions to be Taken

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND86E070616			D533 / M6 propellant		
Date of analysis:			Date: 19 NOV 2010		
Other Information M6 Propellant		Sample Data #1 0.5000 g 100 ml		Solvent ACN	
Standards (ERG-006)			Sample #		
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	2.068	135.8	854.4	0.482
2,4-DNDPA	50.0	5.182	717.3	0	0.000
2,2' DNDPA	50.0	7.635	736.3	13022.2	0.000
2,4' DNDPA	50.0	11.713	779	0	0.000
4NDPA	50.0	13.454	462.4	0	0.000
2NDPA	50.0	15.161	1164.1	0	0.000
DPA	200.0	16.583	4078.5	221.2	0.022
N-NitrosoDPA	75.0	18.033	1011.7	0	0.000
				0.504	
Avg. % Stabilizer for Lot				0.504	
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst Kisha Dickerson			Avg. Tot. Stabilizers 0.50 %		
Analyst Signature			Stable YES		Unstable
			Comments		
Lab. Supervisor Signature			CATEGORY: A		
			Actions to be Taken		

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND82G070164				D533 / M6 propellant			
Date of analysis:				Date: 22 Dec 2010			
Other Information M6 Propellant		Sample Data #1 0.5000 g 100 ml			Solvent ACN		
Standards (ERG-006)				Sample #			
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %		
4,4' DNDPA	50.0	4.041	1072.9	2489.9	0.232		
2,4-DNDPA	50.0	9.403	1132.4	28529	2.519		
2,2' DNDPA	50.0	11.071	1654.7	76.5	0.000		
2,4' DNDPA	50.0	11.863	1176.6	131	0.011		
4NDPA	50.0	12.612	2287.7	0	0.000		
2NDPA	50.0	14.156	6085.2	504.4	0.008		
DPA	200.0	15.296	1602.1	0	0.000		
N-NitrosoDPA	75.0	19.37	2345.7	612.7	0.000		
					2.771		
Avg. % Stabilizer for Lot					2.771		
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D							
Analyst Mike Kile				Avg. Tot. Stabilizers 2.77 %			
Analyst Signature				Stable YES		Unstable	
				Comments			
Lab. Supervisor Signature				CATEGORY: A			
				Actions to be Taken			

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND85F070588			D533 / M6 propellant		
Date of analysis:			Date: 20 Dec 2010		
Other Information M6 Propellant		Sample Data #1 0.5000 g 100 ml		Solvent ACN	
Standards (ERG-006)			Sample #		
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	2.059	87.1	1411.1	1.620
2,4-DNDPA	50.0	5.198	631.9	845.8	0.134
2,2' DNDPA	50.0	7.699	1074.2	15722.5	0.000
2,4' DNDPA	50.0	11.782	545	0	0.000
4NDPA	50.0	13.513	1464.9	246.8	0.017
2NDPA	50.0	15.189	1011.6	0	0.000
DPA	200.0	16.638	2894.7	309.8	0.043
N-NitrosoDPA	75.0	18.069	720.1	0	0.000
				1.814	
Avg. % Stabilizer for Lot				1.814	
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst Kisha Dickerson			Avg. Tot. Stabilizers 1.81 %		
Analyst Signature			Stable YES		Unstable
			Comments		
Lab. Supervisor Signature			CATEGORY: A		
			Actions to be Taken		

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND84E070434				D533 / M6 propellant	
Date of analysis:				Date: 19 SEPT 2011	
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml		Solvent ACN	
Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.866	65.3	372.3	0.570
2,4-DNDPA	50.0	3.45	959.2	13.2	0.001
2,2' DNDPA	50.0	5.27	2749.5	22015	0.000
2,4' DNDPA	50.0	7.695	1051.4	0	0.000
4NDPA	50.0	9.247	1702.8	73.3	0.004
2NDPA	50.0	10.528	3035.1	131.5	0.004
DPA	200.0	12.044	5992.2	876.8	0.059
N-NitrosoDPA	75.0	12.922	1413.2	0	0.000
				0.639	
Avg. % Stabilizer for Lot				0.639	
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst MIKE KILE			Avg. Tot. Stabilizers 0.64 %		
Analyst Signature			Stable YES		Unstable
			Comments		
Lab. Supervisor Signature					
			Actions to be Taken		

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND83F070276	D533 / M6 propellant
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Date of analysis:	Date: 8 SEPTEMBER 2010
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Other Information M6 Propellant	Sample Data #1 0.50 g 100 ml	Solvent ACN
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Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.661	105	324.9	0.309
2,4-DNDPA	50.0	3.445	956.3	26.6	0.003
2,2' DNDPA	50.0	5.251	1621.3	24641	0.000
2,4' DNDPA	50.0	7.652	1041.4	23.8	0.002
4NDPA	50.0	9.199	1675.3	187.8	0.011
2NDPA	50.0	10.475	2996.8	224.7	0.007
DPA	200.0	11.898	5813.2	455.7	0.031
N-NitrosoDPA	75.0	12.869	1403.1	0	0.000

	0.365
Avg. % Stabilizer for Lot	0.365

0.30% or more is Stability Code A
 0.20% - 0.29% is Stability Code C
 Less than 0.20% is Stability Code D

Analyst KISHA DICKERSON	Avg. Tot. Stabilizers 0.36 %
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Analyst Signature	Stable YES Unstable
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Lab. Supervisor Signature	Comments CATEGORY: A
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	Actions to be Taken
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HPLC PROPELLANT STABILITY REPORT

Lot Number: IND85C070512 **D533 / M6 propellant**

Date of analysis: **Date: 26 OCT 2011**

Other Information M6 Propellant	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">Sample Data</td> <td style="width: 35%;"></td> <td style="width: 15%;"></td> <td style="width: 35%;">Solvent</td> </tr> <tr> <td>#1</td> <td>0.50 g</td> <td>100 ml</td> <td>ACN</td> </tr> </table>	Sample Data			Solvent	#1	0.50 g	100 ml	ACN
Sample Data			Solvent						
#1	0.50 g	100 ml	ACN						

Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.811	226.1	610.3	0.270
2,4-DNDPA	50.0	3.428	979.3	0	0.000
2,2' DNDPA	50.0	5.223	938.5	22144	0.000
2,4' DNDPA	50.0	7.579	1058.7	0	0.000
4NDPA	50.0	9.118	1705.2	34.9	0.002
2NDPA	50.0	10.331	3070.6	74.6	0.002
DPA	200.0	11.88	5950.5	669.8	0.045
N-NitrosoDPA	75.0	12.714	1455.8	0	0.000

	0.319
Avg. % Stabilizer for Lot	0.319

0.30% or more is Stability Code A
 0.20% -0.29% is Stability Code C
 Less than 0.20% is Stability Code D

Analyst TAKISHA DICKERSON **Avg. Tot. Stabilizers** 0.32 %

Analyst Signature Stable YES | Unstable

Lab. Supervisor Signature **Comments**
CATEGORY: A

Actions to be Taken

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND82E070114				D533 / M6 propellant	
Date of analysis:				Date: 22 NOV 2011	
Other Information M6 Propellant		Sample Data		Solvent	
		#1 0.50 g 100 ml		ACN	
Standards (ERG-006)			Sample #		
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.753	205.4	623.3	0.303
2,4-DNDPA	50.0	3.383	927.4	0	0.000
2,2' DNDPA	50.0	5.127	481.8	21922	0.000
2,4' DNDPA	50.0	7.38	1001.4	0	0.000
4NDPA	50.0	8.893	1609.3	58.6	0.004
2NDPA	50.0	10.053	2886.9	118	0.004
DPA	200.0	11.686	5621.7	791.2	0.056
N-NitrosoDPA	75.0	12.383	1361.9	0	0.000
					0.367
Avg. % Stabilizer for Lot					0.367
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst TAKISHA DICKERSON			Avg. Tot. Stabilizers 0.37 %		
Analyst Signature			Stable YES		Unstable
			Comments		
Lab. Supervisor Signature			CATEGORY: A		
			Actions to be Taken		

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND87H070720				D533 / M6 propellant	
Date of analysis:				Date: 18 NOV 2011	
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml		Solvent ACN	
Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.747	327.4	1170.4	0.357
2,4-DNDPA	50.0	3.395	1731.2	21.2	0.001
2,2' DNDPA	50.0	5.173	4488.9	22467	0.000
2,4' DNDPA	50.0	7.497	1903.5	0	0.000
4NDPA	50.0	9.01	3102.1	91.8	0.003
2NDPA	50.0	10.21	5531.9	144.8	0.003
DPA	200.0	11.727	11056	931.7	0.034
N-NitrosoDPA	75.0	12.547	2638.3	0	0.000
				0.398	
Avg. % Stabilizer for Lot				0.398	
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst TAKISHA DICKERSON			Avg. Tot. Stabilizers 0.40 %		
Analyst Signature			Stable YES		Unstable
			Comments		
Lab. Supervisor Signature					
			Actions to be Taken		

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND84L070454 **D533 / M6 propellant**

Date of analysis: **Date: 4 MAY 2012**

Other Information M6 Propellant	Sample Data #1 0.50 g 100 ml	Solvent ACN
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Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.867	83.7	400.6	0.479
2,4-DNDPA	50.0	3.338	1156.5	0	0.000
2,2' DNDPA	50.0	5.017	5373.7	23342	0.000
2,4' DNDPA	50.0	7.147	1263.8	0	0.000
4NDPA	50.0	8.595	2061.4	48.3	0.002
2NDPA	50.0	9.687	3694.9	94.1	0.003
DPA	200.0	11.119	7683.7	721.2	0.038
N-NitrosoDPA	75.0	11.99	2133.1		0.000

0.521
Avg. % Stabilizer for Lot 0.521

0.30% or more is Stability Code A
 0.20% -0.29% is Stability Code C
 Less than 0.20% is Stability Code D

Analyst Takisha Dickerson **Avg. Tot. Stabilizers 0.52 %**

Analyst Signature Stable YES Unstable

Lab. Supervisor Signature Comments
CATEGORY: A

Actions to be Taken

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND88H070966 **D533 / M6 propellant**

Date of analysis: **Date: 29 JULY 2011**

Other Information M6 Propellant	Sample Data #1 0.50 g 100 ml Solvent ACN
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Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.642	125.1	600.3	0.480
2,4-DNDPA	50.0	3.455	992.3	0	0.000
2,2' DNDPA	50.0	5.274	125.3	27328	0.000
2,4' DNDPA	50.0	7.702	1067.4	0	0.000
4NDPA	50.0	9.26	1688.8	88.8	0.005
2NDPA	50.0	10.547	3070.1	85.2	0.003
DPA	200.0	12.08	5796.8	694.6	0.048
N-NitrosoDPA	75.0	12.966	1456.1	0	0.000

	0.536
Avg. % Stabilizer for Lot	0.536

0.30% or more is Stability Code A
 0.20% -0.29% is Stability Code C
 Less than 0.20% is Stability Code D

Analyst Kisha Dickerson **Avg. Tot. Stabilizers 0.54 %**

Analyst Signature Stable YES Unstable

Lab. Supervisor Signature Comments
CATEGORY: A

Actions to be Taken

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND81L070073				D533 / M6 propellant			
Date of analysis:				Date: 29 JULY 2011			
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml		Solvent ACN			
Standards (ERG-006)				Sample #			
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %		
4,4' DNDPA	50.0	0.642	125.1	606.3	0.485		
2,4-DNDPA	50.0	3.455	992.3	0	0.000		
2,2' DNDPA	50.0	5.274	125.3	22452	0.000		
2,4' DNDPA	50.0	7.702	1067.4	0	0.000		
4NDPA	50.0	9.26	1688.8	34.3	0.002		
2NDPA	50.0	10.547	3070.1	102.4	0.003		
DPA	200.0	12.08	5796.8	430.9	0.030		
N-NitrosoDPA	75.0	12.966	1456.1	0	0.000		
				0.520			
Avg. % Stabilizer for Lot				0.520			
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D							
Analyst Kisha Dickerson				Avg. Tot. Stabilizers 0.52 %			
Analyst Signature				Stable YES		Unstable	
				Comments			
Lab. Supervisor Signature				CATEGORY: A			
				Actions to be Taken			

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND82L070178 **D533 / M6 propellant**

Date of analysis: **Date: 27 JULY 2011**

Other Information M6 Propellant	Sample Data #1 0.50 g 100 ml Solvent ACN
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Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.694	112.8	398.2	0.353
2,4-DNDPA	50.0	3.477	942.8	0	0.000
2,2' DNDPA	50.0	5.339	77.4	23169	0.000
2,4' DNDPA	50.0	7.842	1020.3	0	0.000
4NDPA	50.0	9.392	1634.2	111.1	0.007
2NDPA	50.0	10.693	2956.2	63.3	0.002
DPA	200.0	12.201	5630.5	349.6	0.025
N-NitrosoDPA	75.0	13.103	1385.2	0	0.000

Avg. % Stabilizer for Lot	0.387
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0.30% or more is Stability Code A
 0.20% -0.29% is Stability Code C
 Less than 0.20% is Stability Code D

Analyst Takisha Dickerson **Avg. Tot. Stabilizers** 0.39 %

Analyst Signature Stable YES | Unstable

Lab. Supervisor Signature **Comments**
CATEGORY: A

Actions to be Taken

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND82H070167				D533 / M6 propellant	
Date of analysis:				Date: 6 JAN 2012	
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml		Solvent ACN	
Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.65	119.1	308.2	0.259
2,4-DNDPA	50.0	3.304	1019.8	0	0.000
2,2' DNDPA	50.0	4.943	1734.6	23824	0.000
2,4' DNDPA	50.0	7.018	1103.9	404.1	0.037
4NDPA	50.0	8.439	1782.5	50.5	0.003
2NDPA	50.0	9.513	3182.1	79.6	0.003
DPA	200.0	10.956	6219.8	750.3	0.048
N-NitrosoDPA	75.0	11.689	1532.4	0	0.000
				0.349	
Avg. % Stabilizer for Lot				0.349	
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst TAKISHA DICKERSON				Avg. Tot. Stabilizers 0.35 %	
Analyst Signature				Stable YES Unstable	
Lab. Supervisor Signature				Comments CATEGORY: A	
				Actions to be Taken	

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND83G070281				D533 / M6 propellant			
Date of analysis:				Date: 4 April 2012			
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml			Solvent ACN		
Standards (ERG-006)				Sample #			
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %		
4,4' DNDPA	50.0	0.881	40.9	93.7	0.229		
2,4-DNDPA	50.0	3.279	928	0	0.000		
2,2' DNDPA	50.0	4.86	26957	26191	0.000		
2,4' DNDPA	50.0	6.571	992.8	0	0.000		
4NDPA	50.0	7.798	1662.7	158.3	0.010		
2NDPA	50.0	8.806	2938.9	98.9	0.003		
DPA	200.0	10.221	5774.5	1004.4	0.070		
N-NitrosoDPA	75.0	10.895	1475.9	0	0.000		
				0.312			
Avg. % Stabilizer for Lot				0.312			
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D							
Analyst Takisha Dickerson				Avg. Tot. Stabilizers 0.31 %			
Analyst Signature				Stable YES		Unstable	
				Comments			
Lab. Supervisor Signature				CATEGORY: A			
				Actions to be Taken			

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND82A070101				D533 / M6 propellant			
Date of analysis:				Date: 28 June 2012			
Other Information M6 Propellant		Sample Data #1		0.50 g		100 ml	
						Solvent ACN	
Standards (ERG-006)				Sample #			
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %		
4,4' DNDPA	50.0	0.874	19.1	129.9	0.680		
2,4-DNDPA	50.0	3.347	961.1	0	0.000		
2,2' DNDPA	50.0	5.046	4032.7	23810	0.000		
2,4' DNDPA	50.0	6.347	22	0	0.000		
4NDPA	50.0	7.273	1080.1	0	0.000		
2NDPA	50.0	8.74	1782.9	45.1	0.003		
DPA	200.0	9.886	3122.3	81.2	0.010		
N-NitrosoDPA	75.0	11.353	6047.1	776.8	0.000		
				0.693			
Avg. % Stabilizer for Lot				0.693			
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D							
Analyst Takisha Dickerson				Avg. Tot. Stabilizers 0.69 %			
Analyst Signature				Stable YES		Unstable	
				Comments			
Lab. Supervisor Signature				CATEGORY: A			
				Actions to be Taken			

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND81L070074				D533 / M6 propellant					
Date of analysis:				Date: 19 SEPT 2011					
Other Information M6 Propellant		Sample Data #1		0.50 g		100 ml		Solvent ACN	
Standards (ERG-006)					Sample #				
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %				
4,4' DNDPA	50.0	0.866	65.3	504.3	0.772				
2,4-DNDPA	50.0	3.45	959.2	0	0.000				
2,2' DNDPA	50.0	5.27	2749.5	21863	0.000				
2,4' DNDPA	50.0	7.695	1051.4	0	0.000				
4NDPA	50.0	9.247	1702.8	66.6	0.004				
2NDPA	50.0	10.528	3035.1	96.6	0.003				
DPA	200.0	12.044	5992.2	593	0.040				
N-NitrosoDPA	75.0	12.922	1413.2	0	0.000				
					0.819				
Avg. % Stabilizer for Lot					0.819				
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D									
Analyst MIKE KILE				Avg. Tot. Stabilizers 0.82 %					
Analyst Signature				Stable		YES		Unstable	
Lab. Supervisor Signature				Comments CATEGORY: A					
				Actions to be Taken					

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND82E070115	D533 / M6 propellant
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Date of analysis:	Date: 2 SEPTEMBER 2011
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Other Information M6 Propellant	Sample Data #1 0.50 g 100 ml	Solvent ACN
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Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.631	119.7	513.1	0.429
2,4-DNDPA	50.0	3.438	959.4	17.4	0.002
2,2' DNDPA	50.0	5.235	1727.8	25268	0.000
2,4' DNDPA	50.0	7.619	1043.1	0	0.000
4NDPA	50.0	9.163	1669.9	77.7	0.005
2NDPA	50.0	10.427	3002.4	153.6	0.005
DPA	200.0	11.959	5688.4	920.8	0.065
N-NitrosoDPA	75.0	12.823	1409.6	0	0.000

	0.505
Avg. % Stabilizer for Lot	0.505

0.30% or more is Stability Code A
 0.20% -0.29% is Stability Code C
 Less than 0.20% is Stability Code D

Analyst KISHA DICKERSON	Avg. Tot. Stabilizers 0.50 %
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Analyst Signature	Stable YES Unstable
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Lab. Supervisor Signature	Comments CATEGORY: A
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	Actions to be Taken
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HPLC PROPELLANT STABILITY REPORT

Lot Number: IND85C070512				D533 / M6 propellant			
Date of analysis:				Date: 26 OCT 2011			
Other Information M6 Propellant		Sample Data #1		0.50 g		100 ml	
						Solvent ACN	
Standards (ERG-006)				Sample #			
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %		
4,4' DNDPA	50.0	0.811	226.1	610.3	0.270		
2,4-DNDPA	50.0	3.428	979.3	0	0.000		
2,2' DNDPA	50.0	5.223	938.5	22144	0.000		
2,4' DNDPA	50.0	7.579	1058.7	0	0.000		
4NDPA	50.0	9.118	1705.2	34.9	0.002		
2NDPA	50.0	10.331	3070.6	74.6	0.002		
DPA	200.0	11.88	5950.5	669.8	0.045		
N-NitrosoDPA	75.0	12.714	1455.8	0	0.000		
				0.319			
Avg. % Stabilizer for Lot				0.319			
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D							
Analyst TAKISHA DICKERSON				Avg. Tot. Stabilizers 0.32 %			
Analyst Signature				Stable YES		Unstable	
				Comments			
Lab. Supervisor Signature				CATEGORY: A			
				Actions to be Taken			

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND81L070072				D533 / M6 propellant			
Date of analysis:				Date: 29 MAY 2012			
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml			Solvent ACN		
Standards (ERG-006)				Sample #			
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %		
4,4' DNDPA	50.0	0.86	235.9	624.2	0.265		
2,4-DNDPA	50.0	3.398	913.2	0	0.000		
2,2' DNDPA	50.0	5.133	1007.2	37338	0.000		
2,4' DNDPA	50.0	7.409	1002.4	0	0.000		
4NDPA	50.0	8.917	1612.8	156.8	0.010		
2NDPA	50.0	10.112	2882.2	297.6	0.010		
DPA	200.0	11.607	5642.3	1100.9	0.078		
N-NitrosoDPA	75.0	12.414	1351.4		0.000		
					0.363		
Avg. % Stabilizer for Lot					0.363		
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D							
Analyst Takisha Dickerson				Avg. Tot. Stabilizers 0.36 %			
Analyst Signature				Stable YES		Unstable	
				Comments			
Lab. Supervisor Signature				CATEGORY: A			
				Actions to be Taken			

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND81D070019				D533 / M6 propellant			
Date of analysis:				Date: 29 MAY 2012			
Other Information M6 Propellant		Sample Data				Solvent	
		#1		0.50 g		100 ml	
						ACN	
Standards (ERG-006)				Sample #			
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %		
4,4' DNDPA	50.0	0.86	235.9	525.7	0.223		
2,4-DNDPA	50.0	3.398	913.2	0	0.000		
2,2' DNDPA	50.0	5.133	1007.2	37577	0.000		
2,4' DNDPA	50.0	7.409	1002.4	0	0.000		
4NDPA	50.0	8.917	1612.8	186.9	0.012		
2NDPA	50.0	10.112	2882.2	282.1	0.010		
DPA	200.0	11.607	5642.3	917.9	0.065		
N-NitrosoDPA	75.0	12.414	1351.4		0.000		
				0.309			
Avg. % Stabilizer for Lot				0.309			
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D							
Analyst Takisha Dickerson				Avg. Tot. Stabilizers 0.31 %			
Analyst Signature				Stable YES		Unstable	
				Comments			
Lab. Supervisor Signature				CATEGORY: A			
				Actions to be Taken			

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND84L070454			D533 / M6 propellant		
Date of analysis:			Date: 4 MAY 2012		
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml		Solvent ACN	
Standards (ERG-006)			Sample #		
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.867	83.7	400.6	0.479
2,4-DNDPA	50.0	3.338	1156.5	0	0.000
2,2' DNDPA	50.0	5.017	5373.7	23342	0.000
2,4' DNDPA	50.0	7.147	1263.8	0	0.000
4NDPA	50.0	8.595	2061.4	48.3	0.002
2NDPA	50.0	9.687	3694.9	94.1	0.003
DPA	200.0	11.119	7683.7	721.2	0.038
N-NitrosoDPA	75.0	11.99	2133.1		0.000
				0.521	
Avg. % Stabilizer for Lot				0.521	
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst Takisha Dickerson			Avg. Tot. Stabilizers 0.52 %		
Analyst Signature			Stable YES		Unstable
			Comments		
Lab. Supervisor Signature					
			Actions to be Taken		

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND80M070011				D533 / M6 propellant			
Date of analysis:				Date: 22 March 2012			
Other Information M8 Propellant		Sample Data #1		0.50 g		100 ml	
				Solvent ACN			
Standards (ERG-006)				Sample #			
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %		
4,4' DNDPA	50.0	0.897	14.6	40.4	0.277		
2,4-DNDPA	50.0	3.327	870.9	0	0.000		
2,2' DNDPA	50.0	5.054	688.7	29012	0.000		
2,4' DNDPA	50.0	7.295	945.9	0	0.000		
4NDPA	50.0	8.792	1528.5	144	0.009		
2NDPA	50.0	10.019	2755.3	103.4	0.004		
DPA	200.0	11.357	5392.9	588.9	0.044		
N-NitrosoDPA	75.0	12.286	1332.2	0	0.000		
				0.334			
Avg. % Stabilizer for Lot				0.334			
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D							
Analyst Takisha Dickerson				Avg. Tot. Stabilizers 0.33 %			
Analyst Signature				Stable YES		Unstable	
Lab. Supervisor Signature				Comments CATEGORY: A			
				Actions to be Taken			

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND84K070448				D533 / M6 propellant			
Date of analysis:				Date: 1 Mar 2012			
Other Information M6 Propellant		Sample Data #1		0.50 g		100 ml	
						Solvent ACN	
Standards (ERG-006)				Sample #			
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %		
4,4' DNDPA	50.0	0.872	13.8	97.7	0.708		
2,4-DNDPA	50.0	3.42	982.9	0	0.000		
2,2' DNDPA	50.0	5.182	2038.4	23346	0.000		
2,4' DNDPA	50.0	7.465	1060.4	0	0.000		
4NDPA	50.0	8.991	1708.9	47.8	0.003		
2NDPA	50.0	10.17	3062.7	91.8	0.003		
DPA	200.0	11.707	6061.6	816.4	0.054		
N-NitrosoDPA	75.0	12.518	1461.9	0	0.000		
				0.768			
Avg. % Stabilizer for Lot				0.768			
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D							
Analyst Takisha Dickerson				Avg. Tot. Stabilizers 0.77 %			
Analyst Signature				Stable YES		Unstable	
Lab. Supervisor Signature				Comments			
				CATEGORY: A			
				Actions to be Taken			

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND81L070073				D533 / M6 propellant			
Date of analysis:				Date: 29 JULY 2011			
Other Information M6 Propellant		Sample Data			Solvent		
		#1	0.50 g	100 ml	ACN		
Standards (ERG-006)				Sample #			
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %		
4,4' DNDPA	50.0	0.642	125.1	606.3	0.485		
2,4-DNDPA	50.0	3.455	992.3	0	0.000		
2,2' DNDPA	50.0	5.274	125.3	22452	0.000		
2,4' DNDPA	50.0	7.702	1067.4	0	0.000		
4NDPA	50.0	9.26	1688.8	34.3	0.002		
2NDPA	50.0	10.547	3070.1	102.4	0.003		
DPA	200.0	12.08	5796.8	430.9	0.030		
N-NitrosoDPA	75.0	12.966	1456.1	0	0.000		
				0.520			
Avg. % Stabilizer for Lot				0.520			
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D							
Analyst Kisha Dickerson				Avg. Tot. Stabilizers 0.52 %			
Analyst Signature				Stable YES		Unstable	
Lab. Supervisor Signature				Comments			
				CATEGORY: A			
				Actions to be Taken			

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND83F070274 **D533 / M6 propellant**

Date of analysis: **Date: 27 JULY 2011**

Other Information M6 Propellant	Sample Data #1 0.50 g 100 ml Solvent ACN
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Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.694	112.8	622.1	0.552
2,4-DNDPA	50.0	3.477	942.8	0	0.000
2,2' DNDPA	50.0	5.339	77.4	22209	0.000
2,4' DNDPA	50.0	7.842	1020.3	0	0.000
4NDPA	50.0	9.392	1634.2	48.5	0.003
2NDPA	50.0	10.693	2956.2	98.3	0.003
DPA	200.0	12.201	5630.5	451.4	0.032
N-NitrosoDPA	75.0	13.103	1385.2	0	0.000

	0.590
Avg. % Stabilizer for Lot	0.590

0.30% or more is Stability Code A
 0.20% -0.29% is Stability Code C
 Less than 0.20% is Stability Code D

Analyst Takisha Dickerson **Avg. Tot. Stabilizers 0.59 %**

Analyst Signature Stable YES Unstable

Lab. Supervisor Signature **Comments**
CATEGORY: A

Actions to be Taken

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND82D070110				D533 / M6 propellant	
Date of analysis:				Date: 27 JULY 2011	
Other Information M6 Propellant		Sample Data		Solvent	
		#1	0.50 g	100 ml	ACN
Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.694	112.8	437.7	0.388
2,4-DNDPA	50.0	3.477	942.8	0	0.000
2,2' DNDPA	50.0	6.339	77.4	22925	0.000
2,4' DNDPA	50.0	7.842	1020.3	0	0.000
4NDPA	50.0	9.392	1634.2	119.1	0.007
2NDPA	50.0	10.693	2956.2	134.9	0.005
DPA	200.0	12.201	5630.5	218.4	0.016
N-NitrosoDPA	75.0	13.103	1385.2	0	0.000
				0.415	
Avg. % Stabilizer for Lot				0.415	
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst Mike Kile			Avg. Tot. Stabilizers 0.42 %		
Analyst Signature			Stable YES		Unstable
			Comments		
Lab. Supervisor Signature			CATEGORY: A		
			Actions to be Taken		

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND81J070067				D533 / M6 propellant			
Date of analysis:				Date: 19 JULY 2011			
Other Information M6 Propellant		Sample Data			Solvent		
		#1	0.50 g	100 ml	ACN		
Standards (ERG-006)				Sample #			
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %		
4,4' DNDPA	50.0	0.727	41.3	307.7	0.745		
2,4-DNDPA	50.0	3.473	885.1	0	0.000		
2,2' DNDPA	50.0	5.326	352.6	24476	0.000		
2,4' DNDPA	50.0	7.805	948.1	0	0.000		
4NDPA	50.0	9.354	1524.4	143.9	0.009		
2NDPA	50.0	10.646	2712.4	121	0.004		
DPA	200.0	12.156	5262.6	496.9	0.038		
N-NitrosoDPA	75.0	13.046	1286	0	0.000		
				0.797			
Avg. % Stabilizer for Lot				0.797			
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D							
Analyst Kisha Dickerson				Avg. Tot. Stabilizers 0.80 %			
Analyst Signature				Stable YES		Unstable	
				Comments			
Lab. Supervisor Signature				CATEGORY: A			
				Actions to be Taken			

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND82J070172			D533 / M6 propellant		
Date of analysis:			Date: 15 July 2011		
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml		Solvent ACN	
Standards (ERG-006)			Sample #		
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.698	60	276.3	0.461
2,4-DNDPA	50.0	3.469	1060.3	0	0.000
2,2' DNDPA	50.0	5.327	112.7	25324	0.000
2,4' DNDPA	50.0	7.82	1131.9	0	0.000
4NDPA	50.0	9.358	1817.5	137.4	0.008
2NDPA	50.0	10.643	3250	121.1	0.004
DPA	200.0	12.15	6226.1	406.2	0.026
N-NitrosoDPA	75.0	13.037	1551.7	0	0.000
				0.498	
Avg. % Stabilizer for Lot				0.498	
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst Mike Kile			Avg. Tot. Stabilizers 0.50 %		
Analyst Signature			Stable YES		Unstable
			Comments		
Lab. Supervisor Signature			CATEGORY: A		
			Actions to be Taken		

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND81G070061				D533 / M6 propellant			
Date of analysis:				Date: 12 JULY 2011			
Other Information M6 Propellant		Sample Data			Solvent		
		#1	0.50 g	100 ml	ACN		
Standards (ERG-006)				Sample #			
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %		
4,4' DNDPA	50.0	0.71	111	358.1	0.323		
2,4-DNDPA	50.0	3.475	1001	79.1	0.008		
2,2' DNDPA	50.0	5.325	95	18335	0.000		
2,4' DNDPA	50.0	7.791	1061.3	83.2	0.008		
4NDPA	50.0	9.345	1700.8	167.7	0.010		
2NDPA	50.0	10.629	3041.2	330.5	0.011		
DPA	200.0	12.152	5943.4	913.3	0.061		
N-NitrosoDPA	75.0	13.034	1443.1	111.8	0.000		
				0.421			
Avg. % Stabilizer for Lot				0.421			
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D							
Analyst Mike Kile				Avg. Tot. Stabilizers 0.42 %			
Analyst Signature				Stable YES		Unstable	
				Comments			
Lab. Supervisor Signature				CATEGORY: A			
				Actions to be Taken			

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND82H070167				D533 / M6 propellant			
Date of analysis:				Date: 6 JAN 2012			
Other Information M6 Propellant		Sample Data				Solvent	
		#1		0.50 g		100 ml ACN	
Standards (ERG-006)				Sample #			
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %		
4,4' DNDPA	50.0	0.65	119.1	308.2	0.259		
2,4-DNDPA	50.0	3.304	1019.8	0	0.000		
2,2' DNDPA	50.0	4.943	1734.6	23824	0.000		
2,4' DNDPA	50.0	7.018	1103.9	404.1	0.037		
4NDPA	50.0	8.439	1782.5	50.5	0.003		
2NDPA	50.0	9.513	3182.1	79.6	0.003		
DPA	200.0	10.958	6219.8	750.3	0.048		
N-NitrosoDPA	75.0	11.669	1532.4	0	0.000		
				0.349			
Avg. % Stabilizer for Lot				0.349			
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D							
Analyst TAKISHA DICKERSON				Avg. Tot. Stabilizers 0.35 %			
Analyst Signature				Stable YES		Unstable	
				Comments			
Lab. Supervisor Signature				CATEGORY: A			
				Actions to be Taken			

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND82D070113 D533 / M6 propellant

Date of analysis: Date: 6 JAN 2012

Other Information M6 Propellant	Sample Data #1 0.50 g 100 ml	Solvent ACN
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Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.85	119.1	328.4	0.276
2,4-DNDPA	50.0	3.304	1019.8	16	0.002
2,2' DNDPA	50.0	4.943	1734.6	21955	0.000
2,4' DNDPA	50.0	7.018	1103.9	0	0.000
4NDPA	50.0	8.439	1782.5	66.8	0.004
2NDPA	50.0	9.513	3182.1	143.1	0.004
DPA	200.0	10.956	6219.8	790.9	0.051
N-NitrosoDPA	75.0	11.669	1532.4	0	0.000

	0.336
Avg. % Stabilizer for Lot	0.336

0.30% or more is Stability Code A
0.20% -0.29% is Stability Code C
Less than 0.20% is Stability Code D

Analyst TAKISHA DICKERSON Avg. Tot. Stabilizers **0.34 %**

Analyst Signature	Stable YES	Unstable
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Lab. Supervisor Signature	Comments CATEGORY: A
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	Actions to be Taken
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HPLC PROPELLANT STABILITY REPORT

Lot Number: IND83F070278 **D533 / M6 propellant**

Date of analysis: **Date: 17 Feb 2012**

Other Information M6 Propellant	Sample Data #1 0.50 g 100 ml Solvent ACN
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Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.869	12.6	73.1	0.580
2,4-DNDPA	50.0	3.42	880.6	0	0.000
2,2' DNDPA	50.0	5.218	1402	23243	0.000
2,4' DNDPA	50.0	7.58	948.7	0	0.000
4NDPA	50.0	9.121	1531.3	103.4	0.007
2NDPA	50.0	10.346	2749.6	78.9	0.003
DPA	200.0	11.875	5397.5	554.2	0.041
N-NitrosoDPA	75.0	12.713	1315.5	0	0.000

	0.631
Avg. % Stabilizer for Lot	0.631

0.30% or more is Stability Code A
 0.20% -0.29% is Stability Code C
 Less than 0.20% is Stability Code D

Analyst Takisha Dickerson **Avg. Tot. Stabilizers 0.63 %**

Analyst Signature Stable YES | Unstable

Lab. Supervisor Signature Comments
CATEGORY: A

Actions to be Taken

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND81D070020 **D533 / M6 propellant**

Date of analysis: **Date: 10 Feb 2012**

Other Information M6 Propellant	Sample Data #1 0.50 g 100 ml Solvent ACN
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Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.868	53.7	398.1	0.741
2,4-DNDPA	50.0	3.292	916.2	0	0.000
2,2' DNDPA	50.0	4.936	839.4	22071	0.000
2,4' DNDPA	50.0	6.943	1003.3	0	0.000
4NDPA	50.0	8.309	1616.5	50	0.003
2NDPA	50.0	9.362	2912	113.3	0.004
DPA	200.0	10.749	5497.2	666	0.048
N-NitrosoDPA	75.0	11.362	1264.1	355.2	0.000

	0.797
Avg. % Stabilizer for Lot	0.797

0.30% or more is Stability Code A
 0.20% -0.29% is Stability Code C
 Less than 0.20% is Stability Code D

Analyst Mike Kile **Avg. Tot. Stabilizers** **0.80 %**

Analyst Signature Stable YES Unstable

Lab. Supervisor Signature Comments
CATEGORY: A

Actions to be Taken

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND86M070673				D533 / M6 propellant	
Date of analysis:				Date: 7 FEB 2012	
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml		Solvent ACN	
Standards (ERG-006)			Sample #		
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.863	50.1	452.6	0.903
2,4-DNDPA	50.0	3.336	893.6	0	0.000
2,2' DNDPA	50.0	5.03	726.8	22299	0.000
2,4' DNDPA	50.0	7.182	1225.5	0	0.000
4NDPA	50.0	8.642	1532.1	67.5	0.004
2NDPA	50.0	9.759	2764.7	120.3	0.004
DPA	200.0	11.235	5480.9	727.3	0.053
N-NitrosoDPA	75.0	11.979	1363.1	0	0.000
0.965					
Avg. % Stabilizer for Lot					0.965
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst TAKISHA DICKERSON				Avg. Tot. Stabilizers 0.97 %	
Analyst Signature				Stable YES Unstable	
				Comments CATEGORY: A	
Lab. Supervisor Signature					
				Actions to be Taken	

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND83G070281				D533 / M6 propellant			
Date of analysis:				Date: 4 April 2012			
Other Information M6 Propellant		Sample Data #1		0.50 g		100 ml Solvent ACN	
Standards (ERG-006)				Sample #			
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %		
4,4' DNDPA	50.0	0.881	40.9	93.7	0.229		
2,4-DNDPA	50.0	3.279	928	0	0.000		
2,2' DNDPA	50.0	4.66	26957	26191	0.000		
2,4' DNDPA	50.0	6.571	992.8	0	0.000		
4NDPA	50.0	7.798	1662.7	158.3	0.010		
2NDPA	50.0	8.806	2938.9	98.9	0.003		
DPA	200.0	10.221	5774.5	1004.4	0.070		
N-NitrosoDPA	75.0	10.895	1475.9	0	0.000		
				0.312			
Avg. % Stabilizer for Lot				0.312			
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D							
Analyst Takisha Dickerson				Avg. Tot. Stabilizers 0.31 %			
Analyst Signature				Stable YES		Unstable	
				Comments			
Lab. Supervisor Signature				CATEGORY: A			
				Actions to be Taken			

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND82A070101				D533 / M6 propellant			
Date of analysis:				Date: 28 June 2012			
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml			Solvent ACN		
Standards (ERG-006)				Sample #			
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %		
4,4' DNDPA	50.0	0.874	19.1	129.9	0.680		
2,4-DNDPA	50.0	3.347	961.1	0	0.000		
2,2' DNDPA	50.0	5.046	4032.7	23810	0.000		
2,4' DNDPA	50.0	6.347	22	0	0.000		
4NDPA	50.0	7.273	1080.1	0	0.000		
2NDPA	50.0	8.74	1782.9	45.1	0.003		
DPA	200.0	9.886	3122.3	81.2	0.010		
N-NitrosoDPA	75.0	11.353	6047.1	776.8	0.000		
					0.693		
Avg. % Stabilizer for Lot					0.693		
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D							
Analyst Takisha Dickerson				Avg. Tot. Stabilizers 0.69 %			
Analyst Signature				Stable YES		Unstable	
				Comments			
Lab. Supervisor Signature				CATEGORY: A			
				Actions to be Taken			

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND84C070331				D533 / M6 propellant			
Date of analysis:				Date: 21 SEP 2010			
Other Information M6 Propellant		Sample Data			Solvent		
		#1	0.5000 g	100 ml	ACN		
Standards (ERG-006)				Sample #			
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %		
4,4' DNDPA	50.0	2.168	128.5	113.7	0.088		
2,4-DNDPA	50.0	5.033	432	217.6	0.050		
2,2' DNDPA	50.0	7.206	1480.6	820.7	0.000		
2,4' DNDPA	50.0	10.409	485.4	222.7	0.046		
4NDPA	50.0	12.024	1113.3	522	0.047		
2NDPA	50.0	13.489	784	396.3	0.051		
DPA	200.0	14.97	2121.4	1130.5	0.213		
N-NitrosoDPA	75.0	16.167	463.9	299.3	0.000		
				0.495			
Avg. % Stabilizer for Lot				0.495			
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D							
Analyst Kisha Dickerson				Avg. Tot. Stabilizers 0.50 %			
Analyst Signature				Stable YES		Unstable	
Lab. Supervisor Signature				Comments			
				CATEGORY: A			
				Actions to be Taken			

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND81G070025	D533 / M6 propellant
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Date of analysis:	Date: 20 OCT 2010
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Other Information M6 Propellant	Sample Data #1 0.5000 g 100 ml	Solvent ACN
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Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	5.024	281.6	50.9	0.018
2,4-DNDPA	50.0	10.59	329	2675.2	0.813
2,2' DNDPA	50.0	12.176	376.1	0	0.000
2,4' DNDPA	50.0	12.67	275.3	36.2	0.013
4NDPA	50.0	13.632	664.1	0	0.000
2NDPA	50.0	14.943	1788.8	39.7	0.002
DPA	200.0	16.114	286	34.1	0.048
N-NitrosoDPA	75.0	19.917	329.9	0	0.000

	0.894
Avg. % Stabilizer for Lot	0.894

0.30% or more is Stability Code A
 0.20% - 0.29% is Stability Code C
 Less than 0.20% is Stability Code D

Analyst Kisha Dickerson	Avg. Tot. Stabilizers 0.89 %
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Analyst Signature	Stable YES Unstable
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Lab. Supervisor Signature	Comments CATEGORY: A
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	Actions to be Taken
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HPLC PROPELLANT STABILITY REPORT

Lot Number: IND86E070616 **D533 / M6 propellant**

Date of analysis: **Date: 19 NOV 2010**

Other Information M6 Propellant	Sample Data #1 0.5000 g 100 ml Solvent ACN
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Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	2.088	135.8	654.4	0.482
2,4-DNDPA	50.0	5.182	717.3	0	0.000
2,2' DNDPA	50.0	7.635	736.3	13022.2	0.000
2,4' DNDPA	50.0	11.713	779	0	0.000
4NDPA	50.0	13.454	462.4	0	0.000
2NDPA	50.0	15.161	1164.1	0	0.000
DPA	200.0	16.583	4078.5	221.2	0.022
N-NitrosoDPA	75.0	18.033	1011.7	0	0.000

	0.504
Avg. % Stabilizer for Lot	0.504

0.30% or more is Stability Code A
 0.20% -0.29% is Stability Code C
 Less than 0.20% is Stability Code D

Analyst Kisha Dickerson **Avg. Tot. Stabilizers 0.50 %**

Analyst Signature Stable YES Unstable

Lab. Supervisor Signature Comments
CATEGORY: A

Actions to be Taken

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND85G070592			D533 / M6 propellant		
Date of analysis:			Date: 30 JULY 2010		
Other Information M6 Propellant		Sample Data #1 0.5000 g 100 ml		Solvent ACN	
Standards (ERG-006)			Sample #		
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	2.1	114.5		0.000
2,4-DNDPA	50.0	4.911	913.975	1063.1	0.116
2,2' DNDPA	50.0	6.723	539.15	0	0.000
2,4' DNDPA	50.0	9.11	1139.55	8309	0.729
4NDPA	50.0	10.528	1494	0	0.000
2NDPA	50.0	11.725	2223.5	0	0.000
DPA	200.0	13.111	4965.5	460.1	0.037
N-NitrosoDPA	75.0	13.888	3100.4	0	0.000
				0.883	
Avg. % Stabilizer for Lot				0.883	
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst MARTY			Avg. Tot. Stabilizers 0.88 %		
Analyst Signature			Stable YES Unstable		
			Comments		
Lab. Supervisor Signature			CATEGORY: A		
			Actions to be Taken		

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND82G070164				D533 / M6 propellant	
Date of analysis:				Date: 22 Dec 2010	
Other Information M6 Propellant		Sample Data		Solvent	
		#1	0.5000 g	100 ml	ACN
Standards (ERG-006)			Sample #		
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	4.041	1072.9	2489.9	0.232
2,4-DNDPA	50.0	9.403	1132.4	28529	2.519
2,2' DNDPA	50.0	11.071	1654.7	78.5	0.000
2,4' DNDPA	50.0	11.863	1176.6	131	0.011
4NDPA	50.0	12.612	2267.7	0	0.000
2NDPA	50.0	14.156	6085.2	504.4	0.008
DPA	200.0	15.296	1602.1	0	0.000
N-NitrosoDPA	75.0	19.37	2346.7	612.7	0.000
				2.771	
Avg. % Stabilizer for Lot				2.771	
0.30% or more is Stability Code A 0.20% - 0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst Mike Kile			Avg. Tot. Stabilizers 2.77 %		
Analyst Signature			Stable YES		Unstable
			Comments		
Lab. Supervisor Signature			CATEGORY: A		
			Actions to be Taken		

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND85F070588	D533 / M6 propellant
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Date of analysis:	Date: 20 Dec 2010
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Other Information M6 Propellant	Sample Data #1 0.5000 g 100 ml	Solvent ACN
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Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	2.059	87.1	1411.1	1.620
2,4-DNDPA	50.0	5.198	631.9	845.8	0.134
2,2' DNDPA	50.0	7.699	1074.2	15722.5	0.000
2,4' DNDPA	50.0	11.782	545	0	0.000
4NDPA	50.0	13.513	1464.9	246.8	0.017
2NDPA	50.0	15.189	1011.6	0	0.000
DPA	200.0	16.638	2894.7	309.8	0.043
N-NitrosoDPA	75.0	18.069	720.1	0	0.000

Avg. % Stabilizer for Lot	1.814 1.814
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0.30% or more is Stability Code A
0.20% -0.29% is Stability Code C
Less than 0.20% is Stability Code D

Analyst Kisha Dickerson	Avg. Tot. Stabilizers 1.81 %
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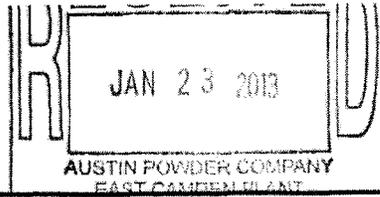
Analyst Signature	Stable YES Unstable
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Lab. Supervisor Signature	Comments CATEGORY: A
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	Actions to be Taken
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HPLC PROPELLANT STABILITY REPORT

Lot Number: IND85F070587				D533 / M6 propellant			
Date of analysis:				Date: 25 AUG 2010			
Other Information M6 Propellant		Sample Data				Solvent	
		#1		0.5000 g		100 ml	
						ACN	
Standards (ERG-006)				Sample #			
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %		
4,4' DNDPA	50.0	2.177	146.5	1821.4	1.243		
2,4-DNDPA	50.0	5.001	961.7	0	0.000		
2,2' DNDPA	50.0	7.038	2567.5	14427.7	0.000		
2,4' DNDPA	50.0	9.931	938.5	0	0.000		
4NDPA	50.0	11.434	1325.8	0	0.000		
2NDPA	50.0	12.813	1809.7	0	0.000		
DPA	200.0	14.19	4886.9	225	0.018		
N-NitrosoDPA	75.0	15.18	1296.7	0	0.000		
				1.262			
Avg. % Stabilizer for Lot				1.262			
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D							
Analyst Kisha Dickerson				Avg. Tot. Stabilizers 1.26 %			
Analyst Signature				Stable YES		Unstable	
Lab. Supervisor Signature				Comments			
				CATEGORY: A			
				Actions to be Taken			



17A721

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND85C070512	D533 / M6 propellant
Date of analysis:	Date: 10 AUGUST 2012

Other information M6 Propellant	Sample Data #1 0.50 g 100 ml	Solvent ACN
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Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
.4' DNDPA	50.0	0.882	8.8	112.9	1.283
.4-DNDPA	50.0	3.343	910.9	0	0.000
.2' DNDPA	50.0	5.034	3858.6	22576	0.000
.4' DNDPA	50.0	7.363	1013.2	0	0.000
NDPA	50.0	8.784	1647.3	59.7	0.004
NDPA	50.0	9.95	2919.6	95.5	0.003
PA	200.0	11.386	5857.1	714.1	0.049
-NitrosoDPA	75.0	12.173	1371.4	0	0.000

	1.339
Avg. % Stabilizer for Lot	1.339

0.30% or more is Stability Code A
 0.20% -0.29% is Stability Code C
 Less than 0.20% is Stability Code D

Analyst Takisha Dickerson	Avg. Tot. Stabilizers 1.34 %
Analyst Signature <i>T. Dickerson</i>	Stable YES Unstable
Lab. Supervisor Signature <i>[Signature]</i>	Comments CATEGORY: A
	Actions to be Taken

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND85C070512		D533 / M6 propellant	
Date of analysis:		Date: 10 AUGUST 2012	
Other Information M6 Propellant	Sample Data		Solvent
	#1	0.50 g	100 ml ACN

Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
.4' DNDPA	50.0	0.882	8.8	112.9	1.283
.4-DNDPA	50.0	3.343	910.9	0	0.000
.2' DNDPA	50.0	5.034	3858.6	22576	0.000
.4' DNDPA	50.0	7.363	1013.2	0	0.000
NDPA	50.0	8.784	1647.3	59.7	0.004
NDPA	50.0	9.95	2919.6	95.5	0.003
PA	200.0	11.386	5857.1	714.1	0.049
-NitrosoDPA	75.0	12.173	1371.4	0	0.000

	1.339
Avg. % Stabilizer for Lot	1.339

0.30% or more is Stability Code A
 0.20% -0.29% is Stability Code C
 Less than 0.20% is Stability Code D

Analyst Takisha Dickerson	Avg. Tot. Stabilizers 1.34 %	
Analyst Signature <i>T. Dickerson</i>	Stable YES	Unstable
Lab. Supervisor Signature <i>[Signature]</i>	Comments CATEGORY: A	
Actions to be Taken		

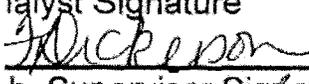
HPLC PROPELLANT STABILITY REPORT

Lot Number: IND91H071485		D533 / M6 propellant	
Date of analysis:		Date: 23 JULY 2012	
Other information 16 Propellant	Sample Data	#1	100 ml
		0.50 g	ACN

Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4' DNDPA	50.0	0.847	108.1	464.3	0.430
4-DNDPA	50.0	3.366	967.8	0	0.000
2' DNDPA	50.0	5.09	4480	20931	0.000
4' DNDPA	50.0	7.496	1085.1	0	0.000
IDPA	50.0	8.926	1772.8	169.1	0.010
IDPA	50.0	9.898	1314.8	134.6	0.010
PA	200.0	11.552	6236.1	208.7	0.013
NitrosoDPA	75.0	12.356	1452.1	0	0.000

	0.463
Avg. % Stabilizer for Lot	0.463

0.30% or more is Stability Code A
 0.20% -0.29% is Stability Code C
 Less than 0.20% is Stability Code D

Analyst Takisha Dickerson	Avg. Tot. Stabilizers 0.46 %
Analyst Signature 	Stable <input checked="" type="checkbox"/> YES Unstable <input type="checkbox"/>
Supervisor Signature 	Comments CATEGORY: A
Actions to be Taken	

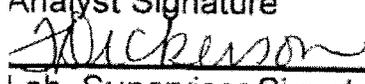
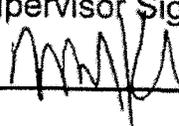
HPLC PROPELLANT STABILITY REPORT

Lot Number: IND86E070617		D533 / M6 propellant	
Date of analysis:		Date: 18 JULY 2012	
Other Information M6 Propellant	Sample Data		Solvent
	#1	0.50 g	100 ml ACN

Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
1,4' DNDPA	50.0	0.863	133.9	389.2	0.291
2,4-DNDPA	50.0	3.365	949.7	0	0.000
2,2' DNDPA	50.0	5.091	2605.4	22628	0.000
2,4' DNDPA	50.0	7.514	1047.9	0	0.000
4NDPA	50.0	8.946	1698.8	45.3	0.003
2NDPA	50.0	10.142	3039.5	80.7	0.003
DPA	200.0	11.585	6044.7	861.6	0.057
N-NitrosoDPA	75.0	12.4	1395.6	0	0.000

	0.353
Avg. % Stabilizer for Lot	0.353

0.30% or more is Stability Code A
 0.20% -0.29% is Stability Code C
 Less than 0.20% is Stability Code D

Analyst Takisha Dickerson	Avg. Tot. Stabilizers 0.35 %	
Analyst Signature 	Stable YES	Unstable
	Comments CATEGORY: A	
Lab. Supervisor Signature 	Actions to be Taken	

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND82H070168 | **D533 / M6 propellant**

Date of analysis: | **Date: 1 FEB 2011**

Other Information M6 Propellant	Sample Data #1 0.5000 g 100 ml Solvent ACN
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Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	4.156	1116	2540.4	0.228
2,4-DNDPA	50.0	9.388	1191.2	31231.4	2.622
2,2' DNDPA	50.0	10.987	1694.7	51.5	0.000
2,4' DNDPA	50.0	11.73	1272.3	143.2	0.011
4NDPA	50.0	12.459	2443.3	0	0.000
2NDPA	50.0	13.939	5852.1	838.5	0.014
DPA	200.0	15.022	1753.1	0	0.000
N-NitrosoDPA	75.0	18.932	2535.1	985.4	0.000

	2.875
Avg. % Stabilizer for Lot	2.875

0.30% or more is Stability Code A
 0.20% -0.29% is Stability Code C
 Less than 0.20% is Stability Code D

Analyst Mike Kile | **Avg. Tot. Stabilizers** **2.88 %**

Analyst Signature | **Stable** YES | **Unstable**

Lab. Supervisor Signature | **Comments**
 CATEGORY: **A**

Actions to be Taken

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND85F070588			D533 / M6 propellant		
Date of analysis:			Date: 20 Dec 2010		
Other Information M6 Propellant		Sample Data #1 0.5000 g 100 ml		Solvent ACN	
Standards (ERG-006)			Sample #		
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	2.059	87.1	1411.1	1.620
2,4-DNDPA	50.0	5.198	631.9	845.8	0.134
2,2' DNDPA	50.0	7.699	1074.2	15722.5	0.000
2,4' DNDPA	50.0	11.782	545	0	0.000
4NDPA	50.0	13.513	1464.9	246.8	0.017
2NDPA	50.0	15.189	1011.6	0	0.000
DPA	200.0	16.638	2894.7	309.8	0.043
N-NitrosoDPA	75.0	18.069	720.1	0	0.000
				1.814	
Avg. % Stabilizer for Lot				1.814	
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst Kisha Dickerson			Avg. Tot. Stabilizers 1.81 %		
Analyst Signature			Stable YES Unstable		
Lab. Supervisor Signature			Comments CATEGORY: A		
			Actions to be Taken		

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND82K070173			D533 / M6 propellant		
Date of analysis:			Date: 21 Apr 2011		
Other Information M6 Propellant		Sample Data #1 0.5000 g 100 ml		Solvent ACN	
Standards (ERG-006)			Sample #		
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	4.152	1065.2	3146.2	0.295
2,4-DNDPA	50.0	9.483	1128.5	28956.1	2.566
2,2' DNDPA	50.0	11.075	1789.9	196.4	0.000
2,4' DNDPA	50.0	11.744	1596.2	254	0.016
4NDPA	50.0	12.553	2329	0	0.000
2NDPA	50.0	14.006	5766.8	251.9	0.004
DPA	200.0	15.107	1617.9	612.3	0.151
N-NitrosoDPA	75.0	18.991	2304.9	398.1	0.000
3.033					
Avg. % Stabilizer for Lot					3.033
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst Kisha Dickerson			Avg. Tot. Stabilizers 3.03 %		
Analyst Signature			Stable YES Unstable		
Lab. Supervisor Signature			Comments CATEGORY: A		
			Actions to be Taken		

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND82F070162				D533 / M6 propellant	
Date of analysis:				Date: 21 June 2012	
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml		Solvent ACN	
Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.864	28.8	148.8	0.517
2,4-DNDPA	50.0	3.374	926.7	0	0.000
2,2' DNDPA	50.0	5.094	2365.5	23931	0.000
2,4' DNDPA	50.0	7.365	1016.5	0	0.000
4NDPA	50.0	8.868	1646.6	219.9	0.013
2NDPA	50.0	10.034	2925.2	200.7	0.007
DPA	200.0	11.552	5759.3	172.6	0.012
N-NitrosoDPA	75.0	12.364	1368	0	0.000
				0.549	
Avg. % Stabilizer for Lot				0.549	
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst Takisha Dickerson				Avg. Tot. Stabilizers 0.55 %	
Analyst Signature				Stable YES Unstable	
Lab. Supervisor Signature				Comments CATEGORY: A	
				Actions to be Taken	

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND84B070327

D533 / M6 propellant

Date of analysis:

Date: 4 Sep 2012

Other Information
M6 Propellant

Sample Data

Solvent

#1

0.50 g

100 ml

ACN

Standards (ERG-006)

Sample #

Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.889	48.8	501.9	1.028
2,4-DNDPA	50.0	3.418	914.3	0	0.000
2,2' DNDPA	50.0	5.22	777.3	23336	0.000
2,4' DNDPA	50.0	7.622	980.5	0	0.000
4NDPA	50.0	9.134	1586.8	95.7	0.006
2NDPA	50.0	10.417	2826.3	104	0.004
DPA	200.0	11.797	5671.5	673.4	0.047
N-NitrosoDPA	75.0	12.757	1337.5	0	0.000

1.086

Avg. % Stabilizer for Lot

1.086

0.30% or more is Stability Code A

0.20% -0.29% is Stability Code C

Less than 0.20% is Stability Code D

Analyst Mike Kile

Avg. Tot. Stabilizers 1.09%

Analyst Signature

Stable YES | **Unstable**

Lab. Supervisor Signature

Comments

CATEGORY: A

Actions to be Taken

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND85FY70587			D533 / M6 propellant		
Date of analysis:			Date: 21 OCT 2011		
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml		Solvent ACN	
Standards (ERG-006)			Sample #		
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.825	86.9	616.6	0.710
2,4-DNDPA	50.0	3.427	963.3	24.1	0.003
2,2' DNDPA	50.0	5.229	912.7	34162	0.000
2,4' DNDPA	50.0	7.596	1040.3	0	0.000
4NDPA	50.0	9.123	1691.6	283.7	0.017
2NDPA	50.0	10.347	3041.3	305.8	0.010
DPA	200.0	11.869	5818.7	301.8	0.021
N-NitrosoDPA	75.0	12.703	1423	0	0.000
				0.760	
Avg. % Stabilizer for Lot				0.760	
0.30% or more is Stability Code A 0.20% - 0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst MIKE KILE			Avg. Tot. Stabilizers 0.76 %		
Analyst Signature			Stable YES		Unstable
			Comments CATEGORY: A		
Lab. Supervisor Signature					
			Actions to be Taken		

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND81D070019				D533 / M6 propellant			
Date of analysis:				Date: 29 MAY 2012			
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml			Solvent ACN		
Standards (ERG-006)				Sample #			
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %		
4,4' DNDPA	50.0	0.86	235.9	525.7	0.223		
2,4-DNDPA	50.0	3.398	913.2	0	0.000		
2,2' DNDPA	50.0	5.133	1007.2	37577	0.000		
2,4' DNDPA	50.0	7.409	1002.4	0	0.000		
4NDPA	50.0	8.917	1612.8	186.9	0.012		
2NDPA	50.0	10.112	2882.2	282.1	0.010		
DPA	200.0	11.607	5642.3	917.9	0.065		
N-NitrosoDPA	75.0	12.414	1351.4		0.000		
				0.309			
Avg. % Stabilizer for Lot				0.309			
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D							
Analyst Takisha Dickerson				Avg. Tot. Stabilizers 0.31 %			
Analyst Signature				Stable YES		Unstable	
Lab. Supervisor Signature				Comments CATEGORY: A			
				Actions to be Taken			

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND81L070072			D533 / M6 propellant		
Date of analysis:			Date: 29 MAY 2012		
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml		Solvent ACN	
Standards (ERG-006)			Sample #		
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.86	235.9	624.2	0.265
2,4-DNDPA	50.0	3.398	913.2	0	0.000
2,2' DNDPA	50.0	5.133	1007.2	37338	0.000
2,4' DNDPA	50.0	7.409	1002.4	0	0.000
4NDPA	50.0	8.917	1612.8	156.8	0.010
2NDPA	50.0	10.112	2882.2	297.6	0.010
DPA	200.0	11.607	5642.3	1100.9	0.078
N-NitrosoDPA	75.0	12.414	1351.4		0.000
				0.363	
Avg. % Stabilizer for Lot				0.363	
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst — Takisha Dickerson			Avg. Tot. Stabilizers 0.36 %		
Analyst Signature			Stable YES Unstable		
Lab. Supervisor Signature			Comments CATEGORY: A		
			Actions to be Taken		

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND84L070454				D533 / M6 propellant			
Date of analysis:				Date: 4 MAY 2012			
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml			Solvent ACN		
Standards (ERG-006)				Sample #			
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %		
4,4' DNDPA	50.0	0.867	83.7	400.6	0.479		
2,4-DNDPA	50.0	3.338	1156.5	0	0.000		
2,2' DNDPA	50.0	5.017	5373.7	23342	0.000		
2,4' DNDPA	50.0	7.147	1263.8	0	0.000		
4NDPA	50.0	8.595	2061.4	48.3	0.002		
2NDPA	50.0	9.687	3694.9	94.1	0.003		
DPA	200.0	11.119	7683.7	721.2	0.038		
N-NitrosoDPA	75.0	11.99	2133.1		0.000		
				0.521			
Avg. % Stabilizer for Lot				0.521			
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D							
Analyst Takisha Dickerson				Avg. Tot. Stabilizers 0.52 %			
Analyst Signature				Stable YES		Unstable	
Lab. Supervisor Signature				Comments CATEGORY: A			
				Actions to be Taken			

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND84G070326				D533 / M6 propellant	
Date of analysis:				Date: 3 MAY 2012	
Other Information M6 Propellant		Sample Data		Solvent	
		#1	0.50 g	100 ml	ACN
Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.867	104.4	324.4	0.311
2,4-DNDPA	50.0	3.335	1105.6	0	0.000
2,2' DNDPA	50.0	5.007	4986.7	23068	0.000
2,4' DNDPA	50.0	7.137	1206.9	0	0.000
4NDPA	50.0	8.593	1969.2	87.1	0.004
2NDPA	50.0	9.688	3527.8	151.4	0.004
DPA	200.0	11.153	7041.6	785.8	0.045
N-NitrosoDPA	75.0	11.897	1704.5		0.000
				0.364	
Avg. % Stabilizer for Lot				0.364	
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst Takisha Dickerson				Avg. Tot. Stabilizers 0.36 %	
Analyst Signature				Stable YES Unstable	
Lab. Supervisor Signature				Comments CATEGORY: A	
				Actions to be Taken	

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND80M070011				D533 / M6 propellant	
Date of analysis:				Date: 22 March 2012	
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml		Solvent ACN	
Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.897	14.6	40.4	0.277
2,4-DNDPA	50.0	3.327	870.9	0	0.000
2,2' DNDPA	50.0	5.054	688.7	29012	0.000
2,4' DNDPA	50.0	7.295	945.9	0	0.000
4NDPA	50.0	8.792	1528.5	144	0.009
2NDPA	50.0	10.019	2755.3	103.4	0.004
DPA	200.0	11.357	5392.9	588.9	0.044
N-NitrosoDPA	75.0	12.286	1332.2	0	0.000
				0.334	
Avg. % Stabilizer for Lot				0.334	
0.30% or more is Stability Code A 0.20%–0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst Takisha Dickerson				Avg. Tot. Stabilizers 0.33 %	
Analyst Signature				Stable YES Unstable	
				Comments CATEGORY: A	
Lab. Supervisor Signature					
				Actions to be Taken	

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND84K070448				D533 / M6 propellant			
Date of analysis:				Date: 1 Mar 2012			
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml			Solvent ACN		
Standards (ERG-006)				Sample #			
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %		
4,4' DNDPA	50.0	0.872	13.8	97.7	0.708		
2,4-DNDPA	50.0	3.42	982.9	0	0.000		
2,2' DNDPA	50.0	5.182	2038.4	23346	0.000		
2,4' DNDPA	50.0	7.465	1060.4	0	0.000		
4NDPA	50.0	8.991	1708.9	47.8	0.003		
2NDPA	50.0	10.17	3062.7	91.8	0.003		
DPA	200.0	11.707	6061.6	816.4	0.054		
N-NitrosoDPA	75.0	12.518	1461.9	0	0.000		
				0.768			
Avg. % Stabilizer for Lot				0.768			
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D							
Analyst Takisha Dickerson				Avg. Tot. Stabilizers 0.77 %			
Analyst Signature				Stable YES		Unstable	
Lab. Supervisor Signature				Comments CATEGORY: A			
				Actions to be Taken			

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND82L070178 **D533 / M6 propellant**

Date of analysis: **Date: 27 JULY 2011**

Other Information M6 Propellant	Sample Data #1 0.50 g 100 ml Solvent ACN
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Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.694	112.8	398.2	0.353
2,4-DNDPA	50.0	3.477	942.8	0	0.000
2,2' DNDPA	50.0	5.339	77.4	23169	0.000
2,4' DNDPA	50.0	7.842	1020.3	0	0.000
4NDPA	50.0	9.392	1634.2	111.1	0.007
2NDPA	50.0	10.693	2956.2	63.3	0.002
DPA	200.0	12.201	5630.5	349.6	0.025
N-NitrosoDPA	75.0	13.103	1385.2	0	0.000

	0.387
Avg. % Stabilizer for Lot	0.387

0.30% or more is Stability Code A
 0.20% -0.29% is Stability Code C
 Less than 0.20% is Stability Code D

Analyst Takisha Dickerson **Avg. Tot. Stabilizers 0.39 %**

Analyst Signature Stable YES | Unstable

Lab. Supervisor Signature **CATEGORY: A**

Actions to be Taken

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND82D070110				D533 / M6 propellant			
Date of analysis:				Date: 27 JULY 2011			
Other Information M6 Propellant		Sample Data			Solvent		
		#1	0.50 g	100 ml	ACN		
Standards (ERG-006)				Sample #			
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %		
4,4' DNDPA	50.0	0.694	112.8	437.7	0.388		
2,4-DNDPA	50.0	3.477	942.8	0	0.000		
2,2' DNDPA	50.0	5.339	77.4	22925	0.000		
2,4' DNDPA	50.0	7.842	1020.3	0	0.000		
4NDPA	50.0	9.392	1634.2	119.1	0.007		
2NDPA	50.0	10.693	2956.2	134.9	0.005		
DPA	200.0	12.201	5630.5	218.4	0.016		
N-NitrosoDPA	75.0	13.103	1385.2	0	0.000		
				0.415			
Avg. % Stabilizer for Lot				0.415			
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D							
Analyst Mike Kile				Avg. Tot. Stabilizers 0.42 %			
Analyst Signature				Stable YES		Unstable	
Lab. Supervisor Signature				Comments			
				CATEGORY: A			
				Actions to be Taken			

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND83F070274			D533 / M6 propellant		
Date of analysis:			Date: 27 JULY 2011		
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml		Solvent ACN	
Standards (ERG-006)			Sample #		
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.694	112.8	622.1	0.552
2,4-DNDPA	50.0	3.477	942.8	0	0.000
2,2' DNDPA	50.0	5.339	77.4	22209	0.000
2,4' DNDPA	50.0	7.842	1020.3	0	0.000
4NDPA	50.0	9.392	1634.2	48.5	0.003
2NDPA	50.0	10.693	2956.2	98.3	0.003
DPA	200.0	12.201	5630.5	451.4	0.032
N-NitrosoDPA	75.0	13.103	1385.2	0	0.000
				0.590	
Avg. % Stabilizer for Lot				0.590	
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst Takisha Dickerson			Avg. Tot. Stabilizers 0.59 %		
Analyst Signature			Stable YES Unstable		
Lab. Supervisor Signature			Comments CATEGORY: A		
			Actions to be Taken		

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND82J070172				D533 / M6 propellant			
Date of analysis:				Date: 15 July 2011			
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml			Solvent ACN		
Standards (ERG-006)				Sample #			
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %		
4,4' DNDPA	50.0	0.698	60	276.3	0.461		
2,4-DNDPA	50.0	3.469	1060.3	0	0.000		
2,2' DNDPA	50.0	5.327	112.7	25324	0.000		
2,4' DNDPA	50.0	7.82	1131.9	0	0.000		
4NDPA	50.0	9.358	1817.5	137.4	0.008		
2NDPA	50.0	10.643	3250	121.1	0.004		
DPA	200.0	12.15	6225.1	406.2	0.026		
N-NitrosoDPA	75.0	13.037	1551.7	0	0.000		
					0.498		
Avg. % Stabilizer for Lot					0.498		
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D							
Analyst Mike Kile				Avg. Tot. Stabilizers 0.50%			
Analyst Signature				Stable YES		Unstable	
Lab. Supervisor Signature				Comments CATEGORY: A			
				Actions to be Taken			

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND82D070113				D533 / M6 propellant	
Date of analysis:				Date: 6 JAN 2012	
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml		Solvent ACN	
Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.65	119.1	328.4	0.276
2,4-DNDPA	50.0	3.304	1019.8	16	0.002
2,2' DNDPA	50.0	4.943	1734.6	21955	0.000
2,4' DNDPA	50.0	7.018	1103.9	0	0.000
4NDPA	50.0	8.439	1782.5	66.8	0.004
2NDPA	50.0	9.513	3182.1	143.1	0.004
DPA	200.0	10.956	6219.8	790.9	0.051
N-NitrosoDPA	75.0	11.669	1532.4	0	0.000
				0.336	
Avg. % Stabilizer for Lot				0.336	
0.30% or more is Stability Code A 0.20%-0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst TAKISHA DICKERSON				Avg. Tot. Stabilizers 0.34 %	
Analyst Signature				Stable YES Unstable	
Lab. Supervisor Signature				Comments CATEGORY: A	
				Actions to be Taken	

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND86M070673				D533 / M6 propellant			
Date of analysis:				Date: 7 FEB 2012			
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml			Solvent ACN		
Standards (ERG-006)				Sample #			
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %		
4,4' DNDPA	50.0	0.863	50.1	452.6	0.903		
2,4-DNDPA	50.0	3.336	893.6	0	0.000		
2,2' DNDPA	50.0	5.03	726.8	22299	0.000		
2,4' DNDPA	50.0	7.182	1225.5	0	0.000		
4NDPA	50.0	8.642	1532.1	67.5	0.004		
2NDPA	50.0	9.759	2784.7	120.3	0.004		
DPA	200.0	11.235	5480.9	727.3	0.053		
N-NitrosoDPA	75.0	11.979	1363.1	0	0.000		
				0.965			
Avg. % Stabilizer for Lot				0.965			
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D							
Analyst TAKISHA DICKERSON				Avg. Tot. Stabilizers 0.97 %			
Analyst Signature				Stable YES		Unstable	
Lab. Supervisor Signature				Comments CATEGORY: A			
				Actions to be Taken			

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND81K070071				D533 / M6 propellant			
Date of analysis:				Date: 7 FEB 2012			
Other Information M6 Propellant		Sample Data #1		0.50 g		100 ml	
				Solvent ACN			
Standards (ERG-006)				Sample #			
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %		
4,4' DNDPA	50.0	0.863	50.1	541.1	1.080		
2,4-DNDPA	50.0	3.336	893.6	14.7	0.002		
2,2' DNDPA	50.0	5.03	726.8	22818	0.000		
2,4' DNDPA	50.0	7.182	1225.5	0	0.000		
4NDPA	50.0	8.642	1532.1	73.1	0.005		
2NDPA	50.0	9.759	2784.7	153.7	0.006		
DPA	200.0	11.235	5480.9	820.7	0.060		
N-NitrosoDPA	75.0	11.979	1363.1	0	0.000		
				1.152			
Avg. % Stabilizer for Lot				1.152			
0.30% or more is Stability Code A 0.20% - 0.29% is Stability Code C Less than 0.20% is Stability Code D							
Analyst TAKISHA DICKERSON				Avg. Tot. Stabilizers 1.15%			
Analyst Signature				Stable YES		Unstable	
Lab. Supervisor Signature				Comments CATEGORY: A			
				Actions to be Taken			

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND83F070278				D533 / M6 propellant			
Date of analysis:				Date: 17 Feb 2012			
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml			Solvent ACN		
Standards (ERG-006)				Sample #			
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %		
4,4' DNDPA	50.0	0.869	12.6	73.1	0.580		
2,4-DNDPA	50.0	3.42	880.6	0	0.000		
2,2' DNDPA	50.0	5.218	1402	23243	0.000		
2,4' DNDPA	50.0	7.58	948.7	0	0.000		
4NDPA	50.0	9.121	1531.3	103.4	0.007		
2NDPA	50.0	10.346	2749.6	76.9	0.003		
DPA	200.0	11.875	5397.5	554.2	0.041		
N-NitrosoDPA	75.0	12.713	1315.5	0	0.000		
				0.631			
Avg. % Stabilizer for Lot				0.631			
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D							
Analyst Takisha Dickerson				Avg. Tot. Stabilizers 0.63 %			
Analyst Signature				Stable YES		Unstable	
Lab. Supervisor Signature				Comments CATEGORY: A			
				Actions to be Taken			

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND82KY70175 **D533 / M6 propellant**

Date of analysis: **Date: 15 AUG 2011**

Other Information M6 Propellant	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">Sample Data</td> <td style="width: 30%;"></td> <td style="width: 15%;"></td> <td style="width: 40%;">Solvent</td> </tr> <tr> <td>#1</td> <td>0.50 g</td> <td>100 ml</td> <td>ACN</td> </tr> </table>	Sample Data			Solvent	#1	0.50 g	100 ml	ACN
Sample Data			Solvent						
#1	0.50 g	100 ml	ACN						

Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.632	30.4	268.1	0.882
2,4-DNDPA	50.0	3.486	989.6	31.1	0.003
2,2' DNDPA	50.0	5.334	1082	23256	0.000
2,4' DNDPA	50.0	7.805	1069.6	0	0.000
4NDPA	50.0	9.35	1646.5	172	0.010
2NDPA	50.0	10.653	3039.9	180.3	0.006
DPA	200.0	12.156	5602.1	257.6	0.018
N-NitrosoDPA	75.0	13.045	1424.8	0	0.000

	0.920
Avg. % Stabilizer for Lot	0.920

0.30% or more is Stability Code A
 0.20% - 0.29% is Stability Code C
 Less than 0.20% is Stability Code D

Analyst MIKE KILE **Avg. Tot. Stabilizers** **0.92 %**

Analyst Signature Stable YES Unstable

Lab. Supervisor Signature **Comments**

CATEGORY: **A**

Actions to be Taken

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND85KY70598			D533 / M6 propellant		
Date of analysis:			Date: 22 AUGUST 2011		
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml		Solvent ACN	
Standards (ERG-006)			Sample #		
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.686	93.1	287.9	0.309
2,4-DNDPA	50.0	3.459	919.4	0	0.000
2,2' DNDPA	50.0	5.284	451.4	22897	0.000
2,4' DNDPA	50.0	7.719	1000.1	0	0.000
4NDPA	50.0	9.269	1596.1	116.7	0.007
2NDPA	50.0	10.555	2887.6	160.7	0.006
DPA	200.0	12.066	5400.7	163	0.012
N-NitrosoDPA	75.0	12.95	1367.3	0	0.000
				0.334	
Avg. % Stabilizer for Lot				0.334	
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst KISHA DICKERSON			Avg. Tot. Stabilizers 0.33 %		
Analyst Signature			Stable YES		Unstable
			Comments CATEGORY: A		
Lab. Supervisor Signature					
			Actions to be Taken		

HPLC PROPELLANT STABILITY REPORT

M

Lot # IND83F070278

D533

Date of analysis 6 August 2010

Other Information

M6 Propellant

Sample Data

#1 0.5000 g 100 ml solvent

ACN

Standards				Sample #1	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0		1	0	0.000
2,4-DNDPA	50.0	4.91	382.3	0	0.000
2,2' DNDPA	50.0	9.825	437	3908.3	0.894
2,4' DNDPA	50.0	11.341	632.4	0	0.000
4NDPA	50.0	11.95	441.7	0	0.000
2NDPA	50.0	12.713	827.6	0	0.000
DPA	200.0	14.06	2176	263.5	0.052
N-NitrosoDPA	75.0	14.999	558.4	0	0.000

	0.946
Avg. % Stabilizer for Lot	0.946

0.30% or more is Stability Code A
 0.29% or more is Stability Code C
 Less than 0.20% is Stability Code D

Analyst Mike Kile

Avg. Tot. Stabilizers **0.95 %**

Analyst Signature

Stable yes Unstable

Lab. Supervisor Signature



Comments
 CATEGORY: A

Actions to be Taken

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND80M070009				D533 / M6 propellant	
Date of analysis:				Date: 20 SEP 2010	
Other Information M6 Propellant		Sample Data #1 0.5000 g 100 ml		Solvent ACN	
Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	2.113	241.3	1503.9	0.623
2,4-DNDPA	50.0	4.997	1505.8	0	0.000
2,2' DNDPA	50.0	7.178	3394.6	16988.6	0.000
2,4' DNDPA	50.0	10.355	947.6	0	0.000
4NDPA	50.0	11.977	1346.1	0	0.000
2NDPA	50.0	13.451	1788.2	0	0.000
DPA	200.0	14.881	5045.5	586	0.046
N-NitrosoDPA	75.0	16.02	1339.6	0	0.000
				0.670	
Avg. % Stabilizer for Lot				0.670	
0.30% or more is Stability Code A 0.20% - 0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst Kisha Dickerson				Avg. Tot. Stabilizers 0.67 %	
Analyst Signature				Stable YES Unstable	
				Comments	
Lab. Supervisor Signature 				CATEGORY: A	
				Actions to be Taken	

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND85K070598 **D533 / M6 propellant**

Date of analysis: **Date: 25 Aug 2010**

Other Information M6 Propellant	Sample Data #1 0.5000 g 100 ml Solvent ACN
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Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	2.177	146.5	1423.9	0.972
2,4-DNDPA	50.0	5.001	961.7	0	0.000
2,2' DNDPA	50.0	7.038	2587.5	14670.5	0.000
2,4' DNDPA	50.0	9.931	938.5	0	0.000
4NDPA	50.0	11.434	1325.8	0	0.000
2NDPA	50.0	12.813	1809.7	0	0.000
DPA	200.0	14.19	4886.9	403.2	0.033
N-NitrosoDPA	75.0	15.18	1296.7	0	0.000

	1.005
Avg. % Stabilizer for Lot	1.005

0.30% or more is Stability Code A
 0.20% - 0.29% is Stability Code C
 Less than 0.20% is Stability Code D

Analyst Kisha Dickerson **Avg. Tot. Stabilizers** 1.00 %

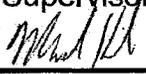
Analyst Signature Stable YES | Unstable

Lab. Supervisor Signature **Comments**

CATEGORY: A

Actions to be Taken

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND83F070274				D533 / M6 propellant	
Date of analysis:				Date: 01 SEP 2010	
Other Information M6 Propellant		Sample Data #1 0.5000 g 100 ml		Solvent ACN	
Standards (ERG-006)			Sample #		
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	2.088	225.3	2553.3	1.133
2,4-DNDPA	50.0	5.017	1148.9	0	0.000
2,2' DNDPA	50.0	7.215	2676.3	19646.7	0.000
2,4' DNDPA	50.0	10.466	954.5	0	0.000
4NDPA	50.0	12.082	1305.7	0	0.000
2NDPA	50.0	13.572	1691.7	0	0.000
DPA	200.0	15.031	4409.7	312.5	0.028
N-NitrosoDPA	75.0	16.17	1249.6	0	0.000
				1.162	
Avg. % Stabilizer for Lot				1.162	
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst Kisha Dickerson			Avg. Tot. Stabilizers 1.16 %		
Analyst Signature			Stable YES		Unstable
			Comments		
Lab. Supervisor Signature 			CATEGORY: A		
			Actions to be Taken		

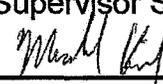
HPLC PROPELLANT STABILITY REPORT

Lot Number: IND85F070588				D533 / M6 propellant	
Date of analysis:				Date: 20 Dec 2010	
Other Information M6 Propellant		Sample Data		Solvent	
		#1	0.5000 g	100 ml	ACN
Standards (ERG-006)			Sample #		
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	2.059	87.1	1411.1	1.620
2,4-DNDPA	50.0	5.198	631.9	845.8	0.134
2,2' DNDPA	50.0	7.699	1074.2	15722.5	0.000
2,4' DNDPA	50.0	11.782	545	0	0.000
4NDPA	50.0	13.513	1464.9	246.8	0.017
2NDPA	50.0	15.189	1011.6	0	0.000
DPA	200.0	16.638	2894.7	309.8	0.043
N-NitrosoDPA	75.0	18.069	720.1	0	0.000
				1.814	
Avg. % Stabilizer for Lot				1.814	
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst Kisha Dickerson			Avg. Tot. Stabilizers 1.81%		
Analyst Signature			Stable YES		Unstable
Lab. Supervisor Signature <i>M. Hall</i>			Comments CATEGORY: A		
			Actions to be Taken		

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND86E070616				D533 / M6 propellant			
Date of analysis:				Date: 19 Nov 2010			
Other Information M6 Propellant		Sample Data #1 0.5000 g 100 ml			Solvent ACN		
Standards (ERG-006)				Sample #			
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %		
4,4' DNDPA	50.0	2.068	135.8	654.4	0.482		
2,4-DNDPA	50.0	5.182	717.3	0	0.000		
2,2' DNDPA	50.0	7.635	736.3	13022.2	0.000		
2,4' DNDPA	50.0	11.713	779	0	0.000		
4NDPA	50.0	13.454	462.4	0	0.000		
2NDPA	50.0	15.161	1164.1	0	0.000		
DPA	200.0	16.583	4078.5	221.2	0.022		
N-NitrosoDPA	75.0	18.033	1011.7	0	0.000		
				0.504			
Avg. % Stabilizer for Lot				0.504			
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D							
Analyst Kisha Dickerson				Avg. Tot. Stabilizers 0.50 %			
Analyst Signature				Stable YES		Unstable	
				Comments			
Lab. Supervisor Signature 				CATEGORY: A			
				Actions to be Taken			

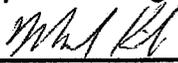
HPLC PROPELLANT STABILITY REPORT

Lot Number: IND84C070331				D533 / M6 propellant	
Date of analysis:				Date: 21 SEP 2010	
Other Information M6 Propellant		Sample Data #1 0.5000 g 100 ml		Solvent ACN	
Standards (ERG-006)			Sample #		
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	2.168	128.5	113.7	0.088
2,4-DNDPA	50.0	5.033	432	217.6	0.050
2,2' DNDPA	50.0	7.206	1480.6	820.7	0.000
2,4' DNDPA	50.0	10.409	485.4	222.7	0.046
4NDPA	50.0	12.024	1113.3	522	0.047
2NDPA	50.0	13.489	784	396.3	0.051
DPA	200.0	14.97	2121.4	1130.5	0.213
N-NitrosoDPA	75.0	16.167	463.9	299.3	0.000
				0.495	
Avg. % Stabilizer for Lot				0.495	
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst Mike Kile			Avg. Tot. Stabilizers 0.50 %		
Analyst Signature			Stable YES		Unstable
			Comments		
Lab. Supervisor Signature 			CATEGORY: A		
			Actions to be Taken		

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND83G070281				D533 / M6 propellant	
Date of analysis:				Date: 1 FEB 2011	
Other Information M6 Propellant		Sample Data #1 0.5000 g 100 ml		Solvent ACN	
Standards (ERG-006)			Sample #		
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	4.156	1116	2037.1	0.183
2,4-DNDPA	50.0	9.388	1191.2	26000.5	2.183
2,2' DNDPA	50.0	10.987	1694.7	81.3	0.000
2,4' DNDPA	50.0	11.73	1272.3	86.5	0.007
4NDPA	50.0	12.459	2443.3	0	0.000
2NDPA	50.0	13.939	5852.1	432.4	0.007
DPA	200.0	15.022	1753.1	0	0.000
N-NitrosoDPA	75.0	18.932	2535.1	791.6	0.000
				2.379	
Avg. % Stabilizer for Lot				2.379	
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst Mike Kile				Avg. Tot. Stabilizers 2.38 %	
Analyst Signature				Stable YES Unstable	
Lab. Supervisor Signature 				Comments CATEGORY: A	
				Actions to be Taken	

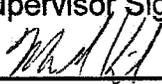
HPLC PROPELLANT STABILITY REPORT

Lot Number: IND81A070101				D533 / M6 propellant			
Date of analysis:				Date: 24 FEB 2011			
Other Information M6 Propellant		Sample Data			Solvent		
		#1	0.5000 g	100 ml	ACN		
Standards (ERG-006)				Sample #			
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %		
4,4' DNDPA	50.0	4.171	1039.1	2536	0.244		
2,4-DNDPA	50.0	9.543	1123.1	21548.2	1.919		
2,2' DNDPA	50.0	11.155	1591.7	168	0.000		
2,4' DNDPA	50.0	11.896	1220.2	92	0.008		
4NDPA	50.0	12.664	2189.9	0	0.000		
2NDPA	50.0	14.158	5531	358	0.006		
DPA	200.0	15.292	2115.1	0	0.000		
N-NitrosoDPA	75.0	19.236	2297.6	512	0.000		
				2.177			
Avg. % Stabilizer for Lot				2.177			
0.30% or more is Stability Code A 0.20% - 0.29% is Stability Code C Less than 0.20% is Stability Code D							
Analyst Mike Kile				Avg. Tot. Stabilizers 2.18 %			
Analyst Signature				Stable YES		Unstable	
Lab. Supervisor Signature 				Comments			
				CATEGORY: A			
				Actions to be Taken			

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND82F070162				D533 / M6 propellant	
Date of analysis:				Date: 24 FEB 2011	
Other Information M6 Propellant		Sample Data #1 0.5000 g 100 ml		Solvent ACN	
Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	4.171	1039.1	2367.1	0.228
2,4-DNDPA	50.0	9.543	1123.1	24569	2.188
2,2' DNDPA	50.0	11.155	1591.7	112	0.000
2,4' DNDPA	50.0	11.896	1220.2	97.5	0.008
4NDPA	50.0	12.664	2189.9	0	0.000
2NDPA	50.0	14.158	5531	481.2	0.009
DPA	200.0	15.292	2115.1	0	0.000
N-NitrosoDPA	75.0	19.236	2297.6	596.7	0.000
				2.432	
Avg. % Stabilizer for Lot				2.432	
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst Mike Kile				Avg. Tot. Stabilizers 2.43 %	
Analyst Signature				Stable YES Unstable	
				Comments	
Lab. Supervisor Signature 				CATEGORY: A	
				Actions to be Taken	

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND86E070617				D533 / M6 propellant	
Date of analysis:				Date: 24 FEB 2011	
Other Information M6 Propellant		Sample Data #1 0.5000 g 100 ml		Solvent ACN	
Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	4.171	1039.1	2362.6	0.227
2,4-DNDPA	50.0	9.543	1123.1	26618.9	2.370
2,2' DNDPA	50.0	11.155	1591.7	43.2	0.000
2,4' DNDPA	50.0	11.896	1220.2	112.1	0.009
4NDPA	50.0	12.664	2189.9	0	0.000
2NDPA	50.0	14.158	5531	497.9	0.009
DPA	200.0	15.292	2115.1	0	0.000
N-NitrosoDPA	75.0	19.236	2297.6	824.3	0.000
				2.616	
Avg. % Stabilizer for Lot				2.616	
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst Mike Kile				Avg. Tot. Stabilizers 2.62 %	
Analyst Signature				Stable YES Unstable	
				Comments	
Lab. Supervisor Signature 				CATEGORY: A	
				Actions to be Taken	

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND83E070273 **D533 / M6 propellant**

Date of analysis: **Date: 24 FEB 2011**

Other Information M6 Propellant	Sample Data #1 0.5000 g 100 ml Solvent ACN
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Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	4.171	1039.1	2377.7	0.229
2,4-DNDPA	50.0	9.543	1123.1	28172.8	2.508
2,2' DNDPA	50.0	11.155	1591.7	41.5	0.000
2,4' DNDPA	50.0	11.896	1220.2	95.3	0.008
4NDPA	50.0	12.664	2189.9	0	0.000
2NDPA	50.0	14.158	5531	673.1	0.012
DPA	200.0	15.292	2115.1	0	0.000
N-NitrosoDPA	75.0	19.236	2297.6	711.6	0.000

	2.757
Avg. % Stabilizer for Lot	2.757

0.30% or more is Stability Code A
 0.20% -0.29% is Stability Code C
 Less than 0.20% is Stability Code D

Analyst Mike Kile **Avg. Tot. Stabilizers** 2.76 %

Analyst Signature **Stable** YES **Unstable**

Lab. Supervisor Signature **Comments**

[Signature] **CATEGORY:** **A**

Actions to be Taken

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND82H070167 D533 / M6 propellant

Date of analysis: Date: 1 FEB 2011

Other Information M6 Propellant	Sample Data #1 0.5000 g 100 ml	Solvent ACN
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Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	4.156	1116	2141.4	0.192
2,4-DNDPA	50.0	9.388	1191.2	26272.9	2.206
2,2' DNDPA	50.0	10.987	1694.7	94.4	0.000
2,4' DNDPA	50.0	11.73	1272.3	147.3	0.012
4NDPA	50.0	12.459	2443.3	0	0.000
2NDPA	50.0	13.939	5852.1	346.6	0.006
DPA	200.0	15.022	1753.1	300.2	0.068
N-NitrosoDPA	75.0	18.932	2535.1	531.9	0.000

	2.483
Avg. % Stabilizer for Lot	2.483

0.30% or more is Stability Code A
 0.20% -0.29% is Stability Code C
 Less than 0.20% is Stability Code D

Analyst: Mike Kile Avg. Tot. Stabilizers: 2.48%

Analyst Signature Stable YES | Unstable

Lab. Supervisor Signature Comments

CATEGORY: A

Actions to be Taken

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND80M070011				D533 / M6 propellant			
Date of analysis:				Date: 21 Apr 2011			
Other Information M6 Propellant		Sample Data			Solvent		
		#1	0.5000 g	100 ml	ACN		
Standards (ERG-006)				Sample #			
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %		
4,4' DNDPA	50.0	4.152	1065.2	2336.8	0.219		
2,4-DNDPA	50.0	9.483	1128.5	26485.4	2.347		
2,2' DNDPA	50.0	11.075	1789.9	52.6	0.000		
2,4' DNDPA	50.0	11.744	1596.2	123.4	0.008		
4NDPA	50.0	12.553	2329	0	0.000		
2NDPA	50.0	14.006	5766.8	662.2	0.011		
DPA	200.0	15.107	1617.9	0	0.000		
N-NitrosoDPA	75.0	18.991	2304.9	215.6	0.000		
				2.586			
Avg. % Stabilizer for Lot				2.586			
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D							
Analyst Kisha Dickerson				Avg. Tot. Stabilizers 2.59 %			
Analyst Signature				Stable YES		Unstable	
Lab. Supervisor Signature <i>[Signature]</i>				Comments CATEGORY: A			
				Actions to be Taken			

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND84K070448				D533 / M6 propellant	
Date of analysis:				Date: 1 Mar 2012	
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml		Solvent ACN	
Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.872	13.8	97.7	0.708
2,4-DNDPA	50.0	3.42	982.9	0	0.000
2,2' DNDPA	50.0	5.182	2038.4	23346	0.000
2,4' DNDPA	50.0	7.465	1060.4	0	0.000
4NDPA	50.0	8.991	1708.9	47.8	0.003
2NDPA	50.0	10.17	3062.7	91.8	0.003
DPA	200.0	11.707	6061.6	816.4	0.054
N-NitrosoDPA	75.0	12.518	1461.9	0	0.000
				0.768	
Avg. % Stabilizer for Lot				0.768	
0.30% or more is Stability Code A 0.20% - 0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst Takisha Dickerson				Avg. Tot. Stabilizers 0.77 %	
Analyst Signature				Stable YES Unstable	
				Comments CATEGORY: A	
Lab. Supervisor Signature					
				Actions to be Taken	

STRAIGHT BILL OF LADING

NOT NEGOTIABLE

Wood 27

RECEIVED, subject to the classification and tariffs in effect on the date of the issue of this Original Bill of Lading. The property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown) consigned, and destined as indicated below, which said carrier (the word carrier being understood throughout this contract meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery of said destination. It on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be, subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading Set forth (1) in Uniform Freight Classification in effect on the date hereof, if this is a rail or rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment.

Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accept for himself and his assigns.

Shipper: Expro Systems, Inc. 1600 Java Road Minden, LA 71055
Shipper's No. 2837
Shipping Date 1/24/13
Purchase Order No.
By APL Freight Charges: Collect Prepaid VXX Location No. 2363/2328

Consigned to Austin Powder Co
Destination 7-LL-10 Blkroom 120
County EAST CAMDEN AR
Route
Charge Account of 7-870-574 0580
Fed Lic. 5-AR-103-20-5E-88139
Exp. Date 5/1/15
State Lic.
Customer No.
Customer P.O. No.
Rel. No.

Table with columns: SHIPPED No. of PKGS, SHIPPED No. of UNITS, PROPER SHIPPING NAME AND HAZARD CLASS, RETURNED No. of PKGS, RETURNED No. of UNITS, EMERGENCY RESPONSE PROCEDURE GUIDE NO., EXEMPTION CODE, H M, Placards Applied to Railcar or Motor Vehicle. Includes a 'RECEIVED' stamp from Austin Powder Company dated JAN 24 2013.

This is to certify that the above-named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation, according to the applicable regulations of the Department of Transportation.

Signature: [Handwritten Signature] Invoice No. 160644589
FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT CALL CHEMTREC - DAY OR NIGHT
IN THE USA CALL 800-424-9300 IN CANADA (ERP #2-0040) 800-561-3636 ELSEWHERE CALL (703) 527-3987

Permanent Address of Shipper: Expro Systems, Inc. 1600 Java Road Minden, Louisiana 71055 (318) 882-8700
Per: [Handwritten Signature]
DOT Hazardous Material Handling Number
Local Federal Explosives License No. 5-LA-119-20-1A-00057 (Shipper)
Received By: Kevin W. Knapp Date 1-24-13
By: [Handwritten Signature] Date 1/24/13 AUTHORIZED RECEIVER

Load 27
17AT 26

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND83G070281				D533 / M6 propellant			
Date of analysis:				Date: 13 AUGUST 2012			
Other Information M6 Propellant		Sample Data #1 0.50 g		Solvent 100 ml ACN			
Standards (ERG-006)				Sample #			
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %		
4NDPA	50.0	0.874	41.1	199.6	0.489		
2,4-DNDPA	50.0	3.363	1017.6	13.9	0.001		
2,2'-DNDPA	50.0	5.079	4556.2	21910	0.000		
2,4'-DNDPA	50.0	7.471	1126.4	0	0.000		
4NDPA	50.0	8.907	1830.9	71.9	0.004		
2NDPA	50.0	10.084	3271.2	123.5	0.004		
DPA	200.0	11.54	6554.9	888.5	0.054		
N-NitrosoDPA	75.0	12.349	1509.1	0	0.000		
				0.549			
Avg. % Stabilizer for Lot				0.549			
0.30% or more is Stability Code A 0.20% - 0.29% is Stability Code C Less than 0.20% is Stability Code D							
Analyst Takisha Dickerson				Avg. Tot. Stabilizers 0.55 %			
Analyst Signature <i>T. Dickerson</i>				Stable YES		Unstable	
Lab. Supervisor Signature <i>M. D.</i>				Comments CATEGORY: A			
				Actions to be Taken			

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND84K070452 **D533 / M6 propellant**

Date of analysis: **Date: 13 AUGUST 2012**

Other Information M6 Propellant	Sample Data #1 0.50 g 100 ml Solvent ACN
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Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.874	41.1	237.6	0.578
2,4-DNDPA	50.0	3.363	1017.6	0	0.000
2,2' DNDPA	50.0	5.079	4556.2	22977	0.000
2,4' DNDPA	50.0	7.471	1126.4	0	0.000
4NDPA	50.0	8.907	1830.9	53.4	0.003
2NDPA	50.0	10.084	3271.2	114.5	0.004
DPA	200.0	11.54	6554.9	610.4	0.037
N-NitrosoDPA	75.0	12.349	1509.1	0	0.000

	0.622
Avg. % Stabilizer for Lot	0.622

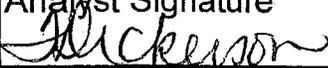
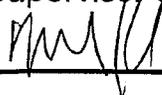
0.30% or more is Stability Code A
 0.20% -0.29% is Stability Code C
 Less than 0.20% is Stability Code D

Analyst Takisha Dickerson **Avg. Tot. Stabilizers** **0.62 %**

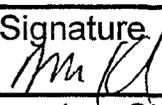
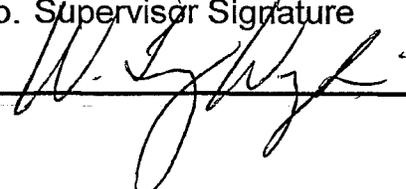
Analyst Signature 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Stable</td> <td style="width: 30%; text-align: center;">YES</td> <td style="width: 40%;">Unstable</td> </tr> <tr> <td colspan="3">Comments</td> </tr> <tr> <td colspan="3" style="text-align: center;">CATEGORY: A</td> </tr> </table>	Stable	YES	Unstable	Comments			CATEGORY: A		
Stable	YES	Unstable								
Comments										
CATEGORY: A										
Lab. Supervisor Signature 										

Actions to be Taken

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND85B070507			D533 / M6 propellant		
Date of analysis:			Date: 16 JULY 2012		
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml		Solvent ACN	
Standards (ERG-006)			Sample #		
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.871	70.6	459.1	0.650
2,4-DNDPA	50.0	3.368	934.1	0	0.000
2,2' DNDPA	50.0	5.103	1888.6	22961	0.000
2,4' DNDPA	50.0	7.516	1021.7	0	0.000
4NDPA	50.0	8.938	1656.1	138.9	0.008
2NDPA	50.0	10.131	2970.1	109.4	0.004
DPA	200.0	11.561	5887.3	342.8	0.023
N-NitrosoDPA	75.0	12.367	1376.5	0	0.000
				0.686	
Avg. % Stabilizer for Lot				0.686	
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst Takisha Dickerson			Avg. Tot. Stabilizers 0.69 %		
Analyst Signature 			Stable YES		Unstable
Lab. Supervisor Signature 			Comments CATEGORY: A		
			Actions to be Taken		

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND89D071039			D533 / M6 propellant		
Date of analysis:			Date: 21 SEP 2012		
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml		Solvent ACN	
Standards (ERG-006)			Sample #		
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.878	38	188.9	0.497
2,4-DNDPA	50.0	3.469	956.6	0	0.000
2,2' DNDPA	50.0	5.366	516.6	21344	0.000
2,4' DNDPA	50.0	7.936	1019.9	0	0.000
4NDPA	50.0	9.415	1618.4	80.3	0.005
2NDPA	50.0	10.707	2844	100.2	0.004
DPA	200.0	12.006	5780.2	973.6	0.067
N-NitrosoDPA	75.0	13.019	1452.3	0	0.000
				0.573	
Avg. % Stabilizer for Lot				0.573	
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst MIKE KILE			Avg. Tot. Stabilizers 0.57 %		
Analyst Signature 			Stable YES		Unstable
Lab. Supervisor Signature 			Comments CATEGORY: A		
			Actions to be Taken		

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND83F070274

D533 / M6 propellant

Date of analysis:

Date: 4 Sep 2012

Other Information
M6 Propellant

Sample Data

#1

0.50 g

100 ml

Solvent

ACN

Standards (ERG-006)

Sample #

Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.889	48.8	443.4	0.909
2,4-DNDPA	50.0	3.418	914.3	0	0.000
2,2' DNDPA	50.0	5.22	777.3	23043	0.000
2,4' DNDPA	50.0	7.622	980.5	0	0.000
4NDPA	50.0	9.134	1586.8	47.5	0.003
2NDPA	50.0	10.417	2826.3	92.1	0.003
DPA	200.0	11.797	5671.5	817.6	0.058
N-NitrosoDPA	75.0	12.757	1337.5	0	0.000

0.973

Avg. % Stabilizer for Lot

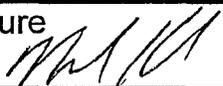
0.973

0.30% or more is Stability Code A
0.20% - 0.29% is Stability Code C
Less than 0.20% is Stability Code D

Analyst Mike Kile

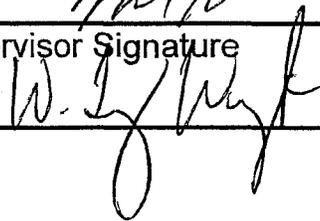
Avg. Tot. Stabilizers 0.97 %

Analyst Signature



Stable YES | **Unstable**

Lab. Supervisor Signature



Comments

CATEGORY: A

Actions to be Taken

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND84G070326 **D533 / M6 propellant**

Date of analysis: **Date: 18 JULY 2012**

Other Information M6 Propellant	Sample Data #1 0.50 g 100 ml Solvent ACN
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Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.863	133.9	498.4	0.372
2,4-DNDPA	50.0	3.365	949.7	0	0.000
2,2' DNDPA	50.0	5.091	2605.4	24044	0.000
2,4' DNDPA	50.0	7.514	1047.9	0	0.000
4NDPA	50.0	8.946	1698.8	49.1	0.003
2NDPA	50.0	10.142	3039.5	84.6	0.003
DPA	200.0	11.585	6044.7	789.2	0.052
N-NitrosoDPA	75.0	12.4	1395.6	0	0.000

	0.430
Avg. % Stabilizer for Lot	0.430

0.30% or more is Stability Code A
 0.20% -0.29% is Stability Code C
 Less than 0.20% is Stability Code D

Analyst Takisha Dickerson **Avg. Tot. Stabilizers** **0.43 %**

Analyst Signature 	Stable YES Unstable
Lab. Supervisor Signature 	Comments CATEGORY: A

	Actions to be Taken
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HPLC PROPELLANT STABILITY REPORT

Lot Number: IND83G070281			D533 / M6 propellant		
Date of analysis:			Date: 13 AUGUST 2012		
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml		Solvent ACN	
Standards (ERG-006)			Sample #		
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.874	41.1	199.6	0.486
2,4-DNDPA	50.0	3.363	1017.6	13.9	0.001
2,2' DNDPA	50.0	5.079	4556.2	21910	0.000
2,4' DNDPA	50.0	7.471	1126.4	0	0.000
4NDPA	50.0	8.907	1830.9	71.9	0.004
2NDPA	50.0	10.084	3271.2	123.5	0.004
DPA	200.0	11.54	6554.9	888.5	0.054
N-NitrosoDPA	75.0	12.349	1509.1	0	0.000
				0.549	
Avg. % Stabilizer for Lot				0.549	
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst Takisha Dickerson			Avg. Tot. Stabilizers 0.55%		
Analyst Signature <i>T. Dickerson</i>			Stable YES		Unstable
Lab. Supervisor Signature <i>mm</i>			Comments CATEGORY: A		
			Actions to be Taken		

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND84K070452				D533 / M6 propellant			
Date of analysis:				Date: 13 AUGUST 2012			
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml			Solvent ACN		
Standards (ERG-006)				Sample #			
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %		
4,4' DNDPA	50.0	0.874	41.1	237.6	0.578		
2,4-DNDPA	50.0	3.363	1017.6	0	0.000		
2,2' DNDPA	50.0	5.079	4556.2	22977	0.000		
2,4' DNDPA	50.0	7.471	1126.4	0	0.000		
4NDPA	50.0	8.907	1830.9	53.4	0.003		
2NDPA	50.0	10.084	3271.2	114.5	0.004		
DPA	200.0	11.54	6554.9	610.4	0.037		
N-NitrosoDPA	75.0	12.349	1509.1	0	0.000		
				0.622			
Avg. % Stabilizer for Lot				0.622			
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D							
Analyst Takisha Dickerson				Avg. Tot. Stabilizers 0.62 %			
Analyst Signature <i>T. Dickerson</i>				Stable YES		Unstable	
Lab. Supervisor Signature <i>[Signature]</i>				Comments CATEGORY: A			
				Actions to be Taken			

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND85B070507 **D533 / M6 propellant**

Date of analysis: **Date: 16 JULY 2012**

Other Information M6 Propellant	Sample Data #1 0.50 g 100 ml Solvent ACN
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Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.871	70.6	459.1	0.650
2,4-DNDPA	50.0	3.368	934.1	0	0.000
2,2' DNDPA	50.0	5.103	1888.6	22961	0.000
2,4' DNDPA	50.0	7.516	1021.7	0	0.000
4NDPA	50.0	8.938	1656.1	138.9	0.008
2NDPA	50.0	10.131	2970.1	109.4	0.004
DPA	200.0	11.561	5887.3	342.8	0.023
N-NitrosoDPA	75.0	12.367	1376.5	0	0.000

	0.686
Avg. % Stabilizer for Lot	0.686

0.30% or more is Stability Code A
 0.20% - 0.29% is Stability Code C
 Less than 0.20% is Stability Code D

Analyst Takisha Dickerson **Avg. Tot. Stabilizers** **0.69 %**

Analyst Signature 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Stable</td> <td style="width: 30%; text-align: center;">YES</td> <td style="width: 40%;">Unstable</td> </tr> <tr> <td colspan="3">Comments</td> </tr> <tr> <td colspan="3" style="text-align: center;">CATEGORY: A</td> </tr> </table>	Stable	YES	Unstable	Comments			CATEGORY: A		
Stable	YES	Unstable								
Comments										
CATEGORY: A										
Lab. Supervisor Signature 										

Actions to be Taken

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND82L070219				D533 / M6 propellant			
Date of analysis:				Date: 10 JUN 2011			
Other Information M6 Propellant		Sample Data			Solvent		
		#1	0.50 g	100 ml	ACN		
Standards (ERG-006)				Sample #			
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %		
4,4' DNDPA	50.0	0.644	12.4	385	3.105		
2,4-DNDPA	50.0	3.435	704.6	15.8	0.002		
2,2' DNDPA	50.0	5.232	151.8	195505	0.000		
2,4' DNDPA	50.0	7.619	748	0	0.000		
4NDPA	50.0	9.164	1189.1	59.4	0.005		
2NDPA	50.0	10.428	2144	121.1	0.006		
DPA	200.0	11.961	3991.7	705.2	0.071		
N-NitrosoDPA	75.0	12.825	1018.7	0	0.000		
				3.188			
Avg. % Stabilizer for Lot				3.188			
0.30% or more is Stability Code A 0.20% - 0.29% is Stability Code C Less than 0.20% is Stability Code D							
Analyst Kisha Dickerson				Avg. Tot. Stabilizers 3.19 %			
Analyst Signature				Stable YES		Unstable	
Lab. Supervisor Signature				Comments CATEGORY: A			
				Actions to be Taken			

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND81DY70015				D533 / M6 propellant	
Date of analysis:				Date: 23 Sept 2011	
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml		Solvent ACN	
Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.882	107.9	423.3	0.392
2,4-DNDPA	50.0	3.447	904.3	16.6	0.002
2,2' DNDPA	50.0	5.247	26461	25393	0.000
2,4' DNDPA	50.0	7.633	980.1	0	0.000
4NDPA	50.0	9.192	1571.6	93.8	0.006
2NDPA	50.0	10.459	2828.7	173.9	0.006
DPA	200.0	11.998	5503.2	836.5	0.061
N-NitrosoDPA	75.0	12.872	1320.7	0	0.000
				0.467	
Avg. % Stabilizer for Lot				0.467	
0.30% or more is Stability Code A 0.20% - 0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst Takisha Dickerson				Avg. Tot. Stabilizers 0.47%	
Analyst Signature				Stable YES Unstable	
Lab. Supervisor Signature				Comments CATEGORY: A	
				Actions to be Taken	

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND81L070074				D533 / M6 propellant			
Date of analysis:				Date: 19 SEPT 2011			
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml			Solvent ACN		
Standards (ERG-006)				Sample #			
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %		
4,4' DNDPA	50.0	0.866	65.3	504.3	0.772		
2,4-DNDPA	50.0	3.45	959.2	0	0.000		
2,2' DNDPA	50.0	5.27	2749.5	21863	0.000		
2,4' DNDPA	50.0	7.695	1051.4	0	0.000		
4NDPA	50.0	9.247	1702.8	66.6	0.004		
2NDPA	50.0	10.528	3035.1	96.6	0.003		
DPA	200.0	12.044	5992.2	593	0.040		
N-NitrosoDPA	75.0	12.922	1413.2	0	0.000		
				0.819			
Avg. % Stabilizer for Lot				0.819			
0.30% or more is Stability Code A 0.20% - 0.29% is Stability Code C Less than 0.20% is Stability Code D							
Analyst MIKE KILE				Avg. Tot. Stabilizers 0.82%			
Analyst Signature				Stable YES		Unstable	
Lab. Supervisor Signature				Comments CATEGORY: A			
				Actions to be Taken			

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND81EY70021				D533 / M6 propellant			
Date of analysis:				Date: 7 OCT 2011			
Other Information M6 Propellant		Sample Data #1		0.50 g		100 ml	
				Solvent ACN			
Standards (ERG-006)				Sample #			
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %		
4,4' DNDPA	50.0	0.859	132.5	420.4	0.317		
2,4-DNDPA	50.0	3.44	910.9	15.1	0.002		
2,2' DNDPA	50.0	5.25	555.2	22225	0.000		
2,4' DNDPA	50.0	7.627	977.5	27.6	0.003		
4NDPA	50.0	9.173	1573.4	159.9	0.010		
2NDPA	50.0	10.403	2845.9	203.9	0.007		
DPA	200.0	11.952	5496.7	159.6	0.012		
N-NitrosoDPA	75.0	12.794	1333	0	0.000		
				0.351			
Avg. % Stabilizer for Lot				0.351			
0.30% or more is Stability Code A 0.20% - 0.29% is Stability Code C Less than 0.20% is Stability Code D							
Analyst Kisha Dickerson				Avg. Tot. Stabilizers 0.35 %			
Analyst Signature				Stable YES		Unstable	
Lab. Supervisor Signature				Comments CATEGORY: A			
				Actions to be Taken			

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND84K070452				D533 / M6 propellant			
Date of analysis:				Date: 25 MAY 2012			
Other Information M6 Propellant			Sample Data #1 0.50 g 100 ml			Solvent ACN	
Standards (ERG-006)				Sample #			
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %		
4,4' DNDPA	50.0	0.88	98.8	240.1	0.243		
2,4-DNDPA	50.0	3.406	1093.5	0	0.000		
2,2' DNDPA	50.0	5.151	5119.8	33851	0.000		
2,4' DNDPA	50.0	7.443	1205.3	0	0.000		
4NDPA	50.0	8.966	1967.7	179.9	0.009		
2NDPA	50.0	10.176	3479.6	296.9	0.009		
DPA	200.0	11.679	6900.6	1122.2	0.065		
N-NitrosoDPA	75.0	12.492	1626.4		0.000		
				0.326			
Avg. % Stabilizer for Lot				0.326			
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D							
Analyst Takisha Dickerson				Avg. Tot. Stabilizers 0.33 %			
Analyst Signature				Stable YES		Unstable	
Lab. Supervisor Signature				Comments CATEGORY: A			
				Actions to be Taken			

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND84L070454			D533 / M6 propellant		
Date of analysis:			Date: 4 MAY 2012		
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml		Solvent ACN	
Standards (ERG-006)			Sample #		
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.867	83.7	400.6	0.479
2,4-DNDPA	50.0	3.338	1156.5	0	0.000
2,2' DNDPA	50.0	5.017	5373.7	23342	0.000
2,4' DNDPA	50.0	7.147	1263.8	0	0.000
4NDPA	50.0	8.595	2061.4	48.3	0.002
2NDPA	50.0	9.687	3694.9	94.1	0.003
DPA	200.0	11.119	7683.7	721.2	0.038
N-NitrosoDPA	75.0	11.99	2133.1		0.000
				0.521	
Avg. % Stabilizer for Lot				0.521	
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst Takisha Dickerson			Avg. Tot. Stabilizers 0.52 %		
Analyst Signature			Stable YES		Unstable
			Comments CATEGORY: A		
Lab. Supervisor Signature					
			Actions to be Taken		

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND84G070326				D533 / M6 propellant					
Date of analysis:				Date: 3 MAY 2012					
Other Information M6 Propellant			Sample Data #1 0.50 g 100 ml			Solvent ACN			
Standards (ERG-006)				Sample #					
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %				
4,4' DNDPA	50.0	0.867	104.4	324.4	0.311				
2,4-DNDPA	50.0	3.335	1105.6	0	0.000				
2,2' DNDPA	50.0	5.007	4986.7	23068	0.000				
2,4' DNDPA	50.0	7.137	1206.9	0	0.000				
4NDPA	50.0	8.593	1969.2	87.1	0.004				
2NDPA	50.0	9.688	3527.8	151.4	0.004				
DPA	200.0	11.153	7041.6	785.8	0.045				
N-NitrosoDPA	75.0	11.897	1704.5		0.000				
				0.364					
Avg. % Stabilizer for Lot				0.364					
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D									
Analyst Takisha Dickerson				Avg. Tot. Stabilizers 0.36 %					
Analyst Signature				Stable		YES		Unstable	
				Comments					
Lab. Supervisor Signature									
				Actions to be Taken					

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND83F070274				D533 / M6 propellant	
Date of analysis:				Date: 27 JULY 2011	
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml		Solvent ACN	
Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.694	112.8	622.1	0.552
2,4-DNDPA	50.0	3.477	942.8	0	0.000
2,2' DNDPA	50.0	5.339	77.4	22209	0.000
2,4' DNDPA	50.0	7.842	1020.3	0	0.000
4NDPA	50.0	9.392	1634.2	48.5	0.003
2NDPA	50.0	10.693	2956.2	98.3	0.003
DPA	200.0	12.201	5630.5	451.4	0.032
N-NitrosoDPA	75.0	13.103	1385.2	0	0.000
				0.590	
Avg. % Stabilizer for Lot				0.590	
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst Takisha Dickerson				Avg. Tot. Stabilizers 0.59 %	
Analyst Signature				Stable YES Unstable	
Lab. Supervisor Signature				Comments CATEGORY: A	
				Actions to be Taken	

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND82D070110				D533 / M6 propellant			
Date of analysis:				Date: 27 JULY 2011			
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml			Solvent ACN		
Standards (ERG-006)				Sample #			
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %		
4,4' DNDPA	50.0	0.694	112.8	437.7	0.388		
2,4-DNDPA	50.0	3.477	942.8	0	0.000		
2,2' DNDPA	50.0	5.339	77.4	22925	0.000		
2,4' DNDPA	50.0	7.842	1020.3	0	0.000		
4NDPA	50.0	9.392	1634.2	119.1	0.007		
2NDPA	50.0	10.693	2956.2	134.9	0.005		
DPA	200.0	12.201	5630.5	218.4	0.016		
N-NitrosoDPA	75.0	13.103	1385.2	0	0.000		
				0.415			
Avg. % Stabilizer for Lot				0.415			
0.30% or more is Stability Code A 0.20% - 0.29% is Stability Code C Less than 0.20% is Stability Code D							
Analyst Mike Kile				Avg. Tot. Stabilizers 0.42 %			
Analyst Signature				Stable YES		Unstable	
Lab. Supervisor Signature				Comments CATEGORY: A			
				Actions to be Taken			

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND82J070172				D533 / M6 propellant			
Date of analysis:				Date: 15 July 2011			
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml			Solvent ACN		
Standards (ERG-006)				Sample #			
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %		
4,4' DNDPA	50.0	0.698	60	276.3	0.461		
2,4-DNDPA	50.0	3.469	1060.3	0	0.000		
2,2' DNDPA	50.0	5.327	112.7	25324	0.000		
2,4' DNDPA	50.0	7.82	1131.9	0	0.000		
4NDPA	50.0	9.358	1817.5	137.4	0.008		
2NDPA	50.0	10.643	3250	121.1	0.004		
DPA	200.0	12.15	6225.1	406.2	0.026		
N-NitrosoDPA	75.0	13.037	1551.7	0	0.000		
					0.498		
Avg. % Stabilizer for Lot					0.498		
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D							
Analyst Mike Kile				Avg. Tot. Stabilizers 0.50%			
Analyst Signature				Stable YES		Unstable	
Lab. Supervisor Signature				Comments CATEGORY: A			
				Actions to be Taken			

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND81G070061			D533 / M6 propellant		
Date of analysis:			Date: 12 JULY 2011		
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml		Solvent ACN	
Standards (ERG-006)			Sample #		
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.71	111	358.1	0.323
2,4-DNDPA	50.0	3.475	1001	79.1	0.008
2,2' DNDPA	50.0	5.325	95	18335	0.000
2,4' DNDPA	50.0	7.791	1061.3	83.2	0.008
4NDPA	50.0	9.345	1700.8	167.7	0.010
2NDPA	50.0	10.629	3041.2	330.5	0.011
DPA	200.0	12.152	5943.4	913.3	0.061
N-NitrosoDPA	75.0	13.034	1443.1	111.8	0.000
				0.421	
Avg. % Stabilizer for Lot				0.421	
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst Mike Kile			Avg. Tot. Stabilizers 0.42 %		
Analyst Signature			Stable YES		Unstable
			Comments		
Lab. Supervisor Signature			Actions to be Taken		

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND83M070322				D533 / M6 propellant			
Date of analysis:				Date: 12 APR 2012			
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml			Solvent ACN		
Standards (ERG-006)				Sample #			
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %		
4,4' DNDPA	50.0	0.882	28.4	566.5	1.995		
2,4-DNDPA	50.0	3.244	978.3	0	0.000		
2,2' DNDPA	50.0	4.803	3426.7	22442	0.000		
2,4' DNDPA	50.0	6.74	1061.1	499.4	0.047		
4NDPA	50.0	8.012	1726.9	66.2	0.004		
2NDPA	50.0	9.091	3662.4	113.4	0.003		
DPA	200.0	10.394	6185.4	978.3	0.063		
N-NitrosoDPA	75.0	10.968	1530.7	0	0.000		
				2.112			
Avg. % Stabilizer for Lot				2.112			
0.30% or more is Stability Code A 0.20% - 0.29% is Stability Code C Less than 0.20% is Stability Code D							
Analyst Kisha Dickerson				Avg. Tot. Stabilizers 2.11 %			
Analyst Signature				Stable YES		Unstable	
Lab. Supervisor Signature				Comments CATEGORY: A			
				Actions to be Taken			

CONTAINS HAZARDOUS MATERIALS

STRAIGHT BILL OF LADING

NOT NEGOTIABLE

Load 47

RECEIVED, subject to the classification and tariffs in effect on the date of the issue of this Original Bill of Lading. The property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown) consigned, and destined as indicated below, which said carrier (the word carrier being understood throughout this contract meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery of said destination. It on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service lobe performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading Set forth (1) in Uniform Freight Classification in effect on the date hereof, if this is a rail or rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment.

Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation of this shipment, and the sold terms and conditions are hereby agreed to by the shipper and accept for himself and his assigns.

Shipper: Expro Systems, Inc. 1600 Java Road Minden, LA 71055
Shipper's No. 2904
Shipping Date 4-5-13
Purchase Order No.
By RROK Freight Charges: Collect Prepaid X Location No. 2472

(Mail or Street Address of Consignee - For purposes of notification only)
Consigned to Austin Powder Co
Destination 7-LL-10 BARRON LA State LA Exp. Date 5/1/15
County East Cameron AR Customer No.
Route
Charge Account of 1-870-574-8500 Customer P.O. No. Rel. No.

Table with columns: SHIPPED No. of PKGS, SHIPPED No. of UNITS, PROPER SHIPPING NAME AND HAZARD CLASS, RETURNED No. of PKGS, RETURNED No. of UNITS, EMERGENCY RESPONSE PROCEDURE GUIDE NO., EXEMPTION 'DOT-E', H M, Placards Applied to Railcar or Motor Vehicle. Includes handwritten entries for UN0161, Powder, Smokeless, 1.3C, PG II and a RECEIVED stamp from Austin Powder Company dated APR - 5 2013.

This is to certify that the above-named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation, according to the applicable regulations of the Department of Transportation.

Signature [Handwritten] Invoice No. [Handwritten]

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT CALL CHEMTREC - DAY OR NIGHT IN THE USA CALL 800-424-9300 IN CANADA (ERP #2-0040) 800-561-3636 ELSEWHERE CALL (703) 527-3887

Permanent Address of Shipper: Expro Systems, Inc. 1600 Java Road Minden, Louisiana 71055 (318) 382-8700

I have been offered placards identifying the shipment as Specified in 49CFR Subpart F of Part 172. I have received the above goods in apparent good order and condition.

Received By [Handwritten] Date 4-5-13
[] CONSIGNEE [] CARRIER

DOT Hazardous Material Handling Number
Local Federal Explosives License No. 5-LA-119-20-1A-00057
By [Handwritten] Date
AUTHORIZED RECEIVER

(Shipper) Agent must detach and retain this Shipping Order

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND82E070114			D533 / M6 propellant		
Date of analysis:			Date: 22 NOV 2011		
Other Information M6 Propellant		Sample Data #1		Solvent 100 ml ACN	
Standards (ERG-006)			Sample #		
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.753	205.4	623.3	0.303
2,4-DNDPA	50.0	3.383	927.4	0	0.000
2,2' DNDPA	50.0	5.127	481.8	21922	0.000
2,4' DNDPA	50.0	7.38	1001.4	0	0.000
4NDPA	50.0	8.893	1609.3	58.6	0.004
2NDPA	50.0	10.053	2886.9	118	0.004
DPA	200.0	11.586	5621.7	791.2	0.056
N-NitrosoDPA	75.0	12.383	1361.9	0	0.000
0.367					
Avg. % Stabilizer for Lot					0.367
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst TAKISHA DICKERSON			Avg. Tot. Stabilizers 0.37%		
Analyst Signature			Stable YES		Unstable
Lab. Supervisor Signature			Comments CATEGORY: A		
Actions to be Taken					

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND80M070011			D533 / M6 propellant		
Date of analysis:			Date: 22 March 2012		
Other Information M6 Propellant		Sample Data #1		0.50 g	100 ml
				Solvent ACN	
Standards (ERG-006)			Sample #		
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.897	14.6	40.4	0.277
2,4-DNDPA	50.0	3.327	870.9	0	0.000
2,2' DNDPA	50.0	5.054	688.7	29012	0.000
2,4' DNDPA	50.0	7.295	945.9	0	0.000
4NDPA	50.0	8.792	1528.5	144	0.009
2NDPA	50.0	10.019	2755.3	103.4	0.004
DPA	200.0	11.357	5392.9	588.9	0.044
N-NitrosoDPA	75.0	12.286	1332.2	0	0.000
				0.334	
Avg. % Stabilizer for Lot				0.334	
0.30% or more is Stability Code A 0.20% - 0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst Takisha Dickerson			Avg. Tot. Stabilizers 0.33 %		
Analyst Signature			Stable YES		Unstable
			Comments CATEGORY: A		
Lab. Supervisor Signature					
			Actions to be Taken		

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND83C070235

D533 / M6 propellant

Date of analysis:

Date: 27 JULY 2011

Other Information
M6 Propellant

Sample Data

#1

0.50 g

100 ml

Solvent

ACN

Standards (ERG-006)

Sample #

Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.694	112.8	396	0.351
2,4-DNDPA	50.0	3.477	942.8	35.1	0.004
2,2' DNDPA	50.0	5.339	77.4	22444	0.000
2,4' DNDPA	50.0	7.842	1020.3	32.9	0.003
4NDPA	50.0	9.392	1634.2	231.7	0.014
2NDPA	50.0	10.693	2956.2	221.1	0.007
DPA	200.0	12.201	5630.5	417	0.030
N-NitrosoDPA	75.0	13.103	1385.2	0	0.000

0.409

Avg. % Stabilizer for Lot

0.409

0.30% or more is Stability Code A

0.20% -0.29% is Stability Code C

Less than 0.20% is Stability Code D

Analyst Mike Kile

Avg. Tot. Stabilizers **0.41 %**

Analyst Signature

Stable YES | **Unstable**

Lab. Supervisor Signature

Comments

CATEGORY: A

Actions to be Taken

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND82L070178			D533 / M6 propellant		
Date of analysis:			Date: 27 JULY 2011		
Other Information M6 Propellant	Sample Data		Solvent		
	#1	0.50 g	100 ml	ACN	
Standards (ERG-006)			Sample #		
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.694	112.8	398.2	0.353
2,4-DNDPA	50.0	3.477	942.8	0	0.000
2,2' DNDPA	50.0	5.339	77.4	23169	0.000
2,4' DNDPA	50.0	7.842	1020.3	0	0.000
4NDPA	50.0	9.392	1634.2	111.1	0.007
2NDPA	50.0	10.693	2956.2	63.3	0.002
DPA	200.0	12.201	5630.5	349.6	0.025
N-NitrosoDPA	75.0	13.103	1385.2	0	0.000
					0.387
Avg. % Stabilizer for Lot					0.387
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst Takisha Dickerson			Avg. Tot. Stabilizers 0.39 %		
Analyst Signature			Stable YES Unstable		
Lab. Supervisor Signature			Comments CATEGORY: A		
Actions to be Taken					

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND82J070172

D533 / M6 propellant

Date of analysis:

Date: 15 July 2011

Other Information
M6 Propellant

Sample Data

#1

0.50 g

100 ml

Solvent

ACN

Standards (ERG-006)

Sample #

Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.698	60	276.3	0.461
2,4-DNDPA	50.0	3.469	1060.3	0	0.000
2,2' DNDPA	50.0	5.327	112.7	25324	0.000
2,4' DNDPA	50.0	7.82	1131.9	0	0.000
4NDPA	50.0	9.358	1817.5	137.4	0.008
2NDPA	50.0	10.643	3250	121.1	0.004
DPA	200.0	12.15	6225.1	406.2	0.026
N-NitrosoDPA	75.0	13.037	1551.7	0	0.000

0.498

Avg. % Stabilizer for Lot

0.498

0.30% or more is Stability Code A
0.20% - 0.29% is Stability Code C
Less than 0.20% is Stability Code D

Analyst Mike Kile

Avg. Tot. Stabilizers 0.50%

Analyst Signature

Stable YES | **Unstable**

Lab. Supervisor Signature

Comments

CATEGORY: A

Actions to be Taken

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND82D070113			D533 / M6 propellant		
Date of analysis:			Date: 6 JAN 2012		
Other Information M6 Propellant	Sample Data		Solvent		
	#1	0.50 g	100 ml	ACN	
Standards (ERG-006)			Sample #		
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.65	119.1	328.4	0.276
2,4-DNDPA	50.0	3.304	1019.8	16	0.002
2,2' DNDPA	50.0	4.943	1734.6	21955	0.000
2,4' DNDPA	50.0	7.018	1103.9	0	0.000
4NDPA	50.0	8.439	1782.5	66.8	0.004
2NDPA	50.0	9.513	3182.1	143.1	0.004
DPA	200.0	10.956	6219.8	790.9	0.051
N-NitrosoDPA	75.0	11.669	1532.4	0	0.000
				0.336	
Avg. % Stabilizer for Lot				0.336	
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst	TAKISHA DICKERSON			Avg. Tot. Stabilizers	0.34 %
Analyst Signature				Stable	YES Unstable
Lab. Supervisor Signature				Comments	
				CATEGORY: A	
				Actions to be Taken	

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND82H070167			D533 / M6 propellant		
Date of analysis:			Date: 6 JAN 2012		
Other Information M6 Propellant		Sample Data #1		0.50 g	100 ml
				Solvent ACN	
Standards (ERG-006)			Sample #		
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.65	119.1	308.2	0.259
2,4-DNDPA	50.0	3.304	1019.8	0	0.000
2,2' DNDPA	50.0	4.943	1734.6	23824	0.000
2,4' DNDPA	50.0	7.018	1103.9	404.1	0.037
4NDPA	50.0	8.439	1782.5	50.5	0.003
2NDPA	50.0	9.513	3182.1	79.6	0.003
DPA	200.0	10.956	6219.8	750.3	0.048
N-NitrosoDPA	75.0	11.669	1532.4	0	0.000
				0.349	
Avg. % Stabilizer for Lot				0.349	
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst TAKISHA DICKERSON			Avg. Tot. Stabilizers 0.35 %		
Analyst Signature			Stable YES		Unstable
Lab. Supervisor Signature			Comments CATEGORY: A		
			Actions to be Taken		

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND83F070278		D533 / M6 propellant	
Date of analysis:		Date: 17 Feb 2012	
Other Information M6 Propellant	Sample Data #1	0.50 g	100 ml Solvent ACN
Standards (ERG-006)		Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1
4,4' DNDPA	50.0	0.869	12.6
2,4-DNDPA	50.0	3.42	880.6
2,2' DNDPA	50.0	5.218	1402
2,4' DNDPA	50.0	7.58	948.7
4NDPA	50.0	9.121	1531.3
2NDPA	50.0	10.346	2749.6
DPA	200.0	11.875	5397.5
N-NitrosoDPA	75.0	12.713	1315.5
		0.631	
Avg. % Stabilizer for Lot		0.631	
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D			
Analyst	Takisha Dickerson	Avg. Tot. Stabilizers	0.63 %
Analyst Signature		Stable	YES Unstable
Lab. Supervisor Signature		Comments	
		CATEGORY: A	
Actions to be Taken			

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND84A070323			D533 / M6 propellant		
Date of analysis:			Date: 21 DEC 2011		
Other Information M6 Propellant	Sample Data #1		0.50 g	100 ml	Solvent ACN
Standards (ERG-006)			Sample #		
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.67	192.9	675.2	0.350
2,4-DNDPA	50.0	3.298	1077.6	0	0.000
2,2' DNDPA	50.0	4.953	951.5	22469	0.000
2,4' DNDPA	50.0	6.749	1136.2	0	0.000
4NDPA	50.0	8.218	1880.4	46.5	0.002
2NDPA	50.0	9.339	3292.9	89.5	0.003
DPA	200.0	10.48	6310.2	733.6	0.047
N-NitrosoDPA	75.0	11.073	1512.2	0	0.000
				0.402	
Avg. % Stabilizer for Lot				0.402	
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst	TAKISHA DICKERSON			Avg. Tot. Stabilizers	0.40 %
Analyst Signature				Stable	YES Unstable
Lab. Supervisor Signature				Comments	
				CATEGORY: A	
Actions to be Taken					

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND80M070009			D533 / M6 propellant		
Date of analysis:			Date: 15 DEC 2011		
Other Information M6 Propellant		Sample Data #1		0.50 g	100 ml
				Solvent ACN	
Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.716	89	477.7	0.537
2,4-DNDPA	50.0	3.354	989.9	0	0.000
2,2' DNDPA	50.0	5.056	1008.9	22956	0.000
2,4' DNDPA	50.0	7.222	1069.8	0	0.000
4NDPA	50.0	8.691	1720.4	60.2	0.003
2NDPA	50.0	9.777	3086.9	111.1	0.004
DPA	200.0	11.201	6051.5	801.6	0.053
N-NitrosoDPA	75.0	11.884	1475.1	0	0.000
				0.597	
Avg. % Stabilizer for Lot				0.597	
0.30% or more is Stability Code A 0.20% - 0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst TAKISHA DICKERSON			Avg. Tot. Stabilizers 0.60 %		
Analyst Signature			Stable YES		Unstable
Lab. Supervisor Signature			Comments CATEGORY: A		
			Actions to be Taken		

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND82KY70175			D533 / M6 propellant		
Date of analysis:			Date: 15 AUG 2011		
Other Information M6 Propellant	Sample Data #1		0.50 g	100 ml	Solvent ACN
Standards (ERG-006)			Sample #		
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.632	30.4	268.1	0.882
2,4-DNDPA	50.0	3.486	989.6	31.1	0.003
2,2' DNDPA	50.0	5.334	1082	23256	0.000
2,4' DNDPA	50.0	7.805	1069.6	0	0.000
4NDPA	50.0	9.35	1646.5	172	0.010
2NDPA	50.0	10.653	3039.9	180.3	0.006
DPA	200.0	12.156	5602.1	257.6	0.018
N-NitrosoDPA	75.0	13.045	1424.8	0	0.000
				0.920	
Avg. % Stabilizer for Lot				0.920	
0.30% or more is Stability Code A 0.20% -0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst	MIKE KILE		Avg. Tot. Stabilizers		0.92 %
Analyst Signature			Stable	YES	Unstable
Lab. Supervisor Signature			Comments		
			CATEGORY: A		
			Actions to be Taken		

HPLC PROPELLANT STABILITY REPORT

Lot Number: IND83M070322			D533 / M6 propellant		
Date of analysis:			Date: 12 APR 2012		
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml		Solvent ACN	
Standards (ERG-006)			Sample #		
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4,4' DNDPA	50.0	0.882	28.4	566.5	1.995
2,4-DNDPA	50.0	3.244	978.3	0	0.000
2,2' DNDPA	50.0	4.803	3426.7	22442	0.000
2,4' DNDPA	50.0	6.74	1061.1	499.4	0.047
4NDPA	50.0	8.012	1726.9	66.2	0.004
2NDPA	50.0	9.091	3662.4	113.4	0.003
DPA	200.0	10.394	6185.4	978.3	0.063
N-NitrosoDPA	75.0	10.968	1530.7	0	0.000
				2.112	
Avg. % Stabilizer for Lot				2.112	
0.30% or more is Stability Code A 0.20% - 0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst Kisha Dickerson			Avg. Tot. Stabilizers 2.11 %		
Analyst Signature			Stable YES		Unstable
Lab. Supervisor Signature			Comments CATEGORY: A		
			Actions to be Taken		

Fw: Discussion with Dave Smith
Keith Mills to: Thomas Ethridge

03/06/2013 01:34 PM

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

----- Forwarded by Keith Mills/RDN/Austin on 03/06/2013 01:34 PM -----

From: Keith Mills/RDN/Austin
To: Dave True/Cle/Austin@Austin
Cc: Craig Bauman/Cle/Austin@Austin
Date: 03/06/2013 01:23 PM
Subject: Discussion with Dave Smith

Dave,

Here are the highlights of the discussion this morning with Dave Smith:

- Needs to move 2.0 million lbs of M6 from Minden ASAP.
- Will pay costs for 1.5 million lbs of storage at Plattsburg, NY. This will be reserved and available for APC to store incoming energetic materials. Magazines will be available late April to early May.
- Explo to retain ownership of the M6 stored by APC.
- Explo to supply two employees to assist unloading at EC.
- APC to inform Explo what containers is most efficient for storage (Drums, super sacks, 50 lb Boxes). All will be DOT approved containers.
- Explo to start shipping 80k to 100k pounds per week to their customers from EC. This inventory will not be replaced at EC and start to free up magazine space. In theory that would mean in 30 weeks we should be out of the M6 storage business...
- Explo to assist with explanation to Highland as to exact status and stability of the M6 product.
- Targeting week of 3-11-2013 to start shipments to and from EC.
- Also discussed Lone Star storage at Tex-Arkana. He stated they are fine with storing the M6 material (the personnel there have munitions backgrounds and understand M6 propellant) and that they would easily lease magazines to APC if we desired. They were not sure of Explo's longevity and did not want to get stuck with the material.

This all contingent upon you and I agreeing to move forward.

We also reviewed incoming shipments for 2013 and discussed all current open orders status with Explo.

We agreed to meet at RD every 4 to 6 weeks to review all of the above. Next meeting is set for the week of April 15th.

Dave openly discussed Explo's current relationship with ATF and felt that wasn't an ongoing issue. LSP has been the main enforcement agency they have been dealing with (this confirms everything we have been hearing).

Let's discuss when you get a free moment or let me know if you are OK with the above items and we will proceed. I am getting in touch with Thomas to discuss also.

Thanks

Keith Mills**Director of Manufacturing**

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

Fw: Next ship coming from Europe
Keith Mills to: Thomas Ethridge

04/17/2013 08:05 AM

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

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----- Forwarded by Keith Mills/RDN/Austin on 04/17/2013 08:05 AM -----

From: Craig Bauman/Cle/Austin
To: Keith Mills/RDN/Austin@Austin
Date: 04/11/2013 02:43 PM
Subject: Re: Next ship coming from Europe

Keith,

First ship - Explo - Paramount - ETA May 1-3

TNT	200 MT
Torpex	200 MT

Per Dave Smith this needs to be flaked which they can start on receipt at a rate of 50,000 lbs/week.

Second ship - Ampol/STV - Ridgeway - ETA June 3-7

Ampol	Comp B	95.2	MT
	TNT	31.68	MT
	A-5	64.	MT
STV	Hexotol (50/50)	171.41	MT
	Comp B (55/45)	28.56	MT
	TGAF-5 (Hexotonal)	36.5	MT
	Hexogen	58.93	MT

Next ship - Explo - Paramount - ETA June 10

Total approx 750 MT including Comp B, Torpex and some TNT. Spoke with Dave Smith today and he will send me an updated list hopefully tomorrow.

He also mentioned TNT from Korea - 500 MT Mil-spec. There are some freight questions here into the west coast.

Please call me when you get a chance.

Thanks.
Craig

Keith Mills Good morning Craig, Could you provide me a lis...

04/11/2013 08:15:36 AM

Keith Mills/RDN/Austin

04/11/2013 08:15 AM

To Craig Bauman/Cle/Austin@Austin

cc

Subject Next ship coming from Europe

Good morning Craig,

Could you provide me a listing of what energetic materials and quantities we are expecting to get on the first and second ships coming in from Europe.

Thanks

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

Re: m-6 shipment 
Keith Mills to: Thomas Ethridge

04/26/2013 03:18 PM

Got it! Thanks for the update. I'll rattle Dave Smith's cage early next week.

Have a good weekend.

Keith Mills

Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

Thomas Ethridge Keith Just wanted to keep you in the loop. No w...

04/26/2013 03:16:02 PM

From: Thomas Ethridge/Mfg/Austin
To: Keith Mills/RDN/Austin@Austin
Date: 04/26/2013 03:16 PM
Subject: m-6 shipment

Keith

Just wanted to keep you in the loop. No word from Explo on shipping the M-6 yet.

Thomas Ethridge, Plant Manager
Austin Powder Company
East Camden, Arkansas
870-574-0580 (Voice)
870-574-2060 (Fax)

Fw: Explo Indictments

Keith Mills To: Thomas Ethridge
Cc: Nick Rupert

06/12/2013 02:17 PM

Had good conversation with James Nixon. He had seen the articles also. He is understanding of the situation and simply wants to be kept in the communication loop. I did discuss with him any additional space at EC. He stated there wasn't currently but if something became available we would be at the top of the list.

Keith Mills

Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com
----- Forwarded by Keith Mills/RDN/Austin on 06/12/2013 02:15 PM -----

From: Keith Mills/RDN/Austin
To: Nick Rupert/RDN/Mfg/Austin@Austin, Thomas Ethridge/Mfg/Austin@Austin
Date: 06/12/2013 01:44 PM
Subject: Fw: Explo Indictments

FYI, proverbial "other shoe" has dropped. I will contact James Nixon yet today.

Keith Mills

Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com
----- Forwarded by Keith Mills/RDN/Austin on 06/12/2013 01:44 PM -----

From: John Capers/RDN/Mfg/Austin
To: Keith Mills/RDN/Austin@Austin, Dave True/Cle/Austin@Austin
Date: 06/12/2013 01:33 PM
Subject: Explo Indictments

In case you have not seen.....

<http://www.foxnews.com/us/2013/06/10/louisiana-company-employees-indicted-in-explosives-case/?test=latestnews>

John

Fw: Highland
Keith Mills to: Thomas Ethridge, EastCamdenAR

07/25/2013 10:31 AM

Thomas and Monica,

Received this communication from James Nixon this morning. Please insure we are prepared for an ATF visit related to the storage of M6 propellant. Magazines, records, etc...

Thanks,
Keith

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

----- Forwarded by Keith Mills/RDN/Austin on 07/25/2013 10:25 AM -----

From: James Nixon <jnixon@highlandinc.net>
To: <Keith.Mills@austinpowder.com>
Date: 07/25/2013 09:22 AM
Subject: Highland

Morning Keith:

ATF called me This past Tuesday July 23, 2013. They have just realized that you are storing M-6 propellant in your leased magazines here at Highland. The New Orleans ATF office is supposed to ask the Little Rock ATF office to make contact with someone at Austin and inspect the magazines and material. I believe they received the same findings letter I submitted to you regarding the products potential instability.

I am sorry I did not call you right away no excuse I just got busy and forgot. Call me if you need to discuss my cell phone number is (870) 833-2007.

Regards,

James Nixon

Re: ISO 
Keith Mills to: Terry Wright

09/11/2013 03:46 PM

Terry,

Thanks. It is appreciated.

Keith

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

Terry Wright

Keith:

09/11/2013 01:59:18 PM

From: Terry Wright <terrywright@explosystems.com>
To: <Keith.Mills@austinpowder.com>
Date: 09/11/2013 01:59 PM
Subject: ISO

Keith:

Dave asked me to send you information on Certification. Call 1 877 368 3530 and ask for the Northern District. DNV is the name of the company we used. If you need any further assistance please don't hesitate to call.

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

Fw: M6 & Emulsion Product Letter and Process Flow Diagram

Keith Mills to: Terry Wright

07/10/2013 11:31 AM

Cc: Tom Justice

Bcc: Dave True, Dennis.Schultz

Terry,

I understand you had contacted Tom this morning to see how we are progressing with the M6/Emulsion project. I thought it best for me to respond. As I indicated in the attached schedule I sent to David Smith we need to understand when Explo's regulatory issues have been cleared before we start the APC internal approval process and any additional work on this project. As I'm sure you understand, with limited resources at Red Diamond we have many other ongoing projects (including the PETN plant). So we cannot proceed further until we have a good understanding that Explo will be able to move forward pending the current regulatory issues at Minden. I have not gotten any feedback from David Smith since I sent the schedule. I hope the discussions with the State of Louisiana went well.

Thanks,
Keith

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

----- Forwarded by Keith Mills/RDN/Austin on 07/10/2013 11:15 AM -----

From: Keith Mills/RDN/Austin
To: <davidalansmith@bellsouth.net>
Cc: Tom Justice/RDN/Mfg/Austin@Austin
Date: 06/24/2013 08:29 AM
Subject: Re: M6 & Emulsion Product Letter and Process Flow Diagram

David,

Here is the requested project schedule and time line. It is not date specific as it starts the clock ticking once all regulatory issues are cleared and the final project approval.



Propellant& Emulsion Blend Sched 6-24-2013.pdf

Thanks

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

That is probably very realistic. We can provide s...

06/20/2013 04:46:14 PM

From: <davidalansmith@bellsouth.net>
To: Keith Mills <keith.mills@austinpowder.com>
Date: 06/20/2013 04:46 PM
Subject: Re: M6 & Emulsion Product Letter and Process Flow Diagram

That is probably very realistic. We can provide services of an AutoCad engineer if that will help from the resources side.

Thanks

Dave

-----Original Message-----

From: <Keith.Mills@austinpowder.com>

Date: Thu, 20 Jun 2013 16:40:55

To: David Smith<davidalansmith@bellsouth.net>

Subject: RE: M6 & Emulsion Product Letter and Process Flow Diagram

David,

This activity will shift from Denny's group (product engineering) to Tom Justice's team (manufacturing engineering). I will discuss with Tom tomorrow morning. With that being said I want to say that with Red Diamond's current projects and resource requirements this will have to fall in line with three or four other major projects all ready in process. Therefore the time line will certainly be conservative versus aggressive. Not sure of the image you have in mind from your side. I am believing it to be at least end of the year if not beyond for start up based upon the other ongoing resource demands on our side.

Keith Mills

Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦

Keith.Mills@austinpowder.com

From: David Smith <davidalansmith@bellsouth.net>

To: <Keith.Mills@austinpowder.com>

Date: 06/20/2013 03:36 PM

Subject: RE: M6 & Emulsion Product Letter and Process Flow Diagram

Keith: This looks good. Could you have Denny give us a general time line (CPM) and step by step process (engineering design, fabrication, installation, start- up etc.)

For getting this done. Assume that any building modifications can be done concurrent to equipment fab. Leave out the economic decision as we can do that parallel to the engineering phase.

You can use \$27.50 per man hour on a loaded basis for our labor cost. If we can get this by COB tomorrow it would be a big help.

Thanks,

Dave

-----Original Message-----

From: Keith.Mills@austinpowder.com [mailto:Keith.Mills@austinpowder.com]

Sent: Thursday, June 20, 2013 9:39 AM

To: David Smith

Cc: Dennis.Schulz@austinpowder.com; Dave.True@austinpowder.com

Subject: M6 & Emulsion Product Letter and Process Flow Diagram

David,

Glad to hear your discussions with the officials went well yesterday. As we discussed this morning, please find attached the letter and process flow diagram.

Thanks

(See attached file: M6 Propellant Project.pdf) (See attached file: M6 & Emulsion Process Flow.pdf)

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH
45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦
Keith.Mills@austinpowder.com

Re: Work area 
Keith Mills to: Terry Wright
Cc: Dave True

06/06/2013 10:59 AM

Terry,

Unfortunately we cannot agree to provide a work area for Explo to repackage the M6 propellant at East Camden. Besides potential legal and regulatory issues related to doing this we are filling all of our magazines this week with the incoming materials from the recent ship arriving from Europe. Also as you know, Highland is concerned about having the M6 product stored at our magazines and they are not open to any other handling of that product except for loading it on trucks to ship it out of the industrial park. I have communicated with Highland this week.

Not the answer you were looking for but it is where we are at this point in time.

Thanks,
Keith

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

Terry Wright

Dave and Keith:

06/04/2013 08:41:22 AM

From: Terry Wright <terrywright@explosystems.com>
To: <dave.true@austinpowder.com>, <Keith.Mills@austinpowder.com>
Date: 06/04/2013 08:41 AM
Subject: Work area

Dave and Keith:

We have several customers that require the M6 propellant in WPP shot bags. Is it possible or even feasible to do repack at East Camden? I would bring up the packaging material and bin and laborers. It would take us two days to complete this task. I would only need access to the M6, a place to put the bin and scale and access to a forklift. Your thoughts, and thank you again for all your help.

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

Reflection from yesterday's discussion

Keith Mills To: Terry Wright

03/19/2013 07:50 AM

Cc: davidalansmith, Thomas Ethridge, Nick Rupert

Good morning Terry,

As I was reflecting on our conversation yesterday, I recalled during the visit to Red Diamond by Dave Smith the discussion was two to three loads per day to be off loaded at East Camden. I confirmed with Nick to make sure I was recalling correctly and he stated yes that is what he wrote down also. If the intent is to do more than that then we need to reconsider also. Our vision was not to off load 4, 5, or 6 loads per day. We are also trying to operate our normal business and operations at East Camden. Not sure what commitments were made by Explo to the regulatory agencies but we need to be methodical and deliberate at EC. I will discuss with Thomas today.

Keith

Keith Mills

Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.co

Fw: Emailing: SANY0023.JPG, SANY0020.JPG, SANY0021.JPG

Keith Mills to: Terry Wright

Cc: davidalansmith

03/15/2013 03:26 PM

Terry,

I am forwarding per request from Dave Smith

Thanks

Keith Mills

Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

----- Forwarded by Keith Mills/RDN/Austin on 03/15/2013 03:25 PM -----

From: Keith Mills/RDN/Austin
To: davidalansmith@bellsouth.net
Cc: Thomas Ethridge/Mfg/Austin@Austin
Date: 03/15/2013 10:08 AM
Subject: Fw: Emailing: SANY0023.JPG, SANY0020.JPG, SANY0021.JPG

Dave,

We have issues. Please take a look at the containers we received this week from Minden. This was not what we agreed to. The containers must be legal and in good condition containers. These obviously are not in good shipping condition. Several of them you cannot even read the print on the outside of the container. We are going to need to stop until we get this under control. Please call me when you get a free moment so we can discuss.

Thanks

Keith Mills

Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

----- Forwarded by Keith Mills/RDN/Austin on 03/15/2013 10:03 AM -----

From: Thomas Ethridge/Mfg/Austin
To: Keith Mills/RDN/Austin@Austin
Date: 03/15/2013 09:48 AM
Subject: Emailing: SANY0023.JPG, SANY0020.JPG, SANY0021.JPG

The message is ready to be sent with the following file or link attachments:

SANY0023.JPG

SANY0020.JPG

SANY0021.JPG

Note: To protect against computer viruses, e-mail programs may prevent sending or receiving certain types of file attachments. Check your e-mail security settings to determine how attachments are handled.

Thomas Ethridge, Plant Manager

Austin Powder Company

East Camden, Arkansas
870-574-0580 (Voice)
870-574-2060 (Fax)



- SANY0023.JPG



- SANY0020.JPG



- SANY0021.JPG

Re: EUC 
Keith Mills to: Terry Wright

03/02/2012 11:01 AM

Terry,

Here is the signed EUC as requested.

I am hoping we can actually get a chance to meet in a couple of weeks.



M6 EUC 3-2-12.pdf

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

Terry Wright

Keith:

03/02/2012 10:30:57 AM



Terry Wright
<terrywright@explosystems.com>

To <Keith.Mills@austinpowder.com>

cc

03/02/2012 10:30 AM

Subject EUC

Keith:

Hope all is well. Attached you will find the EUC for the 840 pounds of M6 that was delivered to Camden per Denny's request. Would you sign and return it to me. Thanks

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

[attachment "Scan_Doc0001.pdf" deleted by Keith Mills/RDN/Austin]



END-USE CERTIFICATE

(STATEMENT REGARDING DISPOSITION AND USE OF PROPERTY)

Please complete and return form to *Explo Systems, Inc* within 30 days.

TYPE OR PRINT ALL INFORMATION

The following applies to all property subject to sale using this form: the use, export, or re-export of this property, is subject to the publications, penalties, and other provisions of the economic programs administered by the Office of Foreign Assets Control, U. S. Treasury Department, 31 CFR Chapter V

EUC #APC001

Date: 1 MAR 2012

To: AUSTIN POWDER COMPANY.

Regarding: Final disposition of 840 POUNDS OF M-6 MATERIAL

SECTION I. GENERAL INFORMATION

BUSINESS/CORPORATION HEADQUARTERS:

NAME: AUSTIN POWDER CO

ADDRESS: 430 POWDER PLANT ROAD
McARTHUR, OHIO, 45651

1. TYPE OF FIRM: Explosive Manufacture

SOLE PROPRIETORSHIP PARTNERSHIP **XX** CORPORATION

2. NATURE OF END-USER'S BUSINESS: Commercial Boosters

3. NATURE OF PRINCIPLES BUSINESS: Manufacture

4. FIRM'S ID/FEDERAL TAX NUMBER: 34-00077750

SECTION II. END USE/USER INFORMATION.

1. PURPOSE. THE PROPERTY REFERRED TO ABOVE TO IN ABOVE OFFER WILL BE UTILIZED FOR THE FOLLOWING. Enter an "X" in the appropriate item (a) box below. In case of resale, Item 1 D MUST be marked

A. Retention for the following specific use
To be used in the manufacture of commercial explosive products-Boosters

It is hereby certified that Austin Powder Company will comply with all applicable federal, state and local ordinances and regulations with respect to the care, handling, storage and shipment, resale, export and other use of the material, hereby purchased, and that we as a user of, or dealer in, said materials are capable of complying with all applicable federal, state and local laws. This certification is made in accordance with and subject to the penalties of Title 18, section 1001 of the United States Code, Crimes and Criminal Procedures.

Signature: 

Name: Keith Mills

Title: Director of Manufacture

Re: Plans 
Keith Mills to: terrywright

06/19/2013 10:20 AM

Terry,

We got the package this morning and I have passed along to Tom Justice. Who at your facility should Tom be working with on this project for communication purposes?

Thanks

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

Keith You should receive a Fedex package with...

06/18/2013 09:41:40 AM

From: <terrywright@explosystems.com>
To: <keith.mills@austinpowder.com>
Date: 06/18/2013 09:41 AM
Subject: Plans

Keith

You should receive a Fedex package with drawings of the building we are talking about. I assume we are talking about receiving the emulsion in bulk and not setting up a module?
Sent via BlackBerry by AT&T

Re: PETN 
Keith Mills to: terrywright

06/18/2013 04:08 PM

Terry,

At this time and the foreseeable future, we are in good standing for PETN. With all of the other energetic materials coming in we are tightening the purse strings on items we have sufficient quantities of.

Thank again for sharing the opportunity with us.

Keith

Keith Mills

Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

Keith Several weeks I gave Nick a quote on an a...

06/18/2013 11:32:14 AM

From: <terrywright@explosystems.com>
To: <keith.mills@austinpowder.com>
Date: 06/18/2013 11:32 AM
Subject: PETN

Keith

Several weeks I gave Nick a quote on an alternate PETN source. Any thoughts?
Sent via BlackBerry by AT&T

Re: Plans 
Keith Mills to: terrywright

06/18/2013 09:47 AM

Terry,

Thanks for the information.

We have discussed moving one of the mobile plants to either Minden or APC-EC and getting ansol from EDC to specifically support this project. Once USN comes on line in Greenville we will have mobile plant availability

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

Keith You should receive a Fedex package with...

06/18/2013 09:41:40 AM

From: <terrywright@explosystems.com>
To: <keith.mills@austinpowder.com>
Date: 06/18/2013 09:41 AM
Subject: Plans

Keith

You should receive a Fedex package with drawings of the building we are talking about. I assume we are talking about receiving the emulsion in bulk and not setting up a module?
Sent via BlackBerry by AT&T

Re: Loads
Keith Mills
to:
terrywright
03/16/2013 10:21 AM
Show Details

Thanks Terry. I'll call Monday.

Keith

Keith Mills
Austin Powder Company
Office: 740.596.5286 ext 7412
Cell: 614.569.1783

-----Original Message-----

From: terrywright@explosystems.com
Received: Saturday, 16 Mar 2013, 10:04am
To: Keith.Mills@austinpowder.com
Subject: Re: Loads

Keith

Sorry I didn't get back to you yesterday but I was in the middle of another crisis when all this started. We do appreciate your efforts and Please keep me in the loop in the future so I can address the situation immediately. Give me a call Monday so we can discuss

Terry

Sent via BlackBerry by AT&T

-----Original Message-----

From: <Keith.Mills@austinpowder.com>
Date: Fri, 15 Mar 2013 16:24:55
To: <terrywright@explosystems.com>
Cc: <davidalansmith@bellsouth.net>; <Thomas.Ethridge@austinpowder.com>
Subject: Re: Loads

The concern I have is these drums on the end of the trailer look good. If every drum on that trailer is in that condition that is fine. While I understand, per Dave Smith, there may not be a safety or environmental concern. I am concerned regarding the physical integrity and condition of the legal shipping containers. We cannot even read the DOT cert number on some of the drums. As you know we are already under the microscope with Highland as they are not happy that we are supporting Explo. We do not want to jeopardize that relationship. Nor do we want to not be DOT compliant when shipping these drums back out. Sorting the good, bad, and ugly at East Camden is not an option. What ever trailers are at R&R currently needs to be sorted through before coming into AFC-EC. We also need to get the drums current;y at AFC-EC that is in poor condition removed. Don't get me wrong. We are dedicated to supporting Explo. But we need to make absolutely sure that anything going into our magazines are in good condition and DOT compliant.

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond 430 Powder Plant Road 4 McArthur, OH
45651-0317
Office: 740.596.5286 ext 7412 4 Cell: 614.569.1783 4
Keith.Mills@austinpowder.com
From: <terrywright@explosystems.com>
To: <keith.mills@austinpowder.com>
Date: 03/15/2013 03:45 PM
Subject: Loads
These are ready to ship. Can I wipe those down and make this happen.
Sent via BlackBerry by AT&T(See attached file: IMG-20130315-00054.jpg) (See attached file: IMG-20130315-00053.jpg)

Re: Loads 
Keith Mills to: terrywright
Cc: davidalansmith, Thomas Ethridge

03/15/2013 04:24 PM

The concern I have is these drums on the end of the trailer look good. If every drum on that trailer is in that condition that is fine. While I understand, per Dave Smith, there may not be a safety or environmental concern. I am concerned regarding the physical integrity and condition of the legal shipping containers. We cannot even read the DOT cert number on some of the drums. As you know we are already under the microscope with Highland as they are not happy that we are supporting Explo. We do not want to jeopardize that relationship. Nor do we want to not be DOT compliant when shipping these drums back out. Sorting the good, bad, and ugly at East Camden is not an option. What ever trailers are at R&R currently needs to be sorted through before coming into APC-EC. We also need to get the drums current; at APC-EC that is in poor condition removed.

Don't get me wrong. We are dedicated to supporting Explo. But we need to make absolutely sure that anything going into our magazines are in good condition and DOT compliant.

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

These are ready to ship. Can I wipe those down...

03/15/2013 03:45:17 PM

From: <terrywright@explosystems.com>
To: <keith.mills@austinpowder.com>
Date: 03/15/2013 03:45 PM
Subject: Loads

These are ready to ship. Can I wipe those down and make this happen.



Sent via BlackBerry by AT&T IMG-20130315-00054.jpg IMG-20130315-00053.jpg

Fw: Photo's from Hexogen Report 13-5-22

Keith Mills o David Smith

08/14/2013 08:18 AM

Keith Mills

Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

----- Forwarded by Keith Mills/RDN/Austin on 08/14/2013 08:16 AM -----

From: Mark Fox/RDN/Mfg/Austin
To: Dave True/Cle/Austin@Exchange, Keith Mills/RDN/Austin@Austin
Date: 08/13/2013 08:56 AM
Subject: Photo's from Hexogen Report 13-5-22

Attached are the pictures from the Red Diamond Lab Report# 13-5-22.

Page 1



SANY0054.JPGSANY0055.JPGSANY0056.JPGSANY0058.JPG

Page 2

[attachment "DSCN6535.JPG" deleted by Keith Mills/RDN/Austin] [attachment "DSCN6536.JPG" deleted by Keith Mills/RDN/Austin] [attachment "DSCN6537.JPG" deleted by Keith Mills/RDN/Austin] [attachment "DSCN6541.JPG" deleted by Keith Mills/RDN/Austin]

Page 3

[attachment "DSCN6542.JPG" deleted by Keith Mills/RDN/Austin] [attachment "hexogen fibers 7-24-13.jpg" deleted by Keith Mills/RDN/Austin]

Page 4

[attachment "DSCN6562.JPG" deleted by Keith Mills/RDN/Austin] [attachment "DSCN6567.JPG" deleted by Keith Mills/RDN/Austin] [attachment "DSCN6565.JPG" deleted by Keith Mills/RDN/Austin]

Page 5

[attachment "DSCN6572.JPG" deleted by Keith Mills/RDN/Austin] [attachment "DSCN6573.JPG" deleted by Keith Mills/RDN/Austin]

Page 6

[attachment "DSCN6578.JPG" deleted by Keith Mills/RDN/Austin] [attachment "DSCN6580.JPG" deleted by Keith Mills/RDN/Austin] [attachment "DSCN6577.JPG" deleted by Keith Mills/RDN/Austin] [attachment "DSCN6581.JPG" deleted by Keith Mills/RDN/Austin] [attachment "DSCN6582.JPG" deleted by Keith Mills/RDN/Austin]

Page 7

[attachment "DSCN6586.JPG" deleted by Keith Mills/RDN/Austin]

Re: Explo 

Keith Mills o David Smith

08/14/2013 08:11 AM

Good morning Dave,

I sent an email yesterday morning with pictures only. Unfortunately I got a delivery failure notification last night due to the size of the email. I will breakdown the digital images into a few emails hoping they can get through to you.

Thanks,
Keith

Keith Mills

Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

David Smith

Keith: ISL had problems opening the photos fro...

08/13/2013 07:51:33 AM

From: David Smith <davidasmith@explosystems.com>
To: "<Keith.Mills@austinpowder.com>" <Keith.Mills@austinpowder.com>
Date: 08/13/2013 07:51 AM
Subject: Explo

Keith: ISL had problems opening the photos from your report. Could it be possible to send the photos separate from the report.?

Thanks,

Dave

Sent from my iPad

Fw: Photo's from Hexogen Report 13-5-22

Keith Mills o David Smith

08/13/2013 09:43 AM

Keith Mills

Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

----- Forwarded by Keith Mills/RDN/Austin on 08/13/2013 09:43 AM -----

From: Mark Fox/RDN/Mfg/Austin
To: Dave True/Cle/Austin@Exchange, Keith Mills/RDN/Austin@Austin
Date: 08/13/2013 08:56 AM
Subject: Photo's from Hexogen Report 13-5-22

Attached are the pictures from the Red Diamond Lab Report# 13-5-22.

Page 1



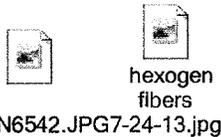
SANY0054.JPGSANY0055.JPGSANY0056.JPGSANY0058.JPG

Page 2



DSCN6535.JPGDSCN6536.JPGDSCN6537.JPGDSCN6541.JPG

Page 3



DSCN6542.JPG7-24-13.jpg

Page 4



DSCN6562.JPGDSCN6567.JPGDSCN6565.JPG

Page 5



DSCN6572.JPGDSCN6573.JPG

Page 6



DSCN6578.JPGDSCN6580.JPGDSCN6577.JPGDSCN6581.JPGDSCN6582.JPG

Page 7



DSCN6586.JPG

Fw: Hexogen received from Explo System in pails.

Keith Mills o David Smith

08/12/2013 03:00 PM

Bcc: Dave True, Craig Bauman

David,

As we discussed earlier today, please find attached the lab report for the recent receipts of Hexogen from ISL. I believe you will understand after reading the report and seeing the pictures of the product in a test kettle that is a 50/50 mix of TNT and the received Hexogen that this material is not usable in our cast booster process. The entire shipment of the Hexogen is on hold and cannot be used. Based on this shipment all RDX based compound shipments from ISL are considered suspect. I will be contacting Bob Belock as he will be in Europe later this week to see if he could possibly inspect the next shipment of product at ISL if that can possibly be arranged by Explo and ISL.

I look forward to talking with you after you have a chance to review this information.

Thanks
Keith

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

----- Forwarded by Keith Mills/RDN/Austin on 08/12/2013 02:38 PM -----

From: Mark Fox/RDN/Mfg/Austin
To: Thomas Ethridge/Mfg/Austin@Austin, Dave True/Cle/Austin@Exchange, Keith Mills/RDN/Austin@Austin, Nick Rupert/RDN/Mfg/Austin@Austin, Mike Thompson/RDN/Austin@Austin, Bob Belock/RDN/Mfg/Austin@Austin
Date: 08/12/2013 02:28 PM
Subject: Hexogen received from Explo System in pails.

Attached please find Red Diamond Lab Report # 13-5-22 for Hexogen, Desensibilert de-milled by Spreewerk Lubben of Germany and imported by Explo Systems. Also attached are analysis of the materials (1,000 lb. bomb and 540 lb.) received from Explo Systems.



Hexogen
13522



081213.pdfScan_Doc0052.pdfScan_Doc0053.pdf

Re: Explo 

Keith Mills  David Smith

08/06/2013 08:16 AM

Dave,

Thanks for the "heads up". I'll await your call tomorrow.

Thanks again,
Keith

Keith Mills

Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

David Smith

Keith: Sorry but going to have to reschedule our...

08/06/2013 08:11:24 AM

From: David Smith <davidalansmith@bellsouth.net>
To: <keith.mills@austinpowder.com>
Date: 08/06/2013 08:11 AM
Subject: Explo

Keith: Sorry but going to have to reschedule our meeting. We had some BATF issues prop up late yesterday that

Will take our full attention today. I will let you know tomorrow morning what I can do as far as timing.

Thanks for your understanding,

Dave

Purpose for today's phone call

Keith Mills o David Smith

07/31/2013 04:08 PM

Bcc: Dave True

David,

Just wanted to touch base with you. I would like to set up an in person meeting so we can have some open discussions. We have numerous activities between our two companies. It is always good to sit down periodically and discuss issues so we have a good understanding of each others thoughts and concerns that can't always be captured in a phone call or email exchange. Is there any opportunity in the near future for you to visit Red Diamond? If not I will arrange to come see you in Kentucky, Minden, or East Camden. Your choice. Please advise.

Thanks,
Keith

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Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

Fw: Revised Letter

Keith Mills o David Smith

06/26/2013 08:33 AM

David,

Please find attached a corrected letter.

Thanks

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

----- Forwarded by Keith Mills/RDN/Austin on 06/26/2013 08:33 AM -----

From: Dennis Schulz/RDN/Austin
To: Keith Mills/RDN/Austin@Austin
Date: 06/26/2013 08:19 AM
Subject: Revised Letter

It appears the math was incorrect.
The correct usage is 2MM to 4MM pounds.
I believe that was the only change requested.

Denny

Dennis Schulz

Austin Powder Company ♦ P.O. Box 317, 430 Powder Plant Rd. ♦ McArthur, OH 45651

Office: 740.596.5286 ♦ Mobile: 740.649.3933 ♦ Dennis.Schulz@austinpowder.com



M6 Propellant Project.pdf

RE: M6 & Emulsion Product Letter and Process Flow Diagram 

Keith Mills to: David Smith

06/25/2013 03:36 PM

David,

Just opened your email. I have been tied up with international visitors all day. The letter was written by Denny. I only have a PDF version. Denny is not here this afternoon. I'll chat with him in the morning.

Thanks

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

David Smith

Keith: In your letter about the market for M6 you...

06/25/2013 09:39:05 AM

From: David Smith <davidalansmith@bellsouth.net>
To: <Keith.Mills@austinpowder.com>
Date: 06/25/2013 09:39 AM
Subject: RE: M6 & Emulsion Product Letter and Process Flow Diagram

Keith: In your letter about the market for M6 you stated 40% propellant and that the market was 5,000,000 to 10,000,000 lbs per year

But the propellant usage was 1.2 to 2.5 million pounds. Should that be 2,000,000 to 4,000,000 lbs. of propellant. If so can get a revised letter?

Would be available to discuss if you like.

We will be submitting this plan to State of Louisiana later today,

Thanks,
Dave

-----Original Message-----

From: Keith.Mills@austinpowder.com [mailto:Keith.Mills@austinpowder.com]
Sent: Thursday, June 20, 2013 9:39 AM
To: David Smith
Cc: Dennis.Schulz@austinpowder.com; Dave.True@austinpowder.com
Subject: M6 & Emulsion Product Letter and Process Flow Diagram

David,

Glad to hear your discussions with the officials went well yesterday. As we discussed this morning, please find attached the letter and process flow diagram.

Thanks

(See attached file: M6 Propellant Project.pdf) (See attached file: M6 & Emulsion Process Flow.pdf)

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH
45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦
Keith.Mills@austinpowder.com

AUSTIN POWDER COMPANY

Red Diamond Laboratory



EXPLOSIVE: Trinitrotoluene (TNT) UN0209

COMPANY NAME: PRVA ISKRA - NAMENSKA PROIZVODNJA A.D. EX-2012091525

Baricka Reka BB Str.
11504 Baric
Belgrade, Serbia
Phone: 381 11 8701 059

Imported by: EXPLO SYSTEMS Inc. Minden, LA Contract #: P116681 for 3,3003,600 Lbs.

REPORT FROM: M. Abele / M. Fox

DATE: 5/10/13

COPIES: K. Mills N. Rupert

LAB FINDINGS:

TNT PACAGING

The TNT's Port of Discharge was at Grande Anse, Canada and delivered by carrier Transport Nordique to Red Diamond by trailers. The TNT was received in fiberboard boxes palletized on wooden pallets that contained thirty (30) cases per pallet. The pallets were loaded two (2) pallets side by side on the trailers. The boxes were arranged five (5) cases high by three (3) cases wide with two (2) rows on the pallets. The boxes were shrink wrapped to the pallet. The pallets are two way loading and have been treated. The pallet loading appeared to be stable; none of the received pallets have been broken apart in transit.

Front of Pallet



Side of Pallet



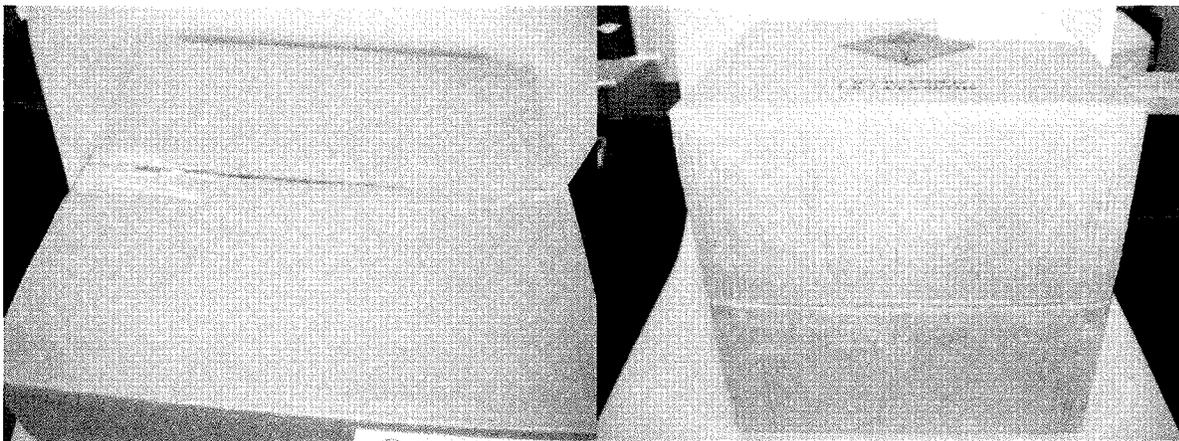
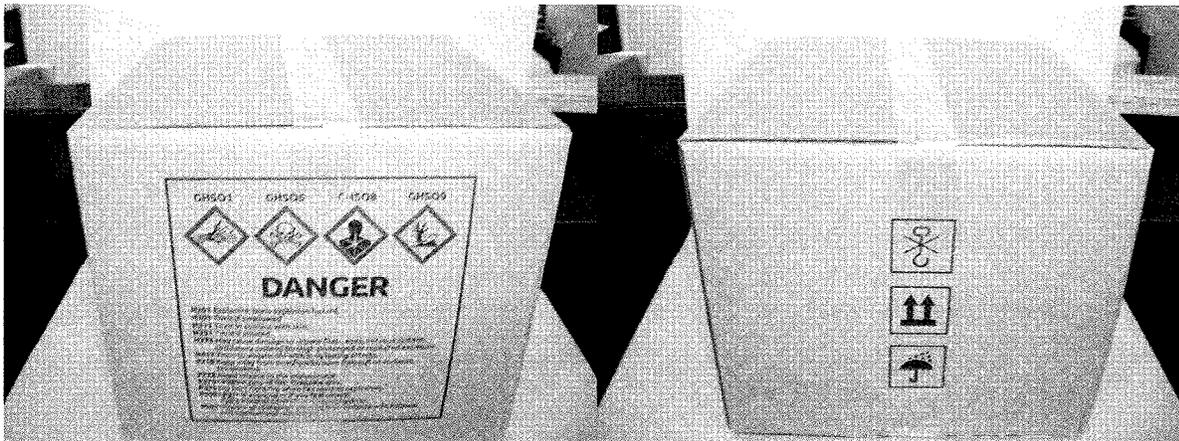
Label on Pallet Load

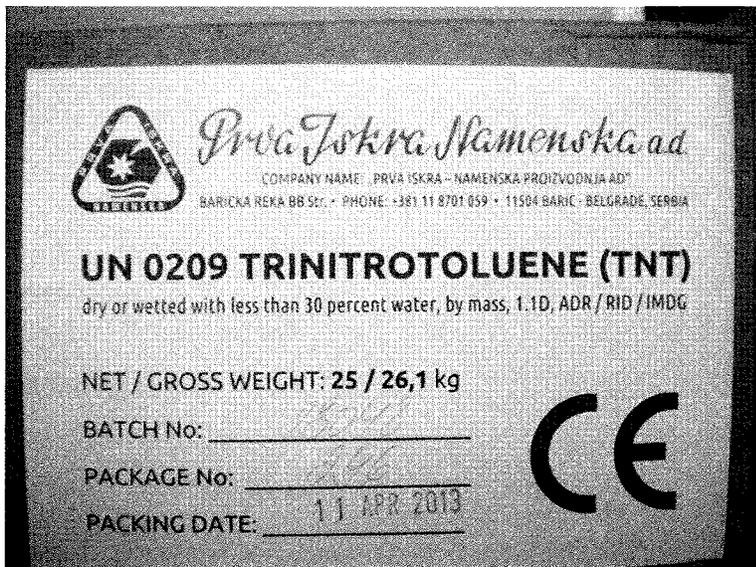
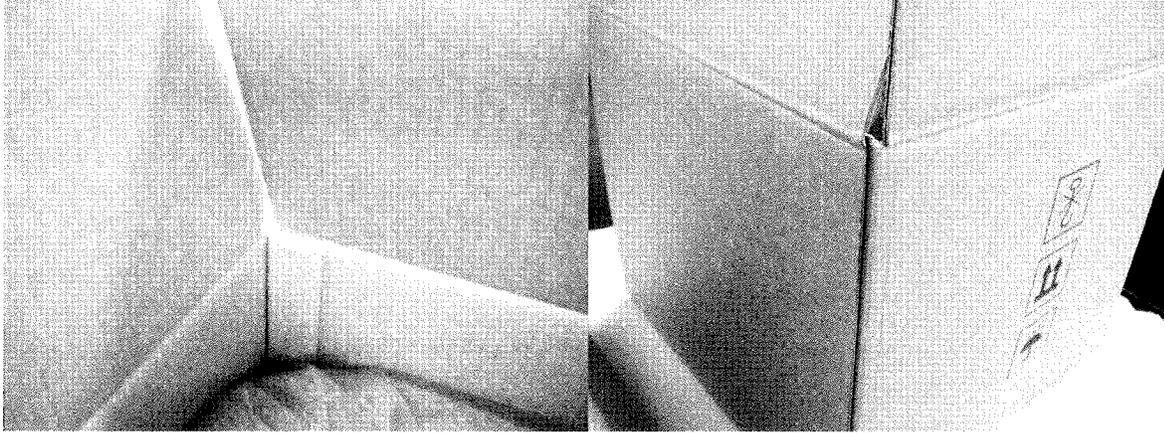


Box Construction and Labeling

The TNT is packaged in a clear 4 mil Polyethylene bag, 25 kg net in cardboard box, according to RID, ADR and IMDG packaging & transport regulations. The box is a one-piece UN approved fiberboard box. The box is glued together on one side edge with a 1 3/4" tab. The box bottom and top flaps of the box are each taped closed with one piece of clear tape (2 mil thick x 1 7/8" wide). The box has one preprinted label that is placed on the box and has the Batch#, Package# and Packing Date. The Batch# and Package# are written on the boxes. The Packing Date is stamped on the box. The rest of the labeling on the box is preprinted on the box. The side of the box opposite the white preprinted label side, the top and bottom of the box are blank. It was noted that the UN 0209 number was printed 6 mm high and should be at least 10 mm high.

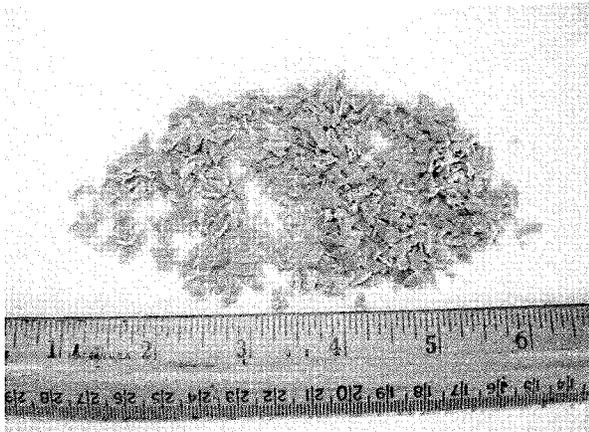
Pictures of TNT Box: All sides of the box are shown in the following.





TNT Analysis:

The TNT is in flaked form, 18 – 23 mil thick and light buff in color.



The following table is the Red Diamond Lab analysis of the TNT from the box in the pictures. The DSC Analysis of this TNT can't be performed at this time. The analysis will be performed upon installation completion of a newly purchased DSC by the manufacturer's technician.

ANALYSIS	Percent %	Manufacturer's Spec.
Moisture	0.05	0.10 Max.
TNT	99.92	-
Acetone Insoluble	0.03	0.05 Max.

The manufacturer's specification for DNT content or a quality control document for the analysis of the DNT content in the TNT has not been obtained but has been requested. The Austin Powder Co. TNT Specification for DNT content is it must not exceed 0.07% in the TNT.

Fw: Photo's from Hexogen Report 13-5-22

Keith Mills o David Smith

08/14/2013 08:18 AM

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

----- Forwarded by Keith Mills/RDN/Austin on 08/14/2013 08:16 AM -----

From: Mark Fox/RDN/Mfg/Austin
To: Dave True/Cle/Austin@Exchange, Keith Mills/RDN/Austin@Austin
Date: 08/13/2013 08:56 AM
Subject: Photo's from Hexogen Report 13-5-22

Attached are the pictures from the Red Diamond Lab Report# 13-5-22.

Page 1



SANY0054.JPGSANY0055.JPGSANY0056.JPGSANY0058.JPG

Page 2

[attachment "DSCN6535.JPG" deleted by Keith Mills/RDN/Austin] [attachment "DSCN6536.JPG" deleted by Keith Mills/RDN/Austin] [attachment "DSCN6537.JPG" deleted by Keith Mills/RDN/Austin] [attachment "DSCN6541.JPG" deleted by Keith Mills/RDN/Austin]

Page 3

[attachment "DSCN6542.JPG" deleted by Keith Mills/RDN/Austin] [attachment "hexogen fibers 7-24-13.jpg" deleted by Keith Mills/RDN/Austin]

Page 4

[attachment "DSCN6562.JPG" deleted by Keith Mills/RDN/Austin] [attachment "DSCN6567.JPG" deleted by Keith Mills/RDN/Austin] [attachment "DSCN6565.JPG" deleted by Keith Mills/RDN/Austin]

Page 5

[attachment "DSCN6572.JPG" deleted by Keith Mills/RDN/Austin] [attachment "DSCN6573.JPG" deleted by Keith Mills/RDN/Austin]

Page 6

[attachment "DSCN6578.JPG" deleted by Keith Mills/RDN/Austin] [attachment "DSCN6580.JPG" deleted by Keith Mills/RDN/Austin] [attachment "DSCN6577.JPG" deleted by Keith Mills/RDN/Austin] [attachment "DSCN6581.JPG" deleted by Keith Mills/RDN/Austin] [attachment "DSCN6582.JPG" deleted by Keith Mills/RDN/Austin]

Page 7

[attachment "DSCN6586.JPG" deleted by Keith Mills/RDN/Austin]

Re: Exploratory

Keith Mills o David Smith

08/14/2013 08:11 AM

Good morning Dave,

I sent an email yesterday morning with pictures only. Unfortunately I got a delivery failure notification last night due to the size of the email. I will breakdown the digital images into a few emails hoping they can get through to you.

Thanks,
Keith

Keith Mills

Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

David Smith

Keith: ISL had problems opening the photos fro...

08/13/2013 07:51:33 AM

From: David Smith <davidasmith@explosystems.com>
To: "<Keith.Mills@austinpowder.com>" <Keith.Mills@austinpowder.com>
Date: 08/13/2013 07:51 AM
Subject: Exploratory

Keith: ISL had problems opening the photos from your report. Could it be possible to send the photos separate from the report.?

Thanks,

Dave

Sent from my iPad

Fw: Photo's from Hexogen Report 13-5-22

Keith Mills o David Smith

08/13/2013 09:43 AM

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

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To: Dave True/Cle/Austin@Exchange, Keith Mills/RDN/Austin@Austin
Date: 08/13/2013 08:56 AM
Subject: Photo's from Hexogen Report 13-5-22

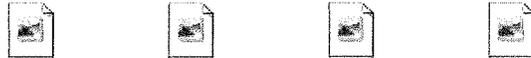
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Page 1



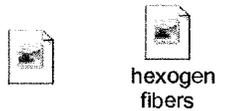
SANY0054.JPGSANY0055.JPGSANY0056.JPGSANY0058.JPG

Page 2



DSCN6535.JPGDSCN6536.JPGDSCN6537.JPGDSCN6541.JPG

Page 3



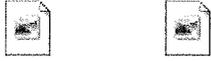
DSCN6542.JPG7-24-13.jpg

Page 4



DSCN6562.JPGDSCN6567.JPGDSCN6565.JPG

Page 5



DSCN6572.JPG DSCN6573.JPG

Page 6



DSCN6578.JPG DSCN6580.JPG DSCN6577.JPG DSCN6581.JPG DSCN6582.JPG

Page 7



DSCN6586.JPG

Fw: Hexogen received from Explo System in pails.

Keith Mills o David Smith

08/12/2013 03:00 PM

Bcc: Dave True, Craig Bauman

David,

As we discussed earlier today, please find attached the lab report for the recent receipts of Hexogen from ISL. I believe you will understand after reading the report and seeing the pictures of the product in a test kettle that is a 50/50 mix of TNT and the received Hexogen that this material is not usable in our cast booster process. The entire shipment of the Hexogen is on hold and cannot be used. Based on this shipment all RDX based compound shipments from ISL are considered suspect. I will be contacting Bob Belock as he will be in Europe later this week to see if he could possibly inspect the next shipment of product at ISL if that can possibly be arranged by Explo and ISL.

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Hexogen
13522



081213.pdfScan_Doc0052.pdfScan_Doc0053.pdf

Re: Explo 

Keith Mills  David Smith

08/06/2013 08:16 AM

Dave,

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David Smith

Keith: Sorry but going to have to reschedule our...

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To: <keith.mills@austinpowder.com>
Date: 08/06/2013 08:11 AM
Subject: Explo

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Thanks for your understanding,

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Purpose for today's phone call

Keith Mills o David Smith

07/31/2013 04:08 PM

Bcc: Dave True

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Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

Fw: Revised Letter

Keith Mills o David Smith

06/26/2013 08:33 AM

David,

Please find attached a corrected letter.

Thanks

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

----- Forwarded by Keith Mills/RDN/Austin on 06/26/2013 08:33 AM -----

From: Dennis Schulz/RDN/Austin
To: Keith Mills/RDN/Austin@Austin
Date: 06/26/2013 08:19 AM
Subject: Revised Letter

It appears the math was incorrect.
The correct usage is 2MM to 4MM pounds.
I believe that was the only change requested.

Denny

Dennis Schulz

Austin Powder Company ♦ P.O. Box 317, 430 Powder Plant Rd. ♦ McArthur, OH 45651

Office: 740.596.5286 ♦ Mobile: 740.649.3933 ♦ Dennis.Schulz@austinpowder.com



M8 Propellant Project.pdf

RE: M6 & Emulsion Product Letter and Process Flow Diagram 

Keith Mills o David Smith

06/25/2013 03:36 PM

David,

Just opened your email. I have been tied up with international visitors all day. The letter was written by Denny. I only have a PDF version. Denny is not here this afternoon. I'll chat with him in the morning.

Thanks

Keith Mills
Director of Manufacturing

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Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

David Smith

Keith: In your letter about the market for M6 you...

06/25/2013 09:39:05 AM

From: David Smith <davidalansmith@bellsouth.net>
To: <Keith.Mills@austinpowder.com>
Date: 06/25/2013 09:39 AM
Subject: RE: M6 & Emulsion Product Letter and Process Flow Diagram

Keith: In your letter about the market for M6 you stated 40% propellant and that the market was 5,000,000 to 10,000,000 lbs per year

But the propellant usage was 1.2 to 2.5 million pounds. Should that be 2,000,000 to 4,000,000 lbs. of propellant. If so can get a revised letter?

Would be available to discuss if you like.

We will be submitting this plan to State of Louisiana later today,

Thanks,
Dave

-----Original Message-----

From: Keith.Mills@austinpowder.com [mailto:Keith.Mills@austinpowder.com]
Sent: Thursday, June 20, 2013 9:39 AM
To: David Smith
Cc: Dennis.Schulz@austinpowder.com; Dave.True@austinpowder.com
Subject: M6 & Emulsion Product Letter and Process Flow Diagram

David,

Glad to hear your discussions with the officials went well yesterday. As we discussed this morning, please find attached the letter and process flow diagram.

Thanks

(See attached file: M6 Propellant Project.pdf) (See attached file: M6 & Emulsion Process Flow.pdf)

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ◊ 430 Powder Plant Road ◊ McArthur, OH
45651-0317
Office: 740.596.5286 ext 7412 ◊ Cell: 614.569.1783 ◊
Keith.Mills@austinpowder.com

RE: M6 & Emulsion Product Letter and Process Flow Diagram 

Keith Mills o David Smith

06/20/2013 04:40 PM

David,

This activity will shift from Denny's group (product engineering) to Tom Justice's team (manufacturing engineering). I will discuss with Tom tomorrow morning. With that being said I want to say that with Red Diamond's current projects and resource requirements this will have to fall in line with three or four other major projects all ready in process. Therefore the time line will certainly be conservative versus aggressive. Not sure of the image you have in mind from your side. I am believing it to be at least end of the year if not beyond for start up based upon the other ongoing resource demands on our side.

Keith Mills

Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

David Smith

Keith: This looks good. Could you have Denny...

06/20/2013 03:36:38 PM

From: David Smith <davidalansmith@bellsouth.net>
To: <Keith.Mills@austinpowder.com>
Date: 06/20/2013 03:36 PM
Subject: RE: M6 & Emulsion Product Letter and Process Flow Diagram

Keith: This looks good. Could you have Denny give us a general time line (CPM) and step by step process (engineering design, fabrication, installation, start- up etc.)

For getting this done. Assume that any building modifications can be done concurrent to equipment fab. Leave out the economic decision as we can do that parallel to the engineering phase.

You can use \$27.50 per man hour on a loaded basis for our labor cost. If we can get this by COB tomorrow it would be a big help.

Thanks,

Dave

-----Original Message-----

From: Keith.Mills@austinpowder.com [mailto:Keith.Mills@austinpowder.com]
Sent: Thursday, June 20, 2013 9:39 AM
To: David Smith
Cc: Dennis.Schulz@austinpowder.com; Dave.True@austinpowder.com
Subject: M6 & Emulsion Product Letter and Process Flow Diagram

David,

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(See attached file: M6 Propellant Project.pdf) (See attached file: M6 & Emulsion Process Flow.pdf)

Keith Mills

Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH
45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦

Keith.Mills@austinpowder.com

M6 & Emulsion Product Letter and Process Flow Diagram

Keith Mills o David Smith

06/20/2013 09:39 AM

Cc: Dennis Schulz, Dave True

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Glad to hear your discussions with the officials went well yesterday. As we discussed this morning, please find attached the letter and process flow diagram.

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M6 Propellant Project.pdf M6 & Emulsion Process Flow.pdf

Keith Mills
Director of Manufacturing

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Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

Re: M6 Propellant Slurry 

Keith Mills  David Smith

05/21/2013 11:28 AM

Cc: Dennis Schulz, Dave True

Dave,

Here is the current status on producing M6 & emulsion packaged product at Red Diamond. We have developed and tested a manufacturing process that has yielded positive results at the emulsion R&D facility. Since that point we have been looking at various locations to set up the mass production process in a quick and timely manner. Unfortunately we have looked and ruled out three locations at Red Diamond due to either safety concerns, building limitations, or infrastructure inadequacies. We have now settled on developing a stand alone structure that will be located in the area of our emulsion based products. With that being said, we have been reviewing costs related to transportation from Minden to Red Diamond to the end customer in Pennsylvania. We are estimating that cost to be around the \$0.15 to 0.16/lb range. The target total product cost is \$0.22/lb delivered to the customer. With the additional investment costs being incurred related to the building, equipment, and Red Diamond labor costs the overall project at Red Diamond is not looking as attractive as originally planned. At one point there were discussions between APC and Explo about this product possibly being produced at Minden. The freight cost from Minden to the end customer in Pennsylvania really does not change regardless of where the blended product is made (Red Diamond or Minden). We are at the point of asking if Explo would still be interested in producing this product if the total costs can be achieved against the above target? Please review and advise if Explo can support this project.

If APC would proceed we need to complete the following items to get into mass production:

Currently working with our architect on preliminary building image.

1. Finalize detailed process engineering.
2. Develop P&ID's and draft work instructions.
3. Perform design Process Hazards Analysis.
4. Finalize building design and budget
5. Review permitting requirements, construction and environmental impacts. We also need to review impact to our burn permit limits with the addition of this process and the PETN project.
6. Develop overall project budget and scope for approvals from APC-Cleveland.
7. Order process equipment
8. Construct building
9. Install equipment
10. Perform pre-start up PHA
11. Run production trials
12. Start mass production

Items 1 through 6 are being conducted simultaneously. These items could be complete by the end of September. As always, the unknown is timing required for permit approvals. Once permits and project budgets are approved we anticipate six months to complete items 7 through 12. So in reality we are probably looking at April 2014 for a projected mass production start up timing.

Sorry for the lengthy explanation but the project realities are becoming more clear as we work through the details. Please review and advise Explo's desire and ability to proceed with production at Minden if we can get to targeted costs. I look forward to talking with you about your thoughts.

Thanks,
Keith

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

David Smith

Keith: Know that you are moving forward with y...

05/20/2013 04:09:20 PM

From: David Smith <davidalansmith@bellsouth.net>
To: <keith.mills@austinpowder.com>
Date: 05/20/2013 04:09 PM
Subject: M6 Propellant Slurry

Keith: Know that you are moving forward with your M6 packaged propellant facility, could you give us an update

For our Army reports where you are and potential timeframes for startup.

Thanks,

Dave

Serbia TNT Report

Keith Mills o David Smith

05/14/2013 11:18 AM

Dave,

Here is the initial report on the Serbian TNT we received last week. Overall we are very pleased with the product. Just a couple of comments in the report that we should probably address. EX number printed height and DNT content certification. Hopefully we can see more of this product. It melts and pours very well.

Thanks again,
Keith

Keith Mills Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

----- Forwarded by Keith Mills/RDN/Austin on 05/14/2013 11:16 AM -----

From: Elaine Gates/RDN/Mfg/Austin
To: Keith Mills/RDN/Austin@Austin
Date: 05/14/2013 11:14 AM
Subject: Document



networkscan_007243.pdf

Fw: Serbian TNT

Keith Mills o David Smith

05/14/2013 10:35 AM



PRVA ISKRA NAMENSKA TNT 051013.doc

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

----- Forwarded by Keith Mills/RDN/Austin on 05/14/2013 10:34 AM -----

From: Keith Mills/RDN/Austin
To: David Smith <davidalansmith@bellsouth.net>
Date: 05/13/2013 09:39 AM
Subject: Fw: Serbian TNT

Good morning Dave,

Here is the initial report on the Serbian TNT we received last week. Overall we are very pleased with the product. Just a couple of comments in the report that we should address. EX number printed height and DNT content certification. Hopefully we can see more of this product. It melts and pours very well.

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Keith

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Director of Manufacturing

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Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

----- Forwarded by Keith Mills/RDN/Austin on 05/13/2013 09:36 AM -----

From: Mark Fox/RDN/Mfg/Austin
To: Keith Mills/RDN/Austin@Austin, Nick Rupert/RDN/Mfg/Austin@Austin
Date: 05/10/2013 03:01 PM
Subject: Serbian TNT

Attached please find a report on TNT from PRVA ISKRA - NAMENSKA in Belgrade, Serbia. The TNT was imported by EXPLO SYSTEMS and received in Grande Anse, Canada.

RE: Explo ☐

Keith Mills ○ David Smith

05/14/2013 10:30 AM

Dave,

Thanks for the feedback. Don't get me wrong. We do understand that Explo is doing everything it can to get to back to a normal business environment. We also appreciate your efforts in obtaining energetic materials for APC. It will just help when we are able to see the first and continued shipments outbound from EC. A lot of eyes are looking to see when this will happen. I will be at EC tomorrow and Thursday.

Thanks again,
Keith

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

David Smith

Keith: Terry will be coordinating pick up this we...

05/14/2013 09:30:41 AM

From: David Smith <davidalansmith@bellsouth.net>
To: <Keith.Mills@austinpowder.com>
Date: 05/14/2013 09:30 AM
Subject: RE: Explo

Keith: Terry will be coordinating pick up this week with Thomas. Terry will be in Camden on Wednesday for Doctors' appointment

And could load the trailers then.

Sorry for the delay but we are still going through several inspections this week.

Thanks,

Dave

-----Original Message-----

From: Keith.Mills@austinpowder.com [mailto:Keith.Mills@austinpowder.com]
Sent: Monday, May 13, 2013 9:46 AM
To: David Smith
Cc: Thomas.Ethridge@austinpowder.com
Subject: RE: Explo

Dave,

Again, just a quick follow up. No one made it to East Camden last week for outbound M6 shipments. It has now been a full month since we received the last incoming shipment to APC-EC. Originally the first shipment was to leave no later than the week of April 22nd. Please advise when we will see the first outbound shipment. Hopefully early this week.

Thanks,
Keith

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH
45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦
Keith.Mills@austinpowder.com

From: David Smith <davidalansmith@bellsouth.net>
To: <Keith.Mills@austinpowder.com>
Cc: <Thomas.Ethridge@austinpowder.com>,
<Brian.Gilliland@austinpowder.com>
Date: 05/09/2013 03:08 PM
Subject: RE: Explo

Keith: Thanks for the information. Lionel Koons will be in East Camden on Friday to load out two M6 Propellant trailers and will get the paperwork

And he will have a pre done Fed Ex envelope to ship the BOL's that have been received to our customs agent in Vermont.

Brian: Can we get the original Paperwork that have been delivered to Red Diamond to date sent to: Danielle Blake, DHL Global Forwarding, 4278 US Rte. 5, Derby, VT 05829

(802) 873-3001. If we could do that Overnight that would be great.

Thanks for all of your help,

Dave Smith

-----Original Message-----

From: Keith.Mills@austinpowder.com [mailto:Keith.Mills@austinpowder.com]
Sent: Thursday, May 09, 2013 2:56 PM
To: David Smith
Cc: Thomas.Ethridge@austinpowder.com; Brian.Gilliland@austinpowder.com
Subject: Re: Explo

Dave,

Thomas Ethridge at East Camden and Brian Gilliland at Red Diamond. I discussed with both and they are copied on this email. Please use them as you need to get the required documentation.

Thanks

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH
45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦
Keith.Mills@austinpowder.com

From: David Smith <davidalansmith@bellsouth.net>
To: <keith.mills@austinpowder.com>
Date: 05/09/2013 02:42 PM
Subject: Explo

Keith: Could you please give us the contact person at Ed Diamond and Camden that will have copies of the incoming paperwork?

WE need to get those copies to US Customs at the point of entry to get the Delivery Verification Certificates (DVC's) signed by Customs.

WE have only 10 days after clearance to get these signed.

Thanks,

Dave

RE: Explo

Keith Mills o David Smith

05/13/2013 09:45 AM

Cc: Thomas.Ethridge

Dave,

Again, just a quick follow up. No one made it to East Camden last week for outbound M6 shipments. It has now been a full month since we received the last incoming shipment to APC-EC. Originally the first shipment was to leave no later than the week of April 22nd. Please advise when we will see the first outbound shipment. Hopefully early this week.

Thanks,
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Director of Manufacturing

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Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

David Smith

Keith: Thanks for the information. Lionel Koons...

05/09/2013 03:08:48 PM

From: David Smith <davidalansmith@bellsouth.net>
To: <Keith.Mills@austinpowder.com>
Cc: <Thomas.Ethridge@austinpowder.com>, <Brian.Gilliland@austinpowder.com>
Date: 05/09/2013 03:08 PM
Subject: RE: Explo

Keith: Thanks for the information. Lionel Koons will be in East Camden on Friday to load out two M6 Propellant trailers and will get the paperwork

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Thanks for all of your help,

Dave Smith

-----Original Message-----

From: Keith.Mills@austinpowder.com [mailto:Keith.Mills@austinpowder.com]
Sent: Thursday, May 09, 2013 2:56 PM
To: David Smith
Cc: Thomas.Ethridge@austinpowder.com; Brian.Gilliland@austinpowder.com
Subject: Re: Explo

Dave,

Thomas Ethridge at East Camden and Brian Gilliland at Red Diamond. I discussed with both and they are copied on this email. Please use them as you need to get the required documentation.

Thanks

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ◊ 430 Powder Plant Road ◊ McArthur, OH
45651-0317
Office: 740.596.5286 ext 7412 ◊ Cell: 614.569.1783 ◊
Keith.Mills@austinpowder.com

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To: <keith.mills@austinpowder.com>
Date: 05/09/2013 02:42 PM
Subject: Explo

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WE have only 10 days after clearance to get these signed.

Thanks,

Dave

Fw: Serbian TNT

Keith Mills o David Smith

05/13/2013 09:39 AM

Good morning Dave,

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Thanks again,
Keith

Keith Mills
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----- Forwarded by Keith Mills/RDN/Austin on 05/13/2013 09:36 AM -----

From: Mark Fox/RDN/Mfg/Austin
To: Keith Mills/RDN/Austin@Austin, Nick Rupert/RDN/Mfg/Austin@Austin
Date: 05/10/2013 03:01 PM
Subject: Serbian TNT

Attached please find a report on TNT from PRVA ISKRA - NAMENSKA in Belgrade, Serbia. The TNT was imported by EXPLO SYSTEMS and received in Grande Anse, Canada.



PRVA
ISKRA
NAMENSKA
TNT
051013.doc

Re: Explo 

Keith Mills o David Smith

05/09/2013 02:55 PM

Cc: Thomas Ethridge, Brian Gilliland

Dave,

Thomas Ethridge at East Camden and Brian Gilliland at Red Diamond. I discussed with both and they are copied on this email. Please use them as you need to get the required documentation.

Thanks

Keith Mills

Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

David Smith

Keith: Could you please give us the contact per...

05/09/2013 02:42:33 PM

From: David Smith <davidalansmith@bellsouth.net>
To: <keith.mills@austinpowder.com>
Date: 05/09/2013 02:42 PM
Subject: Explo

Keith: Could you please give us the contact person at Ed Diamond and Camden that will have copies of the incoming paperwork?

WE need to get those copies to US Customs at the point of entry to get the Delivery Verification Certificates (DVC's) signed by Customs.

WE have only 10 days after clearance to get these signed.

Thanks,

Dave

M6 Shipment out of APC East Camden

Keith Mills o David Smith

05/02/2013 11:50 AM

Bcc: Dave True

Good morning Dave,

Just a quick follow up with you. As we discussed it is critically important that we start to see shipments of M6 propellant out of our East Camden facility. The first of these shipments were to start the week of April 22nd. As of today, May 2nd, there has not been any shipments yet and none are scheduled for the remainder of the week. That puts us two weeks behind plan. Terry Wright has communicated to our Nick Rupert that "maybe" one truck shipment would be made next week. This is beginning to concern us as well as Highland Park executives are consistently asking the status of the out going shipments.

The above situation is compounding our ability to store incoming product. With the amount of M6 propellant we have stored at East Camden our open magazine space is severely limited. As you know, there are three ships schedule to arrive starting tomorrow through early July. It is our understanding from Paramount that the magazines at Plattsburg will not be ATF compliant and available until the end of July. Therefore the additional pressure to see product moving out of East Camden is growing. We are also looking at other options for storage at this time but we need your support to move the M6 product.

Please review and then let's discuss.

Thanks,
Keith

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

Re: Reflection from yesterday's discussion

Keith Mills o David Smith

03/19/2013 11:48 AM

Dave,

Thanks for the feedback. Thomas and I are playing phone tag this morning. As soon as he and I connect, I'll let you know regarding the additional person.

Thanks again,

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

David Smith

Keith: My apologies for Terry's reaction to yester...

03/19/2013 10:22:11 AM

From: David Smith <davidalansmith@bellsouth.net>
To: "<Keith.Mills@austinpowder.com>" <Keith.Mills@austinpowder.com>
Date: 03/19/2013 10:22 AM
Subject: Re: Reflection from yesterday's discussion

Keith: My apologies for Terry's reaction to yesterday. Trying to chalk it up to some major oral surgery he had yesterday. I will be up to meet Thomas tomorrow afternoon and hopefully keep things on track. We sincerely appreciate your help and understand fully your concerns and caution. Please let me know if an additional person to record code dates and facilitate any labeling or packaging issues would be helpful. Could start that tomorrow if it would be helpful.

Thanks,

Dave

Sent from my iPad

On Mar 19, 2013, at 7:50 AM, <Keith.Mills@austinpowder.com> wrote:

>
> Good morning Terry,
>
> As I was reflecting on our conversation yesterday. I recalled during the
> visit to Red Diamond by Dave Smith the discussion was two to three loads
> per day to be off loaded at East Camden. I confirmed with Nick to make sure
> I was recalling correctly and he stated yes that is what he wrote down
> also. If the intent is to do more than that then we need to reconsider
> also. Our vision was not to off load 4, 5, or 6 loads per day. We are also
> trying to operate our normal business and operations at East Camden. Not
> sure what commitments were made by Explo to the regulatory agencies but we
> need to be methodical and deliberate at EC. I will discuss with Thomas
> today.
>
> Keith
>

> Keith Mills
> Director of Manufacturing
> Austin Powder Company - Red Diamond ◊ 430 Powder Plant Road ◊ McArthur, OH
> 45651-0317
> Office: 740.596.5286 ext 7412 ◊ Cell: 614.569.1783 ◊
> Keith.Mills@austinpowder.co

Re: Explo M6 

Keith Mills o David Smith

03/12/2013 02:13 PM

Bcc: Thomas Ethridge

Dave,

Just got feedback from James Nixon at Highland. He has reviewed the letter and agreed to allow Austin to accept the M6 product from Explo. As we discussed, their biggest concern is to see consistency in outbound shipments. They will be monitoring the outbound shipments. Explo needs to make sure we have a steady flow back out so as not to jeopardize APC's relationship with Highland.

Thanks for the quick response and turnaround today so we can keep the project moving forward. It is appreciated.

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

David Smith

Keith: Did the letter met Highlands requirements?

03/12/2013 01:07:40 PM

From: David Smith <davidalansmith@bellsouth.net>
To: <keith.mills@austinpowder.com>
Date: 03/12/2013 01:07 PM
Subject: Explo M6

Keith: Did the letter met Highlands requirements?

Thanks,

Dave

Re: Explo 

Keith Mills o David Smith

03/11/2013 08:34 AM

Dave,

I have meetings until 1:00 today. Can we connect around that time to finalize the plan to start moving the M6 product at that time?

Thanks

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

David Smith

Keith: It was great to meet you yesterday and si...

03/07/2013 12:09:32 PM

From: David Smith <davidalansmith@bellsouth.net>
To: <keith.mills@austinpowder.com>
Date: 03/07/2013 12:09 PM
Subject: Explo

Keith: It was great to meet you yesterday and sincerely appreciate Austin helping us get the M6

Situation resolved. We will work very hard to minimize any impact on your operations in Camden.

We are getting trailers positioned on Monday and plan to start on Tuesday. Should Terry Wright coordinate

This effort and our possible help with your local management?

Thanks again, we will be forever grateful.

Dave Smith

Re: Explo 

Keith Mills o David Smith

03/08/2013 07:52 AM

Dave,

Just a quick update. Dave True and I were not able to connect yesterday. I am hoping to today. I'll let you know as we progress.

Thanks
Keith

Keith Mills

Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

David Smith

Keith: It was great to meet you yesterday and si...

03/07/2013 12:09:32 PM

From: David Smith <davidalansmith@bellsouth.net>
To: <keith.mills@austinpowder.com>
Date: 03/07/2013 12:09 PM
Subject: Explo

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We are getting trailers positioned on Monday and plan to start on Tuesday. Should Terry Wright coordinate

This effort and our possible help with your local management?

Thanks again, we will be forever grateful.

Dave Smith

Re: Explo 

Keith Mills o David Smith

03/07/2013 12:40 PM

Dave,

It was good to meet you also.

I am suppose to have a discussion this afternoon with Dave True to review our meeting yesterday. Once we are in agreement I'll let you know.

Hopefully be back in touch yet today.

Thanks,
Keith

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

David Smith

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03/07/2013 12:09:32 PM

From: David Smith <davidalansmith@bellsouth.net>
To: <keith.mills@austinpowder.com>
Date: 03/07/2013 12:09 PM
Subject: Explo

Keith: It was great to meet you yesterday and sincerely appreciate Austin helping us get the M6

Situation resolved. We will work very hard to minimize any impact on your operations in Camden.

We are getting trailers positioned on Monday and plan to start on Tuesday. Should Terry Wright coordinate

This effort and our possible help with your local management?

Thanks again, we will be forever grateful.

Dave Smith

ISO-14001 Registrar
Keith Mills to: davidalansmith

09/09/2013 03:07 PM

Hello Dave,

Thanks for supporting Bob Belock's visit to Europe last week. It was truly appreciated.

I wanted to follow up our conversation while you were at ISL. Could you please share with me the name and contact information of the ISO-14001 registrar that Explo used. It would be greatly appreciated.

Thanks
Keith

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

Bob Belock Inspect at ISL
Keith Mills to: davidalansmith

08/14/2013 10:30 AM

Dave,

I talked with Bob yesterday. He is aware of our need to him visually inspect the materials for the September ISL shipment. Let's discuss at your convenience.

Thanks

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

Fw: Photo's from Hexogen Report 13-5-22

Keith Mills o davidalansmith

08/14/2013 08:29 AM

Keith Mills

Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

----- Forwarded by Keith Mills/RDN/Austin on 08/14/2013 08:28 AM -----

From: Mark Fox/RDN/Mfg/Austin
To: Dave True/Cle/Austin@Exchange, Keith Mills/RDN/Austin@Austin
Date: 08/13/2013 08:56 AM
Subject: Photo's from Hexogen Report 13-5-22

Attached are the pictures from the Red Diamond Lab Report# 13-5-22.

Page 1

[attachment "SANY0054.JPG" deleted by Keith Mills/RDN/Austin] [attachment "SANY0055.JPG" deleted by Keith Mills/RDN/Austin] [attachment "SANY0056.JPG" deleted by Keith Mills/RDN/Austin] [attachment "SANY0058.JPG" deleted by Keith Mills/RDN/Austin]

Page 2

[attachment "DSCN6535.JPG" deleted by Keith Mills/RDN/Austin] [attachment "DSCN6536.JPG" deleted by Keith Mills/RDN/Austin] [attachment "DSCN6537.JPG" deleted by Keith Mills/RDN/Austin] [attachment "DSCN6541.JPG" deleted by Keith Mills/RDN/Austin]

Page 3

[attachment "DSCN6542.JPG" deleted by Keith Mills/RDN/Austin] [attachment "hexogen fibers 7-24-13.jpg" deleted by Keith Mills/RDN/Austin]

Page 4

[attachment "DSCN6562.JPG" deleted by Keith Mills/RDN/Austin] [attachment "DSCN6567.JPG" deleted by Keith Mills/RDN/Austin] [attachment "DSCN6565.JPG" deleted by Keith Mills/RDN/Austin]

Page 5

[attachment "DSCN6572.JPG" deleted by Keith Mills/RDN/Austin] [attachment "DSCN6573.JPG" deleted by Keith Mills/RDN/Austin]

Page 6



DSCN6578.JPGDSCN6580.JPGDSCN6577.JPGDSCN6581.JPGDSCN6582.JPG

Page 7



DSCN6586.JPG

Fw: Photo's from Hexogen Report 13-5-22

Keith Mills o davidalansmith

08/14/2013 08:26 AM

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

----- Forwarded by Keith Mills/RDN/Austin on 08/14/2013 08:24 AM -----

From: Mark Fox/RDN/Mfg/Austin
To: Dave True/Cle/Austin@Exchange, Keith Mills/RDN/Austin@Austin
Date: 08/13/2013 08:56 AM
Subject: Photo's from Hexogen Report 13-5-22

Attached are the pictures from the Red Diamond Lab Report# 13-5-22.

Page 1

[attachment "SANY0054.JPG" deleted by Keith Mills/RDN/Austin] [attachment "SANY0055.JPG" deleted by Keith Mills/RDN/Austin] [attachment "SANY0056.JPG" deleted by Keith Mills/RDN/Austin] [attachment "SANY0058.JPG" deleted by Keith Mills/RDN/Austin]

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[attachment "DSCN6535.JPG" deleted by Keith Mills/RDN/Austin] [attachment "DSCN6536.JPG" deleted by Keith Mills/RDN/Austin] [attachment "DSCN6537.JPG" deleted by Keith Mills/RDN/Austin] [attachment "DSCN6541.JPG" deleted by Keith Mills/RDN/Austin]

Page 3

[attachment "DSCN6542.JPG" deleted by Keith Mills/RDN/Austin] [attachment "hexogen fibers 7-24-13.jpg" deleted by Keith Mills/RDN/Austin]

Page 4

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Page 5



DSCN6572.JPG DSCN6573.JPG

Page 6

[attachment "DSCN6578.JPG" deleted by Keith Mills/RDN/Austin] [attachment "DSCN6580.JPG" deleted by Keith Mills/RDN/Austin] [attachment "DSCN6577.JPG" deleted by Keith Mills/RDN/Austin] [attachment "DSCN6581.JPG" deleted by Keith Mills/RDN/Austin] [attachment "DSCN6582.JPG" deleted by Keith Mills/RDN/Austin]

Page 7

[attachment "DSCN6586.JPG" deleted by Keith Mills/RDN/Austin]

Fw: Photo's from Hexogen Report 13-5-22

Keith Mills o davidalansmith

08/14/2013 08:23 AM

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

----- Forwarded by Keith Mills/RDN/Austin on 08/14/2013 08:21 AM -----

From: Mark Fox/RDN/Mfg/Austin
To: Dave True/Cle/Austin@Exchange, Keith Mills/RDN/Austin@Austin
Date: 08/13/2013 08:56 AM
Subject: Photo's from Hexogen Report 13-5-22

Attached are the pictures from the Red Diamond Lab Report# 13-5-22.

Page 1

[attachment "SANY0054.JPG" deleted by Keith Mills/RDN/Austin] [attachment "SANY0055.JPG" deleted by Keith Mills/RDN/Austin] [attachment "SANY0056.JPG" deleted by Keith Mills/RDN/Austin] [attachment "SANY0058.JPG" deleted by Keith Mills/RDN/Austin]

Page 2

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Page 3

[attachment "DSCN6542.JPG" deleted by Keith Mills/RDN/Austin] [attachment "hexogen fibers 7-24-13.jpg" deleted by Keith Mills/RDN/Austin]

Page 4



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Page 5

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Page 6

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Page 7

[attachment "DSCN6586.JPG" deleted by Keith Mills/RDN/Austin]

Fw: Photo's from Hexogen Report 13-5-22

Keith Mills o davidalansmith

08/14/2013 08:21 AM

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

----- Forwarded by Keith Mills/RDN/Austin on 08/14/2013 08:20 AM -----

From: Mark Fox/RDN/Mfg/Austin
To: Dave True/Cle/Austin@Exchange, Keith Mills/RDN/Austin@Austin
Date: 08/13/2013 08:56 AM
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fibers

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DSCN6586.JPG

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Keith Mills o davidalansmith

08/14/2013 08:20 AM

Keith Mills

Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

----- Forwarded by Keith Mills/RDN/Austin on 08/14/2013 08:18 AM -----

From: Mark Fox/RDN/Mfg/Austin
To: Dave True/Cle/Austin@Exchange, Keith Mills/RDN/Austin@Austin
Date: 08/13/2013 08:56 AM
Subject: Photo's from Hexogen Report 13-5-22

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Keith Mills to: davidalansmith

08/14/2013 08:20 AM

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com
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Page 7

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Re: M6 & Emulsion Product Letter and Process Flow Diagram 

Keith Mills to: davidalansmith

06/24/2013 08:29 AM

Cc: Tom Justice

David,

Here is the requested project schedule and time line. It is not date specific as it starts the clock ticking once all regulatory issues are cleared and the final project approval.



Propellant & Emulsion Blend Sched 6-24-2013.pdf

Thanks

Keith Mills

Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

That is probably very realistic. We can provide s...

06/20/2013 04:46:14 PM

From: <davidalansmith@bellsouth.net>
To: Keith Mills <keith.mills@austinpowder.com>
Date: 06/20/2013 04:46 PM
Subject: Re: M6 & Emulsion Product Letter and Process Flow Diagram

That is probably very realistic. We can provide services of an AutoCad engineer if that will help from the resources side.

Thanks

Dave

-----Original Message-----

From: <Keith.Mills@austinpowder.com>

Date: Thu, 20 Jun 2013 16:40:55

To: David Smith<davidalansmith@bellsouth.net>

Subject: RE: M6 & Emulsion Product Letter and Process Flow Diagram

David,

This activity will shift from Denny's group (product engineering) to Tom Justice's team (manufacturing engineering). I will discuss with Tom tomorrow morning. With that being said I want to say that with Red Diamond's current projects and resource requirements this will have to fall in line with three or four other major projects all ready in process. Therefore the time line will certainly be conservative versus aggressive. Not sure of the image you have in mind from your side. I am believing it to be at least end of the year if not beyond for start up based upon the other ongoing resource demands on our side.

Keith Mills

Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ◊ Cell: 614.569.1783 ◊
Keith.Mills@austinpowder.com

From: David Smith <davidalansmith@bellsouth.net>
To: <Keith.Mills@austinpowder.com>
Date: 06/20/2013 03:36 PM
Subject: RE: M6 & Emulsion Product Letter and Process Flow Diagram

Keith: This looks good. Could you have Denny give us a general time line (CPM) and step by step process (engineering design, fabrication, installation, start- up etc.)

For getting this done. Assume that any building modifications can be done concurrent to equipment fab. Leave out the economic decision as we can do that parallel to the engineering phase.

You can use \$27.50 per man hour on a loaded basis for our labor cost. If we can get this by COB tomorrow it would be a big help.

Thanks,

Dave

-----Original Message-----

From: Keith.Mills@austinpowder.com [mailto:Keith.Mills@austinpowder.com]
Sent: Thursday, June 20, 2013 9:39 AM
To: David Smith
Cc: Dennis.Schulz@austinpowder.com; Dave.True@austinpowder.com
Subject: M6 & Emulsion Product Letter and Process Flow Diagram

David,

Glad to hear your discussions with the officials went well yesterday. As we discussed this morning, please find attached the letter and process flow diagram.

Thanks

(See attached file: M6 Propellant Project.pdf) (See attached file: M6 & Emulsion Process Flow.pdf)

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ◊ 430 Powder Plant Road ◊ McArthur, OH
45651-0317
Office: 740.596.5286 ext 7412 ◊ Cell: 614.569.1783 ◊
Keith.Mills@austinpowder.com

Fw: Dave Smith letter
Keith Mills to: davidalansmith
Cc: Dennis Schulz, Dave True

06/17/2013 03:45 PM

Dave,

Please find attached the document outlining the M6 and emulsion blended product that we are considering to be manufactured at Explo Minden. Please review and let's talk.

Thanks

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

----- Forwarded by Keith Mills/RDN/Austin on 06/17/2013 03:42 PM -----

From: Dennis Schulz/RDN/Austin
To: Keith Mills/RDN/Austin@Austin
Cc: Dave True/Cle/Austin@Austin
Date: 06/17/2013 02:55 PM
Subject: Dave Smith letter

Let me know if there are changes needed.



M6 Propellant Product.pdf

AUSTIN POWDER COMPANY



Subject: M6 Propellant Product

10 June 2013

From: Dennis Schulz
Emulsion Development Manager
Austin Powder Company

cc: Dave True
Keith Mills
Dave Smith

Austin Powder Company is interested in contracting Explo Systems, Inc. to manufacture a "private label" product containing M6 Propellant.

Austin Powder Company has a market for a product that contains the M6 propellant. Initial estimates indicate a market for 5MM to 10MM pounds annually of a product containing approximately 40% M6 propellant. This translates to between 1.2MM and 2.5MM pounds of M6 propellant. It is expected the market size will grow as the product gains acceptance.

Initially the product would consist of 40% M6 propellant (US DOT classification: 1.3C, UN0161) and 60% of an (US DOT classification: Oxidizer, 5.1, UN3375). The final product would have an US DOT classification of Blasting Agent, 1.5D, UN0332. To achieve this 1.5D classification, the product must pass a series of tests designed to provide data on sensitivity, high temperature stability and on the outcome of a large scale burn. This testing is underway at a DOT approved testing facility and so far all the tests have indicated a safe, stable product. It seems that once the propellant is surrounded by the insensitive emulsion, the propellant loses sensitivity, allowing for the blended product to meet the lower classification rating.

Additionally, Austin Powder Company has developed a simple, efficient and extremely safe manufacturing method. The advantage of this method is the handling of the M6 propellant is kept to an absolute minimum. The product would be packaged in a woven polypropylene outer bag with an inner polyethylene bag. The packaging will conform to 49CFR 173.62, Packaging instruction 116. Austin Powder Company is prepared to provide the details of this method to Explo Systems once a contract is in place.

While there is much to be done, an excellent opportunity exists for both Austin Powder Company and Explo Systems, Inc.

Please contact me with any questions.

*Austin Powder Company • 430 Powder Plant Rd. • P.O. Box 317 • McArthur, OH 45651
Phone 740 596-5286 • Fax 740 596-9856*

Re: Explo M6 
Keith Mills to: davidalansmith

03/13/2013 10:21 AM

Dave,

Good morning.

A little of a bumpy start this morning related to the M6 unloading. We had two R&R trailers dropped at APC-EC. Thomas is requesting to R&R that we only have one at a time. No support from Explo-Minden at EC yet. Thomas been in communication with Lionel at Minden. He is not sure when the support personnel will arrive at EC...

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

Keith: Thanks, really appreciate your help. Dave

03/12/2013 02:34:16 PM

From: <davidalansmith@bellsouth.net>
To: Keith Mills <keith.mills@austinpowder.com>
Date: 03/12/2013 02:34 PM
Subject: Re: Explo M6

Keith: Thanks, really appreciate your help.

Dave

-----Original Message-----

From: <Keith.Mills@austinpowder.com>
Date: Tue, 12 Mar 2013 14:13:13
To: David Smith<davidalansmith@bellsouth.net>
Subject: Re: Explo M6

Dave,

Just got feedback from James Nixon at Highland. He has reviewed the letter and agreed to allow Austin to accept the M6 product from Explo. As we discussed, their biggest concern is to see consistency in outbound shipments. They will be monitoring the outbound shipments. Explo needs to make sure we have a steady flow back out so as not to jeopardize APC's relationship with Highland.

Thanks for the quick response and turnaround today so we can keep the project moving forward. It is appreciated.

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦
Keith.Mills@austinpowder.com

From: David Smith <davidalansmith@bellsouth.net>
To: <keith.mills@austinpowder.com>
Date: 03/12/2013 01:07 PM
Subject: Explo M6

Keith: Did the letter met Highlands requirements?

Thanks,

Dave

Re: Explo 
Keith Mills to: davidalansmith

03/08/2013 08:39 AM

Dave,

I appreciate you being proactive. I'm not sure Thomas Ethridge has communicated with Highland yet about the possibility of additional M6 coming to East Camden. I will connect with him this morning. If we need some additional support from there we will let you know.

Thanks again,
Keith

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

Keith: Thanks, we are getting in contact with Hig...

03/08/2013 08:19:05 AM

From: <davidalansmith@bellsouth.net>
To: Keith Mills <keith.mills@austinpowder.com>
Date: 03/08/2013 08:19 AM
Subject: Re: Explo

Keith: Thanks, we are getting in contact with Highlands this morning to give them a comfortable feeling about the M6.

Thanks,

Dave

-----Original Message-----

From: <Keith.Mills@austinpowder.com>
Date: Fri, 8 Mar 2013 07:52:49
To: David Smith<davidalansmith@bellsouth.net>
Subject: Re: Explo

Dave,

Just a quick update. Dave True and I were not able to connect yesterday. I am hoping to today. I'll let you know as we progress.

Thanks
Keith

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦
Keith.Mills@austinpowder.com

From: David Smith <davidalansmith@bellsouth.net>
To: <keith.mills@austinpowder.com>
Date: 03/07/2013 12:09 PM

Subject: Explo

Keith: It was great to meet you yesterday and sincerely appreciate Austin helping us get the M6

Situation resolved. We will work very hard to minimize any impact on your operations in Camden.

We are getting trailers positioned on Monday and plan to start on Tuesday. Should Terry Wright coordinate

This effort and our possible help with your local management?

Thanks again, we will be forever grateful.

Dave Smith



Explo
David Smith to: <Keith.Mills@austinpowder.com>

08/13/2013 07:51 AM

History:

This message has been replied to and forwarded.

Keith: ISL had problems opening the photos from your report. Could it be possible to send the photos separate from the report.?

Thanks,

Dave

Sent from my iPad



RE: M6 & Emulsion Product Letter and Process Flow Diagram

David Smith to: Keith.Mills

06/20/2013 03:36 PM

History:

This message has been replied to.

Keith: This looks good. Could you have Denny give us a general time line (CPM) and step by step process (engineering design, fabrication, installation, start- up etc.)

For getting this done. Assume that any building modifications can be done concurrent to equipment fab. Leave out the economic decision as we can do that parallel to the engineering phase.

You can use \$27.50 per man hour on a loaded basis for our labor cost. If we can get this by COB tomorrow it would be a big help.

Thanks,

Dave

-----Original Message-----

From: Keith.Mills@austinpowder.com [mailto:Keith.Mills@austinpowder.com]

Sent: Thursday, June 20, 2013 9:39 AM

To: David Smith

Cc: Dennis.Schulz@austinpowder.com; Dave.True@austinpowder.com

Subject: M6 & Emulsion Product Letter and Process Flow Diagram

David,

Glad to hear your discussions with the officials went well yesterday. As we discussed this morning, please find attached the letter and process flow diagram.

Thanks

(See attached file: M6 Propellant Project.pdf) (See attached file: M6 & Emulsion Process Flow.pdf)

Keith Mills

Director of Manufacturing

Austin Powder Company - Red Diamond ◊ 430 Powder Plant Road ◊ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ◊ Cell: 614.569.1783 ◊

Keith.Mills@austinpowder.com



RE: Dave Smith letter
David Smith to: Keith.Mills
Cc: Dennis.Schultz

06/20/2013 08:13 AM

Keith, Denny: Got a very favorable response from State of Louisiana for location of the Slurry module at our facility.

Can we get the first line in your memo to say "committed" or "Firmly committed" instead of Interested?

Also, a simple line diagram of the process would be very helpful to describe the process to nonmanufacturing background regulatory people.

Thanks,

Dave

-----Original Message-----

From: Keith.Mills@austinpowder.com [mailto:Keith.Mills@austinpowder.com]
Sent: Monday, June 17, 2013 3:46 PM
To: davidalansmith@bellsouth.net
Cc: Dennis.Schulz@austinpowder.com; Dave.True@austinpowder.com
Subject: Fw: Dave Smith letter

Dave,

Please find attached the document outlining the M6 and emulsion blended product that we are considering to be manufactured at Explo Minden. Please review and let's talk.

Thanks

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH
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Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦
Keith.Mills@austinpowder.com

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From: Dennis Schulz/RDN/Austin
To: Keith Mills/RDN/Austin@Austin
Cc: Dave True/Cle/Austin@Austin
Date: 06/17/2013 02:55 PM
Subject: Dave Smith letter

Let me know if there are changes needed.

(See attached file: M6 Propellant Product.pdf)

M6 Propellant Slurry
David Smith
to:
keith.mills
05/20/2013 04:09 PM
Show Details

History: This message has been replied to.

Keith: Know that you are moving forward with your M6 packaged propellant facility, could you give us an update

For our Army reports where you are and potential timeframes for startup.

Thanks,

Dave



RE: Explo
David Smith to: Keith.Mills

05/14/2013 09:30 AM

History: This message has been replied to.

Keith: Terry will be coordinating pick up this week with Thomas. Terry will be in Camden on Wednesday for Doctors' appointment

And could load the trailers then.

Sorry for the delay but we are still going through several inspections this week.

Thanks,

Dave

-----Original Message-----

From: Keith.Mills@austinpowder.com [mailto:Keith.Mills@austinpowder.com]
Sent: Monday, May 13, 2013 9:46 AM
To: David Smith
Cc: Thomas.Ethridge@austinpowder.com
Subject: RE: Explo

Dave,

Again, just a quick follow up. No one made it to East Camden last week for outbound M6 shipments. It has now been a full month since we received the last incoming shipment to APC-EC. Originally the first shipment was to leave no later than the week of April 22nd. Please advise when we will see the first outbound shipment. Hopefully early this week.

Thanks,
Keith

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH
45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦
Keith.Mills@austinpowder.com

From: David Smith <davidalansmith@bellsouth.net>
To: <Keith.Mills@austinpowder.com>
Cc: <Thomas.Ethridge@austinpowder.com>, <Brian.Gilliland@austinpowder.com>
Date: 05/09/2013 03:08 PM
Subject: RE: Explo

Keith: Thanks for the information. Lionel Koons will be in East Camden on Friday to load out two M6 Propellant trailers and will get the paperwork

And he will have a pre done Fed Ex envelope to ship the BOL's that have

been received to our customs agent in Vermont.

Brian: Can we get the original Paperwork that have been delivered to Red Diamond to date sent to: Danielle Blake, DHL Global Forwarding, 4278 US Rte. 5, Derby, VT 05829

(802) 873-3001. If we could do that Overnight that would be great.

Thanks for all of your help,

Dave Smith

-----Original Message-----

From: Keith.Mills@austinpowder.com [mailto:Keith.Mills@austinpowder.com]
Sent: Thursday, May 09, 2013 2:56 PM
To: David Smith
Cc: Thomas.Ethridge@austinpowder.com; Brian.Gilliland@austinpowder.com
Subject: Re: Explo

Dave,

Thomas Ethridge at East Camden and Brian Gilliland at Red Diamond. I discussed with both and they are copied on this email. Please use them as you need to get the required documentation.

Thanks

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ◊ 430 Powder Plant Road ◊ McArthur, OH
45651-0317
Office: 740.596.5286 ext 7412 ◊ Cell: 614.569.1783 ◊
Keith.Mills@austinpowder.com

From: David Smith <davidalansmith@bellsouth.net>
To: <keith.mills@austinpowder.com>
Date: 05/09/2013 02:42 PM
Subject: Explo

Keith: Could you please give us the contact person at Ed Diamond and Camden that will have copies of the incoming paperwork?

WE need to get those copies to US Customs at the point of entry to get the Delivery Verification Certificates (DVC's) signed by Customs.

WE have only 10 days after clearance to get these signed.

Thanks,

Dave



RE: Explo
David Smith to: Keith.Mills
Cc: Thomas.Ethridge, Brian.Gilliland

05/09/2013 03:08 PM

History: This message has been replied to.

Keith: Thanks for the information. Lionel Koons will be in East Camden on Friday to load out two M6 Propellant trailers and will get the paperwork

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Thanks for all of your help,

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Sent: Thursday, May 09, 2013 2:56 PM
To: David Smith
Cc: Thomas.Ethridge@austinpowder.com; Brian.Gilliland@austinpowder.com
Subject: Re: Explo

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Keith Mills
Director of Manufacturing
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Office: 740.596.5286 ext 7412 ◊ Cell: 614.569.1783 ◊
Keith.Mills@austinpowder.com

From: David Smith <davidalansmith@bellsouth.net>
To: <keith.mills@austinpowder.com>
Date: 05/09/2013 02:42 PM
Subject: Explo

Keith: Could you please give us the contact person at Ed Diamond and Camden that will have copies of the incoming paperwork?

WE need to get those copies to US Customs at the point of entry to get the Delivery Verification Certificates (DVC's) signed by Customs.

WE have only 10 days after clearance to get these signed.

Thanks,

Dave

Explo
David Smith
to:
keith.mills
05/09/2013 02:42 PM
Show Details

History: This message has been replied to.

Keith: Could you please give us the contact person at Ed Diamond and Camden that will have copies of the incoming paperwork?

WE need to get those copies to US Customs at the point of entry to get the Delivery Verification Certificates (DVC's) signed by Customs.

WE have only 10 days after clearance to get these signed.

Thanks,

Dave



TNT

David Smith to: <Keith.Mills@austinpowder.com>

05/07/2013 08:42 AM

History:

This message has been forwarded.

Keith: Would you mind evaluating some of the TNT that we are delivering to Red Diamond this week. We have been offered some more for later this summer and would like some feedback as far as quality, form, and packaging is concerned.

Thanks,

Dave

Sent from my iPad

M 6 Letter
David Smith
to:
keith.mills
03/12/2013 11:06 AM
Show Details

History: This message has been forwarded.

Keith: Please see attached. Hope that it meets your requirements.

Thanks,

Dave



March 12, 2013

Mr. Keith Mills
Director of Manufacturing
Austin Powder Company
PO Box 317
McArthur, OH 45651

Dear Keith:

This letter will serve to clarify the movement of M6 Propellant from your storage location at the Highlands Industrial Park. Once the quantity of M6 propellant is removed from our facility over the next two to three weeks to your storage location in Arkansas we will start to ship *all* out bound shipments to our two surface coal customers in Oklahoma that have been receiving M6 from Explo for over the last two years. These two customers have averaged 80,000 to 100,000 lbs per week over the last year. We will also agree to ship additional quantities from new customers as they are acquired.

We hope that this letter will better clarify our position as to how the M6 propellant will be shipped once it arrives at your storage facility.

Sincerely,

A handwritten signature in black ink, appearing to read "D. A. Smith", is written over a light blue horizontal line.

David A. Smith, PE
Vice President

Explo
David Smith
to:
keith.mills
03/12/2013 10:57 AM
Show Details

Keith:

Please see draft letter. Discussed with James Nixon and this hopefully will meet his requirements.

Thanks,

Dave



March 12, 2013

Mr. Keith Mills
Director of Manufacturing
Austin Powder Company
PO Box 317
McArthur, OH 45651

Dear Keith:

This letter will serve to clarify the movement of M6 Propellant from your storage location at the Highlands Industrial Park. Once the quantity of M6 propellant is removed from our facility over the next two to three weeks to your storage location in Arkansas we will start to ship **all** out bound shipments to our two surface coal customers in Oklahoma that have been receiving M6 from Explo for over the last two years. We will also agree to ship additional quantities from new customers as they are aquired.

We hope that this letter will better clarify our position as to how the M6 rpopellant will be shipped once it arrives at your storage facility.

Sincerely,

David A. Smith, PE
Vice President



RE: Explo
David Smith to: Keith.Mills

03/11/2013 09:26 AM

Keith; Absolutely call me as soon as you need to. We are working with R & R to get trailers positioned and to coordinate with local driver to position trailers at your site.

Thanks,

Dave

318 4701145

-----Original Message-----

From: Keith.Mills@austinpowder.com [mailto:Keith.Mills@austinpowder.com]
Sent: Monday, March 11, 2013 8:34 AM
To: David Smith
Subject: Re: Explo

Dave,

I have meetings until 1:00 today. Can we connect around that time to finalize the plan to start moving the M6 product at that time?

Thanks

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH
45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦
Keith.Mills@austinpowder.com

From: David Smith <davidalansmith@bellsouth.net>
To: <keith.mills@austinpowder.com>
Date: 03/07/2013 12:09 PM
Subject: Explo

Keith: It was great to meet you yesterday and sincerely appreciate Austin helping us get the M6

Situation resolved. We will work very hard to minimize any impact on your operations in Camden.

We are getting trailers positioned on Monday and plan to start on Tuesday. Should Terry Wright coordinate

This effort and our possible help with your local management?

Thanks again, we will be forever grateful.

Dave Smith



Call you received

davidalansmith to: Keith Mills

Cc: Dave True

Please respond to davidalansmith

08/21/2013 11:17 AM

Keith: Checked with our Bankruptcy attorney, no motion of any kind has been filed as you were led to believe. Are you sure the caller was from the agency they purported to be from? Call if you have a chance.

Thanks,

Dave

-----Original Message-----

From: <Keith.Mills@austinpowder.com>

Date: Wed, 14 Aug 2013 10:30:19

To: <davidalansmith@bellsouth.net>

Subject: Bob Belock Inspect at ISL

Dave,

I talked with Bob yesterday. He is aware of our need to him visually inspect the materials for the September ISL shipment. Let's discuss at your convenience.

Thanks

Keith Mills

Director of Manufacturing

Austin Powder Company - Red Diamond ◊ 430 Powder Plant Road ◊ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ◊ Cell: 614.569.1783 ◊

Keith.Mills@austinpowder.com



Re: M6 & Emulsion Product Letter and Process Flow Diagram
davidalansmith to: Keith Mills
Please respond to davidalansmith

06/20/2013 04:46 PM

History: This message has been replied to and forwarded.

That is probably very realistic. We can provide services of an AutoCad engineer if that will help from the resources side.

Thanks

Dave

-----Original Message-----

From: <Keith.Mills@austinpowder.com>

Date: Thu, 20 Jun 2013 16:40:55

To: David Smith<davidalansmith@bellsouth.net>

Subject: RE: M6 & Emulsion Product Letter and Process Flow Diagram

David,

This activity will shift from Denny's group (product engineering) to Tom Justice's team (manufacturing engineering). I will discuss with Tom tomorrow morning. With that being said I want to say that with Red Diamond's current projects and resource requirements this will have to fall in line with three or four other major projects all ready in process. Therefore the time line will certainly be conservative versus aggressive. Not sure of the image you have in mind from your side. I am believing it to be at least end of the year if not beyond for start up based upon the other ongoing resource demands on our side.

Keith Mills

Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦

Keith.Mills@austinpowder.com

From: David Smith <davidalansmith@bellsouth.net>

To: <Keith.Mills@austinpowder.com>

Date: 06/20/2013 03:36 PM

Subject: RE: M6 & Emulsion Product Letter and Process Flow Diagram

Keith: This looks good. Could you have Denny give us a general time line (CPM) and step by step process (engineering design, fabrication, installation, start- up etc.)

For getting this done. Assume that any building modifications can be done concurrent to equipment fab. Leave out the economic decision as we can do that parallel to the engineering phase.

You can use \$27.50 per man hour on a loaded basis for our labor cost. If we can get this by COB tomorrow it would be a big help.

Thanks,

Dave

-----Original Message-----

From: Keith.Mills@austinpowder.com [mailto:Keith.Mills@austinpowder.com]
Sent: Thursday, June 20, 2013 9:39 AM
To: David Smith
Cc: Dennis.Schulz@austinpowder.com; Dave.True@austinpowder.com
Subject: M6 & Emulsion Product Letter and Process Flow Diagram

David,

Glad to hear your discussions with the officials went well yesterday. As we discussed this morning, please find attached the letter and process flow diagram.

Thanks

(See attached file: M6 Propellant Project.pdf) (See attached file: M6 & Emulsion Process Flow.pdf)

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ◊ 430 Powder Plant Road ◊ McArthur, OH
45651-0317
Office: 740.596.5286 ext 7412 ◊ Cell: 614.569.1783 ◊
Keith.Mills@austinpowder.com



Re: M6 Shipment out of APC East Camden
davidalansmith to: Keith Mills
Please respond to davidalansmith

05/02/2013 03:00 PM

That will work fine,

Dave

-----Original Message-----

From: <Keith.Mills@austinpowder.com>
Date: Thu, 2 May 2013 14:49:58
To: <davidalansmith@bellsouth.net>
Subject: Re: M6 Shipment out of APC East Camden

Great! Let's shoot for 9:30 if possible. We have a daily management team meeting at 9:00.

Thanks again,
Keith

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH
45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦
Keith.Mills@austinpowder.com

From: <davidalansmith@bellsouth.net>
To: Keith Mills <keith.mills@austinpowder.com>
Date: 05/02/2013 02:44 PM
Subject: Re: M6 Shipment out of APC East Camden

Keith: Let me review with Terry and will call you tomorrow morning. Last of the M6 will get stored tomorrow and we will be back to work on Monday. Will try to get two loads out next week. Is 9:00 am good for the call.

Thanks,

Dave

-----Original Message-----

From: <Keith.Mills@austinpowder.com>
Date: Thu, 2 May 2013 11:50:08
To: David Smith<davidalansmith@bellsouth.net>
Subject: M6 Shipment out of APC East Camden

Good morning Dave,

Just a quick follow up with you. As we discussed it is critically important that we start to see shipments of M6 propellant out of our East Camden facility. The first of these shipments were to start the week of April 22nd. As of today, May 2nd, there has not been any shipments yet and none are scheduled for the remainder of the week. That puts us two weeks behind plan. Terry Wright has communicated to our Nick Rupert that "maybe" one

truck shipment would be made next week. This is beginning to concern us as well as Highland Park executives are consistently asking the status of the out going shipments.

The above situation is compounding our ability to store incoming product. With the amount of M6 propellant we have stored at East Camden our open magazine space is severely limited. As you know, there are three ships schedule to arrive starting tomorrow through early July. It is our understanding from Paramount that the magazines at Plattsburg will not be ATF compliant and available until the end of July. Therefore the additional pressure to see product moving out of East Camden is growing. We are also looking at other options for storage at this time but we need your support to move the M6 product.

Please review and then let's discuss.

Thanks,
Keith

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH
45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦
Keith.Mills@austinpowder.com



Re: Reflection from yesterday's discussion
davidalansmith to: Keith Mills
Please respond to davidalansmith

03/21/2013 03:48 PM

History: This message has been replied to.

Keith: Got 6 loads off today before 1:00pm. Great day. Everyone working as a team.

Thanks,

Dave

-----Original Message-----

From: <Keith.Mills@austinpowder.com>
Date: Tue, 19 Mar 2013 11:48:19
To: David Smith<davidalansmith@bellsouth.net>
Subject: Re: Reflection from yesterday's discussion

Dave,

Thanks for the feedback. Thomas and I are playing phone tag this morning. As soon as he and I connect, I'll let you know regarding the additional person.

Thanks again,

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ◊ 430 Powder Plant Road ◊ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ◊ Cell: 614.569.1783 ◊
Keith.Mills@austinpowder.com

From: David Smith <davidalansmith@bellsouth.net>
To: "<Keith.Mills@austinpowder.com>" <Keith.Mills@austinpowder.com>
Date: 03/19/2013 10:22 AM
Subject: Re: Reflection from yesterday's discussion

Keith: My apologies for Terry's reaction to yesterday. Trying to chalk it up to some major oral surgery he had yesterday. I will be up to meet Thomas tomorrow afternoon and hopefully keep things on track. We sincerely appreciate your help and understand fully your concerns and caution. Please let me know if an additional person to record code dates and facilitate any labeling or packaging issues would be helpful. Could start that tomorrow if it would be helpful.

Thanks,

Dave

Sent from my iPad

On Mar 19, 2013, at 7:50 AM, <Keith.Mills@austinpowder.com> wrote:

>
> Good morning Terry,
>
> As I was reflecting on our conversation yesterday. I recalled during the
> visit to Red Diamond by Dave Smith the discussion was two to three loads
> per day to be off loaded at East Camden. I confirmed with Nick to make
> sure
> I was recalling correctly and he stated yes that is what he wrote down
> also. If the intent is to do more than that then we need to reconsider
> also. Our vision was not to off load 4, 5, or 6 loads per day. We are
> also
> trying to operate our normal business and operations at East Camden. Not
> sure what commitments were made by Explo to the regulatory agencies but
> we
> need to be methodical and deliberate at EC. I will discuss with Thomas
> today.
>
> Keith
>

> Keith Mills
> Director of Manufacturing
> Austin Powder Company - Red Diamond ◊ 430 Powder Plant Road ◊ McArthur,
OH
> 45651-0317
> Office: 740.596.5286 ext 7412 ◊ Cell: 614.569.1783 ◊
> Keith.Mills@austinpowder.co



Re: Emailing: SANY0023.JPG, SANY0020.JPG, SANY0021.JPG
davidalansmith to: Keith Mills
Please respond to davidalansmith

03/15/2013 03:41 PM

History: This message has been forwarded.

Keith: this is where the drums have sweated in the high humidity. We will hand pick to see that at possible you get the best drums possible. This is not a safety or environmental concern. The drums all have an inner coating that would prevent any migration. I will call you in an hour to discuss further.

Dave

-----Original Message-----

From: <Keith.Mills@austinpowder.com>
Date: Fri, 15 Mar 2013 15:26:53
To: Terry Wright<terrywright@explosystems.com>
Cc: <davidalansmith@bellsouth.net>
Subject: Fw: Emailing: SANY0023.JPG, SANY0020.JPG, SANY0021.JPG

Terry,

I am forwarding per request from Dave Smith

Thanks

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ◊ 430 Powder Plant Road ◊ McArthur, OH
45651-0317
Office: 740.596.5286 ext 7412 ◊ Cell: 614.569.1783 ◊
Keith.Mills@austinpowder.com
----- Forwarded by Keith Mills/RDN/Austin on 03/15/2013 03:25 PM -----

From: Keith Mills/RDN/Austin
To: davidalansmith@bellsouth.net
Cc: Thomas Ethridge/Mfg/Austin@Austin
Date: 03/15/2013 10:08 AM
Subject: Fw: Emailing: SANY0023.JPG, SANY0020.JPG, SANY0021.JPG

Dave,

We have issues. Please take a look at the containers we received this week from Minden. This was not what we agreed to. The containers must be legal and in good condition containers. These obviously are not in good shipping condition. Several of them you cannot even read the print on the outside of the container. We are going to need to stop until we get this under control. Please call me when you get a free moment so we can discuss.

Thanks

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ◊ 430 Powder Plant Road ◊ McArthur, OH
45651-0317
Office: 740.596.5286 ext 7412 ◊ Cell: 614.569.1783 ◊

Keith.Mills@austinpowder.com

----- Forwarded by Keith Mills/RDN/Austin on 03/15/2013 10:03 AM -----

From: Thomas Ethridge/Mfg/Austin
To: Keith Mills/RDN/Austin@Austin
Date: 03/15/2013 09:48 AM
Subject: Emailing: SANY0023.JPG, SANY0020.JPG, SANY0021.JPG

The message is ready to be sent with the following file or link
attachments:
SANY0023.JPG

SANY0020.JPG

SANY0021.JPG

Note: To protect against computer viruses, e-mail programs may prevent
sending or receiving certain types of file attachments. Check your e-mail
security settings to determine how attachments are handled.

Thomas Ethridge, Plant Manager
Austin Powder Company
East Camden, Arkansas
870-574-0580 (Voice)
870-574-2060 (Fax)
(See attached file: SANY0023.JPG)
(See attached file: SANY0020.JPG)
(See attached file: SANY0021.JPG)



Re: Explo M6
davidalansmith to: Keith Mills
Please respond to davidalansmith

03/12/2013 02:34 PM

History: This message has been replied to.

Keith: Thanks, really appreciate your help.

Dave

-----Original Message-----

From: <Keith.Mills@austinpowder.com>
Date: Tue, 12 Mar 2013 14:13:13
To: David Smith<davidalansmith@bellsouth.net>
Subject: Re: Explo M6

Dave,

Just got feedback from James Nixon at Highland. He has reviewed the letter and agreed to allow Austin to accept the M6 product from Explo. As we discussed, their biggest concern is to see consistency in outbound shipments. They will be monitoring the outbound shipments. Explo needs to make sure we have a steady flow back out so as not to jeopardize APC's relationship with Highland.

Thanks for the quick response and turnaround today so we can keep the project moving forward. It is appreciated.

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH
45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦
Keith.Mills@austinpowder.com

From: David Smith <davidalansmith@bellsouth.net>
To: <keith.mills@austinpowder.com>
Date: 03/12/2013 01:07 PM
Subject: Explo M6

Keith: Did the letter met Highlands requirements?

Thanks,

Dave



Re: Explo
davidalansmith to: Keith Mills
Please respond to davidalansmith

03/08/2013 09:44 AM

Keith: Have talked to Highlands and they are good with our movement of M6 to your storage.

Just though we would let you know.

Thanks,

Dave

-----Original Message-----

From: <Keith.Mills@austinpowder.com>

Date: Fri, 8 Mar 2013 08:39:33

To: <davidalansmith@bellsouth.net>

Subject: Re: Explo

Dave,

I appreciate you being proactive. I'm not sure Thomas Ethridge has communicated with Highland yet about the possibility of additional M6 coming to East Camden. I will connect with him this morning. If we need some additional support from there we will let you know.

Thanks again,
Keith

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ◊ 430 Powder Plant Road ◊ McArthur, OH
45651-0317
Office: 740.596.5286 ext 7412 ◊ Cell: 614.569.1783 ◊
Keith.Mills@austinpowder.com

From: <davidalansmith@bellsouth.net>
To: Keith Mills <keith.mills@austinpowder.com>
Date: 03/08/2013 08:19 AM
Subject: Re: Explo

Keith: Thanks, we are getting in contact with Highlands this morning to give them a comfortable feeling about the M6.

Thanks,

Dave

-----Original Message-----

From: <Keith.Mills@austinpowder.com>

Date: Fri, 8 Mar 2013 07:52:49

To: David Smith<davidalansmith@bellsouth.net>

Subject: Re: Explo

Dave,

Just a quick update. Dave True and I were not able to connect yesterday. I

am hoping to today. I'll let you know as we progress.

Thanks
Keith

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ◊ 430 Powder Plant Road ◊ McArthur, OH
45651-0317
Office: 740.596.5286 ext 7412 ◊ Cell: 614.569.1783 ◊
Keith.Mills@austinpowder.com

From: David Smith <davidalansmith@bellsouth.net>
To: <keith.mills@austinpowder.com>
Date: 03/07/2013 12:09 PM
Subject: Explo

Keith: It was great to meet you yesterday and sincerely appreciate Austin helping us get the M6

Situation resolved. We will work very hard to minimize any impact on your operations in Camden.

We are getting trailers positioned on Monday and plan to start on Tuesday. Should Terry Wright coordinate

This effort and our possible help with your local management?

Thanks again, we will be forever grateful.

Dave Smith



Re: Explo
davidalansmith to: Keith Mills
Please respond to davidalansmith

03/08/2013 08:19 AM

History: This message has been replied to.

Keith: Thanks, we are getting in contact with Highlands this morning to give them a comfortable feeling about the M6.

Thanks,

Dave

-----Original Message-----

From: <Keith.Mills@austinpowder.com>
Date: Fri, 8 Mar 2013 07:52:49
To: David Smith<davidalansmith@bellsouth.net>
Subject: Re: Explo

Dave,

Just a quick update. Dave True and I were not able to connect yesterday. I am hoping to today. I'll let you know as we progress.

Thanks
Keith

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ◊ 430 Powder Plant Road ◊ McArthur, OH
45651-0317
Office: 740.596.5286 ext 7412 ◊ Cell: 614.569.1783 ◊
Keith.Mills@austinpowder.com

From: David Smith <davidalansmith@bellsouth.net>
To: <keith.mills@austinpowder.com>
Date: 03/07/2013 12:09 PM
Subject: Explo

Keith: It was great to meet you yesterday and sincerely appreciate Austin helping us get the M6

Situation resolved. We will work very hard to minimize any impact on your operations in Camden.

We are getting trailers positioned on Monday and plan to start on Tuesday. Should Terry Wright coordinate

This effort and our possible help with your local management?

Thanks again, we will be forever grateful.

Dave Smith



RE: Highland
James Nixon to: Keith.Mills

09/16/2013 12:26 PM

I am having a Monday. I got your email and failed to scroll down, classic case of moving too fast. Thanks again for the information.

James

-----Original Message-----

From: Keith.Mills@austinpowder.com [mailto:Keith.Mills@austinpowder.com]
Sent: Monday, September 16, 2013 11:00 AM
To: James Nixon
Subject: Re: Highland

Hello James,

Bob Hivick had provided the summary information for the stability testing in his verbiage of the email. My intent was not to include specific data sheets by lot as that would be numerous documents. I thought the summary data would provide you the basic information.

Thanks
Keith

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ◊ 430 Powder Plant Road ◊ McArthur, OH
45651-0317
Office: 740.596.5286 ext 7412 ◊ Cell: 614.569.1783 ◊
Keith.Mills@austinpowder.com

From: James Nixon <jnixon@highlandinc.net>
To: <Keith.Mills@austinpowder.com>
Date: 09/16/2013 11:20 AM
Subject: Highland

Morning Keith:

Thanks for the MSDS on the M6-Propellant. You mentioned in the email you also attached the stability info, but it was not attached.

Thanks,

James

Propellant Stabilization

James Nixon

to:

Keith.Mills

09/12/2013 11:40 AM

Cc:

ghill

Show Details

History: This message has been forwarded.

Keith:

Thanks for the open communication regarding the storage of the M-6 propellant. It is great to see Austin Powder aggressively trying to find a solution. Keep applying pressure to ATF. I want to address the stabilization of the M-6 propellant. Alliant Tech leased a storage magazine here at Highland for the storage of propellant. In 2001 I requested that they test the propellant for stability. They tested the old propellant in their leased magazine and it was deemed stable. The propellant and magazine blew up a week later. The most recent explosion involving Explo at Camp Minden involved the M-6 propellant that was in storage, supposedly in properly controlled conditions. In both cases it was never determined exactly what happened. Because we are dealing with a large amount of old demilled propellant I am very cautious.

Highland would like to know how proper monitoring and testing of the propellant stability will be done on the material should it have to be stored in Austin's leased magazines for an extended period of time. I would like a MSDS on the M-6 propellant. I would like to know who last tested the material, when it was last tested and when the next testing should be done.

Again Highland appreciates Austin Power and your willingness to keep us in the know regarding any M-6 developments. In return if you need anything please call me and I will assist where I can.

Best Regards,

James Nixon

Manager



RE: Explo Update
James Nixon to: Keith.Mills
Cc: ghill

09/03/2013 04:29 PM

Keith,

ATF has certainly not made this easy. It sounds like Austin has its hands full. Please keep me posted to any new developments.

Thanks,

James

-----Original Message-----

From: Keith.Mills@austinpowder.com [mailto:Keith.Mills@austinpowder.com]
Sent: Tuesday, September 03, 2013 10:01 AM
To: James Nixon
Subject: Re: Explo Update

Hello James,

The holiday weekend was good. I hope yours was well.

Explo has been attempting to ship three loads out of EC over the past couple of weeks. With their ATF licenses suspended yet maintaining ownership as a legal asset of Explo (bankruptcy issues) numerous challenges has arisen. We (APC) has been consulting with ATF to see how we can support this request so the ability to dispose of the material does not dry up. ATF has come back stating that if APC took full ownership of the 2.9 million pounds at EC they would allow that to happen. Obviously that is something we do not want to do and believe the overall legal ownership should reside with Explo. . The customer in Oklahoma is telling Explo if they can't deliver product they will need to move on to another source. We are continuing to work through the issues this week. As soon as there is any resolution I will let you know.

Certainly a frustrating situation...

Thanks
Keith

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH
45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦
Keith.Mills@austinpowder.com

From: James Nixon <jnixon@highlandinc.net>
To: <Keith.Mills@austinpowder.com>
Date: 09/03/2013 10:04 AM
Subject: Explo Update

Morning Keith:

I hope you had a great Labor Day Weekend. I was curious if you have had any recent contact with the David's regarding Explo and their plans to begin moving the M-6 propellant?

Thanks,

James

Highland Park
James Nixon
to:
Keith.Mills
08/08/2013 03:10 PM
Show Details

Afternoon Keith:

I just received a phone call from Paige Delgado who is with EPA Section 6 out of Dallas Texas. She has just learned that Explo Systems has M6 propellant stored at Highland and wanted some information. I told Paige that the product was stored at Highland and it was under the control of Austin Powder. I told her I could not give her any other details. She asked for a contact with Austin and I gave her your contact information. Paige works with RCRA and Superfund issues. Her phone number is 469-371-2529.

Regards,

James Nixon
Manager

Highland
James Nixon
to:
Keith.Mills
07/25/2013 09:22 AM
Show Details

History: This message has been replied to and forwarded.
Morning Keith:

ATF called me This past Tuesday July 23, 2013. They have just realized that you are storing M-6 propellant in your leased magazines here at Highland. The New Orleans ATF office is supposed to ask the Little Rock ATF office to make contact with someone at Austin and inspect the magazines and material. I believe they received the same findings letter I submitted to you regarding the products potential instability.

I am sorry I did not call you right away no excuse I just got busy and forgot. Call me if you need to discuss my cell phone number is (870) 833-2007.

Regards,

James Nixon

Explo Letter of Stability
James Nixon
to:
Keith.Mills
07/01/2013 03:58 PM
Show Details

History: This message has been forwarded.

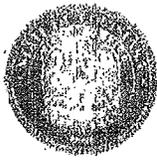
Afternoon Keith:

Highland's East Camden Highland Railroad (EACH) has a storage car location at the Camp Minden facility. The last Explo explosion took out several of their customers railcars. In light of what is happening with Explo the EACH Railroad President Bruce Coffey has been concerned about another explosion. Camp Minden has issued a letter regarding the M6 Propellant and its stability. The Army Safety Team has advised inherent stability issues regarding the M6 propellant. I don't know who the Army Safety Team is but thought you may want a copy of the letter.

When you have reviewed this letter please call me to discuss (870) 574-3600, ext. 135.

Regards,

James Nixon



STATE OF LOUISIANA
MILITARY DEPARTMENT

Camp Minden
100 Louisiana Boulevard
Minden, Louisiana 71055-7908

NGLA-SMD-CM

28 June 2013

Mr. Bruce Coffey
East Camden Railroad
P. O. Box 3180
East Camden, AR 71701

Dear Mr Coffey

This correspondence is provided as follow up to our meeting of 23 May 2013 where we discussed the EXPLO Public Safety issues and the results of a Department of Army Safety team site visit. As you may recall we discussed the following items during the May meeting:

- a. The Public Safety issue relating to improper storage of M6 Propellant has been resolved and all propellant is now in storage igloos.
- b. The Army Safety team advised that M6 propellant has an inherent stability issue that can result in auto-ignition while in storage.

As noted above, we still have a potential safety hazard relating to the M6 propellant. However, it is important to note that the propellant stability was checked by EXPLO when it was received and the Louisiana State Police checked the stability prior to moving it from S-line to storage magazines and found no significant stability issues. The State Military Department has advised EXPLO that their priority of propellant shipment should be from those magazines in close proximity to other tenant activities.

Rest assured that we are doing everything possible to insure the safety of all personnel who live, work, and train at or near Camp Minden and will keep you and your staff informed as the EXPLO situation changes. If you have any questions regarding this issue please contact the undersigned who can be reached at 318-382-4183.


RONNIE D. STUCKEY
COL (Ret), LMD
Installation Commander



RE: M6 shipments from APC-EC
James Nixon to: Keith.Mills

06/18/2013 11:41 AM

Keith,

Thanks for the update.

James

-----Original Message-----

From: Keith.Mills@austinpowder.com [mailto:Keith.Mills@austinpowder.com]
Sent: Monday, June 17, 2013 11:33 AM
To: jnixon@highlandinc.net
Cc: Thomas.Ethridge@austinpowder.com
Subject: M6 shipments from APC-EC

James,

Here is the latest information as we know it. I had a brief conversation this morning with Dave Smith from Explo. He stated the customer site in Oklahoma had experienced a fatal rail accident and has been shutdown during the accident investigation for the past two weeks. He believed shipments "should" resume in the next week or two. We will keep you informed as we progress.

Thanks,
Keith

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ◊ 430 Powder Plant Road ◊ McArthur, OH
45651-0317
Office: 740.596.5286 ext 7412 ◊ Cell: 614.569.1783 ◊
Keith.Mills@austinpowder.com



RE: M 6 Letter
James Nixon to: Keith.Mills

06/05/2013 04:45 PM

History:

This message has been replied to.

Afternoon Keith:

I have been in regular contact with Thomas regarding the M-6 propellant stored for Explo. I believe there have been only 3 shipments at the time. Have you received an updated plan as to when they expect to start shipping regularly. I know Explo is dealing with a lot right now, however history relating to long term storage of propellant has my attention. Thanks for allowing me to stay in touch on this issue.

Have a Great Rest of the week.

James Nixon
Manager
Highland Industrial Park

-----Original Message-----

From: Keith.Mills@austinpowder.com [mailto:Keith.Mills@austinpowder.com]
Sent: Tuesday, March 12, 2013 1:20 PM
To: James Nixon
Subject: RE: M 6 Letter

James,

Thank you for the timely feedback. It is appreciated.

I have also asked for Thomas Ethridge to report to me weekly the amount of outbound M6 product so we have more than one set of eyes on the situation.

Thanks again.
Keith

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH
45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦
Keith.Mills@austinpowder.com

From: James Nixon <jnixon@highlandinc.net>
To: <Keith.Mills@austinpowder.com>
Date: 03/12/2013 02:00 PM
Subject: RE: M 6 Letter

Keith:

It was good to speak with you this morning. I have reviewed the letter and found that Explo does have a plan to move the M-6 Propellant. It also helps to know Austin has reviewed the test data for the M-6 Propellant and found the material to have Class A stability. Highland will allow Austin to accept product from Explo Systems, however if in the near future for some unforeseen

reason shipments stop please let me know so we can discuss.

Highland has enjoyed a long standing business relationship with Austin Powder. If you ever need anything please call me anytime at (870) 833-2007.

James Nixon
Manager

-----Original Message-----

From: Keith.Mills@austinpowder.com [mailto:Keith.Mills@austinpowder.com]
Sent: Tuesday, March 12, 2013 10:34 AM
To: jnixon@highlandinc.net
Cc: Thomas.Ethridge@austinpowder.com
Subject: Fw: M 6 Letter

James,

It was a pleasure talking with you this morning. Please find attached the letter from Explo's Dave Smith explaining the shipment of M6 propellant out of our East Camden facility going forward. Please let me know if you need anything else.

Please don't hesitate to contact me directly if you have any other issues or concerns.

Thank you,
Keith

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ◊ 430 Powder Plant Road ◊ McArthur, OH
45651-0317
Office: 740.596.5286 ext 7412 ◊ Cell: 614.569.1783 ◊
Keith.Mills@austinpowder.com
----- Forwarded by Keith Mills/RDN/Austin on 03/12/2013 11:27 AM -----

From: David Smith <davidalansmith@bellsouth.net>
To: <keith.mills@austinpowder.com>
Date: 03/12/2013 11:06 AM
Subject: M 6 Letter

Keith: Please see attached. Hope that it meets your requirements.

Thanks,

Dave(See attached file: Austin Powder M6 Letter.pdf)



Re: Tritonal
Dave True to: Keith Mills

02/07/2012 06:30 PM

History: This message has been replied to.

I agree with your thinking. What are they doing with it - settling out the aluminum and selling TNT? If we do something your notion that 'replacement costs' should be considered.

David P. True

Austin Powder Company ♦ 25800 Science Park Drive ♦ Cleveland, OH 44122
Office: 216.839.5440 ♦ Toll Free: 800.321.0752 ♦ Cell: 216.403.5096 ♦ dave.true@austinpowder.com

Keith Mills Explo has taken 361,500 lbs of our Tritonal in ex... 02/07/2012 05:11:04 PM

From: Keith Mills/RDN/Austin
To: Dave True/Cle/Austin@Austin,
Date: 02/07/2012 05:11 PM
Subject: Tritonal

Explo has taken 361,500 lbs of our Tritonal in exchange for and equivalent amount of Torpex. That is a good deal for APC.

Now they are asking to purchase all of our remaining Tritonal, 1.3 million pounds. They are requesting we tell them the asking price as they do not want to continue the Torpex trade. I could not get hold of Balish. From we can see we have about \$0.40/lb in it with a standard cost showing \$0.525/lb. I am hesitant to recommend selling it as it does represent 1.0 million pounds of TNT. the down side it is 300.000 lbs of Aluminum. We probably wouldn't be able to replace at that cost...

I also recall Accurate had significant inventory of Tritonal they were trying to dispose of. I am asking Nick to see what they want for it. Maybe a broker type deal...

Thoughts?

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

RE: Torpex.
Terry Wright
to:
Nick.Rupert, davidasmith
05/25/2011 08:20 AM
Cc:
Keith.Mills, Mike.Thompson, Mike.Abele
Show Details

Nick

This is the chunked material that I assume you have left over from when we sent it to you before when we were trying to see if this would work. When you called and asked about HC-6 I assumed again that you were cleaning up. The HC stands for CHUNKED material. To my knowledge you have very little of this material. All the material you are presently getting is Flaked.

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

From: Nick.Rupert@austinpowder.com [mailto:Nick.Rupert@austinpowder.com]
Sent: Wednesday, May 25, 2011 7:06 AM
To: davidasmith@explosystems.com; Terry Wright
Cc: Keith.Mills@austinpowder.com; Mike.Thompson@austinpowder.com; Mike.Abele@austinpowder.com
Subject: Re: Torpex.

No virus found in this message.
Checked by AVG - www.avg.com
Version: 10.0.1375 / Virus Database: 1509/3657 - Release Date: 05/24/11

RE: End Use certificate
Terry Wright
to:
Keith.Mills
05/24/2011 03:26 PM
Show Details

Thanks Keith

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

From: Keith.Mills@austinpowder.com [mailto:Keith.Mills@austinpowder.com]
Sent: Tuesday, May 24, 2011 1:50 PM
To: Lionel Koons
Cc: terrywright@explosystems.com
Subject: Re: End Use certificate
Importance: High

No virus found in this message.
Checked by AVG - www.avg.com
Version: 10.0.1375 / Virus Database: 1509/3657 - Release Date: 05/24/11

End Use certificate
Lionel Koons
to:
keith.mills
05/24/2011 01:15 PM
Cc:
terrywright
Show Details

History: This message has been replied to.

Sir,

Attached is the End Use Certificate we require for all products sent to Austin Powder during the month of April 2011.

Please fill out the bottom portion of the form and e-mail or fax back to me as soon as possible.

Thank You for your assistance.

Lionel Koons

LIONEL W. KOONS
EXPLO SYSTEMS INC.
1600 JAVA ROAD
MINDEN, LA 71055
318.382.8700
318.382.8434 (FAX)
318.564.0776 (CELL)



END-USE CERTIFICATE

(STATEMENT REGARDING DISPOSITION AND USE OF PROPERTY)

Please complete and return form to Explo Systems, Inc within 30 days.

TYPE OR PRINT ALL INFORMATION

The following applies to all property subject to sale using this form: the use, export, or re-export of this property, is subject to the publications, penalties, and other provisions of the economic programs administered by the Office of Foreign Assets Control, U. S. Treasury Department, 31 CFR Chapter V.

EUC #APC002

Date: 3 MAY 2011

To: AUSTIN POWDER COMPANY.

Regarding: Final disposition of 288,000 LBS OF H-6 MATERIAL

SECTION I. GENERAL INFORMATION

BUSINESS/COPRORATION HEADQUARTERS:

NAME: AUSTIN POWDER CO

ADDRESS: 430 POWDER PLANT ROAD
McARTHUR, OHIO. 45651

1. TYPE OF FIRM: Explosive Manufacture

SOLE PROPRIETORSHIP PARTNERSHIP XX CORPORATION

2. NATURE OF END-USER'S BUSINESS: Commercial Boosters

3. NATURE OF PRINCIPLES BUSINESS: Manufacture

4. FIRM'S ID/FEDERAL TAX NUMBER: 34-00077750

SECTION II. END USE/USER INFORMATION.

1. PURPOSE. THE PROPERTY REFERRED TO ABOVE TO IN ABOVE OFFER WILL BE UTILIZED FOR THE FOLLOWING. Enter an "X" in the appropriate item (s) box below. In case of resale, Item 1 D MUST be marked

A. Retention for the following specific use
To be used in the manufacture of commercial explosive products-Boosters

It is hereby certified that Austin Powder Company will comply with all applicable federal, state and local ordinances and regulations with respect to the care, handling, storage and shipment, resale, export and other use of the material, hereby purchased, and that we as a user of, or dealer in, said materials are capable of complying with all applicable federal, state and local laws. This certification is made in accordance with and subject to the penalties of Title 18, section 1001 of the United States Code, Crimes and Criminal Procedures.

Signature: _____
Name: _____
Title: _____

Fw: Tritonal
Nick Rupert to: Keith Mills

06/02/2011 11:49 AM

Let's talk about this possible trade!

Nick

----- Forwarded by Nick Rupert/RDN/Mfg/Austin on 06/02/2011 11:48 AM -----



Terry Wright
<terrywright@explosystems.com>
06/01/2011 10:07 AM

To <Nick.Rupert@austinpowder.com>
cc
Subject RE: Tritonal

I'm listening. Get you ducks in a row and let me know.

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

-----Original Message-----

From: Nick.Rupert@austinpowder.com [mailto:Nick.Rupert@austinpowder.com]
Sent: Wednesday, June 01, 2011 9:04 AM
To: Terry Wright
Subject: Re: Tritonal

Terry,

Maybe we could work out a trade?

Nick

Terry Wright
<terrywright@expl
osystems.com>
06/01/2011 09:22
AM

To
<Nick.Rupert@austinpowder.com>
cc
Subject
Tritonal

Nick

If you have an abundance of Tritional I might be able to sell it for you. We are currently selling Tritional to a customer and could slide yours in if you want to get rid of it. Just a thought, always thinking and trying to take care of you.

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

No virus found in this message.

Checked by AVG - www.avg.com

Version: 10.0.1375 / Virus Database: 1511/3673 - Release Date: 06/01/11

Trade Tritonal for TNT

Nick Rupert to: davidasmith, Terry Wright
Cc: Keith Mills

06/02/2011 04:24 PM

Terry,

As per our phone conversation, we would be acceptable to a trade of our Tritonal for your TNT. Current market value for D-milled TNT is \$0.66 per pound and Tritonal is \$0.57 per pound. We would like to trade you:

1,157,894 pounds of Tritonal for 1,000,000 pounds of TNT! Each party would pay his own freight! Let me know what you think!

Nick

Fw: RDX

Nick Rupert to: Mark Fox, Keith Mills

06/25/2011 07:20 AM

Mark,

Explo has 160 tons of this material for sale. Have we ever purchased this combination of RDX and HMX before?

Nick

----- Forwarded by Nick Rupert/RDN/Mfg/Austin on 06/25/2011 07:15 AM -----



Terry Wright

<terrywright@explosystems.com>

06/24/2011 05:35 PM

To <dave.true@austinpowder.com>

cc <Nick.Rupert@austinpowder.com>

Subject RDX

Gentlemen

The analysis I received on the phone this morning was one thing. The analysis I just received via Email is as follows:

RDX	81.7
HMX	11.1
Wax	3.3
Graphite	3.6

Sorry for the confusion.

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

apc002
Lionel Koons
to:
keith.mills
07/18/2011 09:57 AM
Cc:
terrywright, "Lionel Koons"
Show Details

History: This message has been replied to.

Sir,

Here is the EUC for the H-6 material we sent you during the month of June. Please sign and return to me No later than Wednesday 20 July.

Thanks You

Lionel

LIONEL W. KOONS
EXPLO SYSTEMS INC.
1600 JAVA ROAD
MINDEN, LA 71055
318.382.8700
318.382.8434 (FAX)
318.564.0776 (CELL)



RE: Fw: Metal Piece in Hexotonal H-6 14JN11E2

Terry Wright to: Mike.Abele, Nick.Rupert
Cc: Keith.Mills

07/28/2011 10:16 AM

Mike:

It all deals with the sensitivity level that we are set at vs. you and the volume of material we are trying to screen. The way the melt system works is we have a pre-melter that feeds the flaking belt. If a small piece of metal such as a lathe shaving is under this mass of molten material the magnet may not have the strength to pull it through the material. We have increased the sensitivity and the magnet strength. On the bright side we only have about 200,000# of material to flake that may or may not have metal in it. We are then going into material that is metal free. This issue should be over this month.

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

-----Original Message-----

From: Mike.Abele@austinpowder.com [mailto:Mike.Abele@austinpowder.com]
Sent: Thursday, July 28, 2011 9:08 AM
To: Terry Wright; Nick.Rupert@austinpowder.com
Cc: Keith.Mills@austinpowder.com
Subject: Re: Fw: Metal Piece in Hexotonal H-6 14JN11E2

Terry

The question we have - if we can find this tramp metal why can't your system identify? Not sure if Nick sent you this picture from one in July. Appears to be tubing and lathe turnings.

(See attached file: DSCN3628.JPG)

Please Advise.

Thanks Mike

Nick
Rupert/RDN/Mfg/Au
stin

07/27/2011 12:35
PM

Mike Abele/RDN/Mfg/Austin@Austin To
cc

Subject
Fw: Metal Piece in Hexotonal H-6
14JN11E2

FYI

----- Forwarded by Nick Rupert/RDN/Mfg/Austin on 07/27/2011 12:34 PM -----

Terry Wright
<terrywright@expl
osystems.com>

07/27/2011 08:19
AM

<Nick.Rupert@austinpowder.com> To

cc

Subject
RE: Metal Piece in Hexotonal H-6
14JN11E2

Nick:

I can only assume based on the picture that this is one of the arming tubes that runs down the middle of the H6. It appears to be mashed flat which means if it was covered with H6 during the melting process the system (based on the fact you received it) missed it. We will turn the sensitivity up of the readers to detect better. Please realize there is a fine line that we can't cross on the sensitivity or it will be going off all the time for no reason. It appears that the incidents of foreign material is lessening.

On the bright side the 2.5 million pounds we have been discussing does not have metal hidden in the mixture.

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.

1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

-----Original Message-----

From: Nick.Rupert@austinpowder.com [mailto:Nick.Rupert@austinpowder.com]
Sent: Tuesday, July 26, 2011 2:06 PM
To: davidasmith@explosystems.com; Terry Wright
Subject: Fw: Metal Piece in Hexotonal H-6 14JN11E2

Terry,

We found some more metal in our Mix! Was this DSC run before or after your magnetometer was installed. If after, what do we do next? Let us know what's up!

Nick

----- Forwarded by Nick Rupert/RDN/Mfg/Austin on 07/26/2011 03:02 PM -----

Mike
Abele/RDN/Mfg/Austin

07/25/2011 12:34
PM

To
Nick Rupert/RDN/Mfg/Austin@Austin
cc
Keith Mills/RDN/Austin@Austin, Mike
Thompson/RDN/Austin@Austin
Subject
Metal Piece in Hexotonal H-6
14JN11E2

Nick

The Weigh Team found this piece of metal in Hexotonal (H6)-Date Shift Code (14JN11E2) last week. The letter from Explo Systems -dated 7/8/11, (Terry Wright) did not specify when the magnetometer and additional magnets were installed. Could you please contact Explo- Systems and find out the date installed.

(See attached file: DSCN3625.JPG)

Thanks Mike

FW: Comp B
Terry Wright
to:
Keith.Mills
08/11/2011 02:06 PM
Show Details

Keith

I assume there will be a PO heading my way on this product. Thanks for your help.

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

From: Bob.Belock@austinpowder.com [mailto:Bob.Belock@austinpowder.com]
Sent: Wednesday, August 10, 2011 5:17 PM
To: terrywright@explosystems.com
Cc: Dave.True@austinpowder.com; Keith.Mills@austinpowder.com
Subject: Comp B

Terry, Based on our conversation today we agreed upon a price of \$1.15/lb for 72,000 lbs of 60/40 Comp B that is currently enroute to Minden La. Please have these two trucks diverted to East Camden Ar. Keith, Will you please issue the appropriate purchase order.

Robert J. Belock
Austin Powder Company
Phone: 740-596-5286 Home:740-593-5969 Cell: 740-707-0281
Fax: 740-596-4050
bob.belock@austinpowder.com

No virus found in this message.
Checked by AVG - www.avg.com
Version: 10.0.1392 / Virus Database: 1520/3825 - Release Date: 08/10/11

Explo offers and up date.

Nick Rupert to: Keith Mills, Craig Bauman, Dave True

08/22/2011 01:10 PM

Keith, Craig and Dave,

Here is a current up-date on material that we have on order from Explo and their new offers!

1. Explo Systems has offered us 2,000,000 pounds of Torpex at \$0.70 per pound which we have accepted on our PO 11021.
2. We have purchased 64,000 pounds of A-15 from them at \$1.75. They have requested 50% down on this product. Which would be \$65,000.00. I do not have a problem with the 50% down unless you do!
3. They have made us an offer on another lot of A-5 which is 385,700 pounds. They want \$1.75 per pound for this material, fob Minden, LA. However they want 70% down on this, or \$472,482.50 up front!
4. The last offer they have made is for 1,983,600 of Torpex, which is in Europe. They want \$1.55 a pound for this material. As noted above, our last purchase was for domestic Torpex at \$0.70 a pound. Which I think is way to much for this material. However, Terry Wright said, "make us an offer"!

Please advise on how you want to proceed on items 2 - 3 - 4.

Nick

Trade Agreement

Nick Rupert to: Terry Wright

Cc: Thomas Ethridge

Bcc: Keith Mills

01/12/2012 02:37 PM

Terry,

Attached is a trade agreement between Austin Powder and Explo Systems. Please sign and either fax it back or scan it back to us!



12012
Torpex -
Tritonal
Trade.doc

Thanks,

Nick



AUSTIN POWDER COMPANY

**TRADE
AGREEMENT
12012**

**CORPORATE PURCHASING (740) 596-5286
CLEVELAND OFFICE (216) 464-2400**

ORDER DATE 01/12/12		TERMS NET 15		F.O.B. E CAMDEN		SEE BELOW FOR DUE DATES	
I S S U E D T O	EXPLO SYSTEMS, LLC 1600 JAVA ROAD MINDEN, LA 71055 (318) 382-8700 PLANT LIONAL 318-470-1145 DAVE SMITH – CELL 859-842-0980 FAX			S H I P T O	AUSTIN POWDER COMPANY 7 LC – 10 BLANDY ROAD EAST CAMDEN, AR 71701 870-574-0580		
	SHIP VIA R&R OR APC				TAX EXEMPT YES		
ITEM	QUANTITY	U/M	DESCRIPTION			UNIT PRICE	U/M
1	144,000	LBS	<p>Energetic material trade agreement between the Austin Powder Company and Explo Systems of Minden, LA. It is agreed by both parties that the Austin Powder Company will supply Explo Systems with 144,000 pounds of Tritonal at no charge, Explo Systems will in turn supply the Austin Powder Company 144,000 pounds of Torpex at no charge.</p> <p>Each party to this agreement will pay their own freight !</p> <hr/> <p>Terry Wright Explo Systems, LLC</p> <p style="text-align: right;">Date</p> <hr/> <p>Nick Rupert Austin Powder Company</p> <p style="text-align: right;">Date</p>				
MAIL INVOICES IN TRIPLICATE TO:						AUSTIN POWDER COMPANY PER _____ NICK RUPERT, MANAGER OF PURCHASING The Austin Powder Company will be afforded the right of an on plant inspection of your process and quality system.	
AUSTIN POWDER COMPANY P.O. BOX 317 MCARTHUR, OH 45651							

Fw: Question

Nick Rupert to: Keith Mills

02/21/2012 10:12 AM

Keith,

Have a look at Terry's request, then let's talk.

Nick

----- Forwarded by Nick Rupert/RDN/Mfg/Austin on 02/21/2012 10:11 AM -----



Terry Wright
<terrywright@explosystems.com>

To <Nick.Rupert@austinpowder.com>

cc

02/21/2012 08:33 AM

Subject Question

Nick:

I have a favor and a question. Does Austin have an extra kettle either at RD or Camden that I can buy, rent, lease, borrow. I am not wanting to get into the booster business I am trying to develop a plan where I can melt certain raw materials and integrate into TNT and make Torpex or Tritonal. Trying to make something that Austin can use at a cheap price. Just looking at all our options.

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

M6 Propellant

Dennis Schulz to: terrywright

02/27/2012 10:28 AM

Cc: Keith Mills, Dave True

History: This message has been forwarded.

Terry,

As we discussed, please prepare 840# (1 pallet with 6 @ 140# drums) for us.
You indicated that you could get it to APC at East Camden and we will decide how to get it up here from there.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933



RE: Meeting
Terry Wright to: 'Dennis Schulz'
Cc: "Keith Mills", "Dave True"

02/27/2012 10:44 AM

Denny:

Give me a call and let's discuss the details of this meeting. Where to meet Tom and Keith etc. etc.

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

-----Original Message-----

From: Dennis Schulz [mailto:Dennis.Schulz@austinpowder.com]
Sent: Monday, February 27, 2012 9:31 AM
To: terrywright@explosystems.com
Cc: Keith Mills; Dave True
Subject: Meeting

Terry,

We discussed my coming to your facility the week of March 12th. It seems that Keith Mills and Tom Zukovich will be at East Camden later in the week as well.

Can I plan on meeting with you on Wednesday and then perhaps you can spend a couple hours with Keith and Tom early Thursday as well?

Let us know if this will work for you.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

No virus found in this message.
Checked by AVG - www.avg.com
Version: 10.0.1424 / Virus Database: 2113/4835 - Release Date: 02/27/12

Re: Red Diamond Visit 
Dennis Schulz to: Tom Zukovich
Cc: Keith Mills

02/29/2012 11:42 AM

Tom,

I am planning on going to Explo Systems on Wednesday (March 14th) to visit with Terry Wright and actually see the product and their process. Keith and I talked about us getting together there. I really haven't figured out the timing yet.

Overall I think a couple hours is all we need at this time. Perhaps we should do it when you are here.

Attached is the MSDS for the propellant. I am concerned about how the DNT content will impact the operation.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933



MSDS for M6.pdf



MSDS for M6 (2).pdf



MSDS for M6 (3).pdf

Tom Zukovich <zukovich@exploenergy.com>



Tom Zukovich
<zukovich@exploenergy.com
>
02/29/2012 10:45 AM

To: Dennis Schulz <dennis.schulz@austinpowder.com>
>
cc
Subject: Red Diamond Visit

Denny,

Larry Mc and I have confirmed that I will be at Red Diamond on Mon and Tues 12 & 13 March to do plant inspections. We'll be leaving early Wed morning for Camden, AR.

How much time will we need to talk about your project?

I'll be staying at the University Inn in Athens.

Regards,

Tom Zukovich
Partner
Zukovich, Morhard & Wade, LLC.
+ 1 610-653-8821 Tel
+ 1 610-799-2116 Fax
zukovich@exploenergy.com
<http://www.exploenergy.com>



RE: EUC
Terry Wright to: Keith.Mills

03/02/2012 11:20 AM

Thank you Keith. I look forward to it.

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

-----Original Message-----

From: Keith.Mills@austinpowder.com [mailto:Keith.Mills@austinpowder.com]
Sent: Friday, March 02, 2012 10:02 AM
To: Terry Wright
Subject: Re: EUC

Terry,

Here is the signed EUC as requested.

I am hoping we can actually get a chance to meet in a couple of weeks.

(See attached file: M6 EUC 3-2-12.pdf)

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH
45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦
Keith.Mills@austinpowder.com

Terry Wright
<terrywright@expl
osystems.com> To
<Keith.Mills@austinpowder.com> cc
03/02/2012 10:30 AM Subject
EUC

Keith:

Hope all is well. Attached you will find the EUC for the 840 pounds of M6 that was delivered to Camden per Denny's request. Would you sign and return it to me. Thanks

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell
[attachment "Scan_Doc0001.pdf" deleted by Keith Mills/RDN/Austin]

Re: Visit 

Dennis Schulz to: Terry Wright
Cc: "Keith Mills"

03/11/2012 04:21 PM

Thanks for the reminder to contact you.

I have been called away. In the Airport now.
We have the material and have a decent array of testing planned. I will call
in a week with our results and to set up a visit. It really wasn't going to
work this trip with Tom Zukovich anyway.

Take Care!
Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

----- Original Message -----
From: [terrywright@explosystems.com]
Sent: 03/11/2012 08:05 PM GMT
To: Dennis Schulz
Subject: Visit

Are we still on for this week?
Sent via BlackBerry by AT&T

Re: Pictures 
Mark Fox to: Terry Wright
Cc: Keith Mills, Nick Rupert

03/30/2012 11:35 AM

Terry,

Attached are pictures of the Hexogen material.



Picture Picture Picture
010.jpg009.jpg008.jpg

This is a picture of what the chunks of the material looked like after being in a booster kettle charge with TNT mixing for 20 minutes.



DSCN4975.JPG

Terry Wright Mark:

03/30/2012 09:51:48 AM



Terry Wright
<terrywright@explosystems.com>
03/30/2012 09:51 AM

To <Mark.Fox@austinpowder.com>
cc
Subject Pictures

Mark:

I assume you took some pictures of the material. Can you share that with me.

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell



RE: Fw: M6 Propellant

Terry Wright to: 'Dennis Schulz', 'Thomas Ethridge'
Cc: "Brian Gilliland", "Keith Mills"

02/27/2012 04:16 PM

History: This message has been forwarded.

Here is the MSDS for M6 propellant per your request.

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

-----Original Message-----

From: Dennis Schulz [mailto:Dennis.Schulz@austinpowder.com]
Sent: Monday, February 27, 2012 2:41 PM
To: Thomas Ethridge; terrywright@explosystems.com
Cc: Brian Gilliland; Keith Mills
Subject: Re: Fw: M6 Propellant

Terry,

Would you supply the current MSDS to all above.

Thanks

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Thomas
Ethridge/Mfg/Aust
in
02/27/2012 03:14
PM

Keith Mills/RDN/Austin@Austin To
cc
Brian
Gilliland/RDN/Mfg/Austin@Austin,
Dennis Schulz/RDN/Austin@Austin
Subject
Re: Fw: M6 Propellant (Document
link: Dennis Schulz)

Keith

Please let Explo know to send the MSDS with it.

Thanks

Thomas Ethridge, Plant Manager
Austin Powder Company
East Camden, Arkansas
870-574-0580 (Voice)
870-574-2060 (Fax)

Keith
Mills/RDN/Austin

02/27/2012 02:12
PM

To
Thomas Ethridge/Mfg/Austin@Austin,
Brian
Gilliland/RDN/Mfg/Austin@Austin
cc
Dennis Schulz/RDN/Austin@Austin
Subject
Fw: M6 Propellant

Thomas, once this pallet of material arrives from Explo Systems please let Brain and I know so we can arrange shipment onto RD.

Brian, Once the pallet reaches EC we will need to get it to RD ASAP.

Thanks,

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ◊ 430 Powder Plant Road ◊ McArthur, OH
45651-0317
Office: 740.596.5286 ext 7412 ◊ Cell: 614.569.1783 ◊
Keith.Mills@austinpowder.com
----- Forwarded by Keith Mills/RDN/Austin on 02/27/2012 03:07 PM -----

Dennis
Schulz/RDN/Austin

02/27/2012 10:28
AM

To
terrywright@explosystems.com
cc
Keith Mills/RDN/Austin@Austin, Dave
True/Cle/Austin@Austin
Subject

M6 Propellant

Terry,

As we discussed, please prepare 840# (1 pallet with 6 @ 140# drums) for us. You indicated that you could get it to APC at East Camden and we will decide how to get it up here from there.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

No virus found in this message.

Checked by AVG - www.avg.com

Version: 10.0.1424 / Virus Database: 2113/4835 - Release Date: 02/27/12



Explo Systems, Inc.
1600 Java Road
Minden, LA 71055

MATERIAL SAFETY DATA SHEET

PROPELLANT (Wetted)

SECTION I - PRODUCT IDENTIFICATION

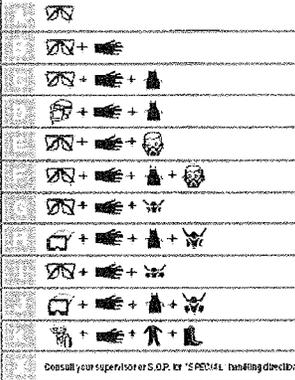
PRODUCT NAME: Propellant, Explosive, Solid, Wetted

Technical Information Phone No.: 318 382 8700

For Chemical Emergency (Spill, Fire, Exposure or Accident) call CHEMTREC day or night. Within the US and Canada: +1 800-424-9300. Outside the US and Canada: +1 703-527-3887 (collect calls accepted).

Ingredient	CAS No.	Wt. %	OSHA PEL ACGIH TLV EPA RQ (if defined) DOT RQ (if defined)
Dibutyl Phthalate	84-74-2	3.00	OSHA PEL 5 mg/m ³ ACGIH TLV 5 mg/m ³ EPA RQ 10 lbs DOT RQ 10 lbs
Diphenylamine	122-39-4	1.00	OSHA PEL 10 mg/m ³ ACGIH TLV 10 mg/m ³ EPA RQ (none defined) DOT RQ (none defined)
Potassium Sulfate	7778-80-5	2.00	OSHA PEL none published ACGIH TLV none published EPA RQ (none defined) DOT RQ (none defined)
Nitrocellulose (flammable solid)	--	87.00	OSHA PEL none published ACGIH TLV none published EPA RQ (none defined) DOT RQ (none defined)
Dinitrotoluene	25321-14-6	10.00	OSHA PEL 10 mg/m ³ ACGIH TLV 10 mg/m ³ EPA RQ 10 lbs DOT RQ 10 lbs

SECTION II - HAZARDS IDENTIFICATION

PROPELLANT		HAZARDOUS MATERIALS IDENTIFICATION SYSTEM	
HEALTH	2 2	HAZARD INDEX 4 = SEVERE HAZARD 3 = SERIOUS HAZARD 2 = MODERATE HAZARD 1 = SLIGHT HAZARD 0 = MINIMAL HAZARD An asterisk (*) or other designation corresponds to additional information on a data sheet or separate chronic effects notification. Additional information:	PERSONAL PROTECTION INDEX 
FLAMMABILITY	4		
	4		
PERSONAL PROTECTION [B]			

Routes of Entry: Inhalation; Skin; Ingestion

Carcinogenicity: None

First Aid Measures: EYES - Immediately flush with copious amount of water (low pressure) for 15 minutes, remove contact lenses; call physician. SKIN - Wash with soap and running water. INGESTION - Contact physician immediately.

INHALATION - Remove to fresh air. Treat irritation symptomatically; call physician.

Firefighting Measures: Self-oxidizing, deluge with water. Will not be able to extinguish unless large quantity of water is used in very short time. Use NIOSH/MSHA approved SCBA and full protective equipment; evacuate area.

Unusual Fire/Explosion Hazard: Easily ignited, highly combustible; protect from fire and sparks and extreme heat.

Autoignition: 383°F (195°C)

Hazardous Combustion Products: Oxides of Carbon

Accidental Release Measures: SPILL - Clean immediately with soft (horsehair) brush and conductive rubber or plastic shovel. Use brass or other non-sparking tools and utensils. DO NOT hammer or otherwise cause impact forces to spilled material (explosion or autoignition could occur with impact force being applied).

SECTION III - HANDLING AND STORAGE

Precautions: Avoid prolonged temperature above 125°F (50°C). Normal storage conditions should be 75°F (21°C) and 50% Humidity. Storage must conform to local, state and federal regulations, specifically: 29 CFR OSHA 1910.109; 27 CFR BATFE 55 subpart K.

Other Special Precautions: Flammable Solid...Keep away from heat, sparks, open flame...Keep containers closed...use with adequate ventilation.

Ventilation: Local and general ventilation necessary to keep air concentration below TLV's.

Personal Protective Equipment: Safety Glasses, Cotton or Leather Gloves, Fire Resistant Coveralls.

SECTION IV - PHYSICAL AND CHEMICAL PROPERTIES

Specific Gravity: 1.496

Evaporation Rate: <1 (Butylacetate = 1)

Solubility in Water: negligible

Appearance and Odor: Hard Cylinder Perforated, Smooth, Greenish Yellow. Odorless.

Materials to Avoid: Oxides of Nitrogen and Carbon.

Conditions to Avoid: Open Flame, Sparks, Heat, Direct Sunlight.
Hazardous Decomposition Products: Oxides of Carbon

SECTION V - DISPOSAL CONSIDERATIONS

Disposal must be in accordance with federal, state and local regulations. Burn in open burning ground in accordance with regulatory requirements. It may also be burned in an incinerator approved for explosives.

DISCLAIMER

The information contained in this MSDS (Material Safety Data Sheet) is based upon available constituent data for the components of **Propellant** and is believed to be correct. However, as this information has been obtained from various sources, including the manufacturers of its components and independent laboratories, it is provided herein without warranty or representation that it is complete, accurate and can be relied upon. Explo Systems, Inc. has not attempted to conceal in any manner the deleterious aspects of this product, and makes no warranty as such. Explo Systems, Inc. cannot anticipate nor control the many situations in which this product or this information may be used; there is no guarantee that the health and safety precautions suggested herein will be proper under all conditions. It is the sole responsibility of each user of the product to determine and comply with the requirements of all applicable laws and regulations regarding its use. This information is given solely for the purposes of safety to persons and property. Any other use of this information is expressly prohibited.

AUTHOR

This MSDS was prepared by: Ferris Callihan, PE - Director Support Technology - Explo Systems, Inc. - 1600 Java Road - Minden, LA 71055 - Tel 318 382 8700 - E-mail: fcallihan@explosystems.com



Remote tipper tie test on M6

Margit Chevalier to: Dennis Schulz, Tom Justice, Shawn Fee
Cc: Keith Mills, Mike Abele, Larry McCorkle, Gerald Stewart, Bob Hivick

09/26/2012 02:46 PM

Dear All,

the pictures of todays test are in the Propellant file.

The test was carried out at 110 psi with various single and double M6 pellets using clips or running only the hammer onto the pellet (in case of an empty tipper tie machine).

No action of the pellet was observed, except breaking of one (see pics).

M

Margit Chevalier | Austin Powder Company **R&D** | 430 Powder Plant Rd | McArthur, OH 45651 | (Office) 740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com



Fw: Propellents

Tom Justice to: Dennis Schulz, Margit Chevalier, Larry McCorkle 09/28/2012 07:49 AM
Cc: Keith Mills, Shawn Fee, Tom Reed, Broderick Speraw

I sent Tom a couple of pictures of the 60/40%.

Tom Justice
Project Manager
Austin Powder Co.
Work : 740-596-5286 ext. 7427
Cell : 740-503-4567
Fax : 740-596-5396
Email : tom.justice@austinpowder.com

----- Forwarded by Tom Justice/RDN/Mfg/Austin on 09/28/2012 07:47 AM -----



Tom Zukovich
<zukovich@exploenergy.com To <Tom.Justice@austinpowder.com>
> cc
09/28/2012 01:18 AM
Subject Re: Propellents

Tom,

Sorry to take so long, but I'm in New Zealand right now and I have been out of e-mail range for a few days.

This stuff looks like it will crush in the pump as you said. I see that it's straight matrix. The other guys use sensitized emulsion and they also use smaller propellant. I think it would drip a lot if you run it through an auger, but I think we can control that. The other guys use a Netzsch size 100 pump in order to run it slower (safer) and it also has much larger cavities to be able to pass larger particles.

Regards,

Tom Zukovich
Partner
Zukovich, Morhard & Wade, LLC.

+ 1 610-653-8821 Tel
+ 1 610-799-2116 Fax
zukovich@exploenergy.com
<http://www.exploenergy.com>

On 25/09/2012, at 12:54 PM, <Tom.Justice@austinpowder.com>
<Tom.Justice@austinpowder.com
> wrote:

>
> Tom,
>
> I am feeling a little apprehensive about the idea of pumping the
> propellents through an Allweiler or a paristaltic pump. I'm curious
> of
> what percentage by weight you would recommend for pumping. We are
> looking
> at a 60/40 mix with the propellents being 40. I am attaching a
> couple of
> pictures of this blend and in my opinion even if we could pump it we
> would
> be crushing a good amount of the propellents each rev. I am
> thinking more
> in the way of an auger packer with either a plastic auger or auger
> tube.
> Your thoughts on this subject would be highly appreciated..
>
> (See attached file: M6 in 503 a.jpg)(See attached file: M6 in 503
> b.jpg)
>
> Tom Justice
> Project Manager
> Austin Powder Co.
> Work : 740-596-5286 ext. 7427
> Cell : 740-503-4567
> Fax : 740-596-5396
> Email : tom.justice@austinpowder.com<M6 in 503 a.jpg><M6 in 503 b.jpg>



Re: Propellant Burn Test. 

Bob Hivick, Dennis Schulz, Gerald Stewart, Keith
Mike Abele to: Mills, Larry McCorkle, Margit Chevalier, Shawn Fee, Tom Justice 10/16/2012 03:25 PM

Additional testing was performed on a larger scale today. The close up video is 80 lbs 40% M6 in 600 and 50 lbs 927 (made with Al and Expancelis in R&D).

The distant video shows all three(3) items below including the product that was shown close-up.

left bin: 80 lbs 40% M6 in 600 and 50 lbs 927 (made with Al and Expancelis in R&D) - filmed on close up
middle bin: 160 lbs of 40% M6 in 503
right bin: 80 lbs of 40% M6 in 600

They can be seen on Library drive under propellant "Burn Test / Large Burn"

Thanks Mike

Mike Abele We performed burn test on samples of propellan... 10/12/2012 03:18:40 PM



Mike Abele/RDN/Mfg/Austin
10/12/2012 03:18 PM

To Dennis Schulz/RDN/Austin, Margit Chevalier/RDN/Austin,
Bob Hivick/RDN/Mfg/Austin, Larry
McCorkle/RDN/Mfg/Austin, Gerald Stewart/RDN/Austin,
Shawn Fee/RDN/Austin, Tom Justice/RDN/Mfg/Austin
cc Keith Mills/RDN/Austin@Austin

Subject Propellant Burn Test.

We performed burn test on samples of propellant from R&D today. The video's turned out great. They can be seen on Library drive under propellant "Burn Test". There are two (2) video's, one close up and one at a distance. Also under folder "burn test" are two (2) still pictures showing description of what was burned.

Thanks Mike



Fw: M-6 Safety

Broderick Speraw to: Keith Mills, Dennis Schulz
Cc: Tom Justice

01/22/2013 08:58 AM

The attached documents are from the Department of Defense regarding M6 propellant and deluge systems. Please give these a look so that we can discuss them this afternoon.

Broderick Speraw
Project Engineer
Austin Powder Company
Phone: 740-596-5286 ext. 7415
Fax: 740-596-5396
Email: broderick.speraw@austinpowder.com

----- Forwarded by Broderick Speraw/RDN/Austin on 01/22/2013 08:51 AM -----

From: Nick Rupert/RDN/Mfg/Austin
To: Broderick Speraw/RDN/Austin@Austin
Cc: Larry McCorkle/RDN/Mfg/Austin@Austin, Keith Mills/RDN/Austin@Austin, chad.cochran@austinpowder.com
Date: 01/21/2013 04:21 PM
Subject: M-6 Safety

Brody,

Have a look at the attached and then we'll call Bob Lloyd!

Nick

----- Forwarded by Nick Rupert/RDN/Mfg/Austin on 01/21/2013 04:19 PM -----



"Kieler, Nick"
<Nick.Kieler@aolc.biz>
01/21/2013 04:03 PM

To "nick.rupert@austinpowder.com"
<nick.rupert@austinpowder.com>

cc

Subject

Nick, I have attached several HCSDS and the paper entitled "UV Study".

Below are Mr. Lloyd's phone number(s):

Telephone: COM (309) 782-2975

DSN 793-2975

Hope this information helps.



Safety is our # 1 Value, 24/7, On the Job, On the Road, At Home

Nicholas M. Kieler

Sr. Safety & Health Manager

American Ordnance, LLC

Iowa Army Ammunition Plant

Land-Line: 319-753-7434

Mobile Phone: 319-572-0027

Pager: 716

Fax: 319-753-7321

Email: kielernm@aolc.biz

			
40032_A	447_D	807_D	UV
PROPELLANTPROPELLANT, PROPELLANT, Study.pdf			
M6+2.pdf	M1.pdf	M2.pdf	

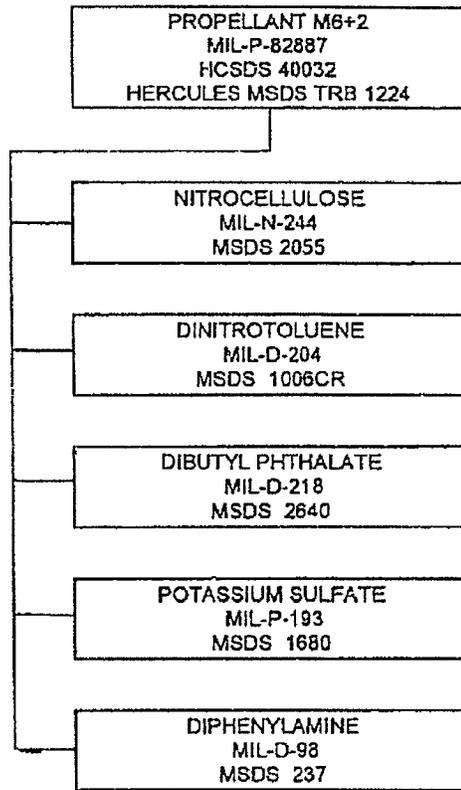
HAZARDOUS COMPONENT SAFETY DATA STATEMENT (HCSDS)		DATE PREPARED (YYMMDD) 940623	REPORT CONTROL (CODE) MIL (A/R) 1687
1 SERIAL / COMPONENT / ASSEMBLY PROPELLANT # M6+2		2 NUMBER 40032	4 REVISION A
3 FEDERAL REGULATORY REQUIREMENTS (PART SAFETY) (DDP USE) FAR 252.223-7002			
PART I - SENSITIVITY (Apparatus and Comparison Values)			
6 -- CRYSTAL TEST NONE		7 -- IMPACT TEST M6+2 - 125 mm PETN - 75mm, RDX - 150 mm	8 ELECTROSTATIC DISCHARGE TEST NONE
PART II - HAZARDS			
9 FIRE HIGH	10 AUTO IGNITION TEMP DTA onset, 1°C/min 160°C (318°F)	11 FLASH POINT N/A	12 DECOMPOSITION PRODUCTS See sheet 2
13 FLAMMABLE AND/OR EXPLOSIVE LIMITS a LOWER PERCENT N/A		14 EXPLOSION MODERATE	15 EXPLOSIVE TEMP (5 Sec) UNKNOWN
b UPPER PERCENT N/A			16 DUSTS N/A
17 HEALTH HAZARD INFORMATION (Priority) See Hercules MSDS TRB No. 1224			18 UNPACKED (in Process) HAZARD CLASS (Specify Quantities Involved) 1.3 (UNLIMITED AMTS)
19 SPECIAL REQUIREMENTS (if additional space is needed use plain bond paper) (1) NSN 1376-01-055-2783, MIL-P-82887 (4) Hercules MSDS TRB No. 1224 (5) SPDN (6) NAVSEA Dwg. 138439 - Packing Box, Mk 7			
PART III - SHIPPING / STORAGE CLASSIFICATION OF ITEM WHEN PACKED IN ACCORDANCE WITH APPROVED PACKING DRAWINGS			
20 DOT HAZARD CLASS DIV 1.3	21 DOT STORAGE COMPATIBILITY GROUP C	22 DOT HAZARD CLASSIFICATION 1.3	23 DOT CONTAINER MARKING POWDER, SMOKELESS UN 0161
24 PREPARED BY (INITIALS)			
a TYPED OR PRINTED NAME Susan T. Peters		b SIGNATURE <i>Susan T. Peters</i>	c ORGANIZATION 6210C/IHD/NSWC
25 CONCLUDED BY			
a TYPED OR PRINTED NAME T. Craig Smith		b SIGNATURE <i>T. Craig Smith</i>	c ORGANIZATION 6210/IHD/NSWC
26 SAFETY CHIEF OR AUTHORIZED REPRESENTATIVE			
a TYPED OR PRINTED NAME Jack W. Puckett		b SIGNATURE <i>Jack W. Puckett</i>	c ORGANIZATION NAVSUREWARCENDIV CRANE (CODE 402)
The information relating to safety (herein referred to as "safety data") contained in this document is limited to those instances when the document is provided as a part of a procurement/production package which involves the development, testing, storage, manufacture, modification, renovation, demilitarization, packaging, transportation, handling, disposal, inspection, repair or any other use of the item, (material/component/assembly) which is specified in the contract. The safety data contained herein are examples which shall be used by the contractor to alert contractor personnel as well as other personnel of hazards associated with the procurement/production		of the item. No representation is made that compliance with the information provided will prevent any accident to persons or property or that additional warnings may not be appropriate. Neither the foregoing nor any act or failure to act by the Government in regard to alerting personnel to the hazards of the item shall affect or relieve the contractor of responsibility for the safety of contractor personnel or property and for the safety of the general public in connection with the performance of the contract, or impose or add to any liability of the Government for such safety.	

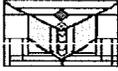
DD Form 2357, APR 85

PROPELLANT M6+2 HCSDS 40032

Block 12. Decomposition products: From Intended operation in a gun, carbon monoxide oxides of nitrogen, ammonia, formaldehyde, all posing minimal toxic hazards due to low concentrations. Residues of open burning pose a carcinogenic hazard.

Block 18.





Re: Fw: M 6 Letter 
Dave True to: Keith Mills

03/12/2013 02:33 PM

well done!!

David P. True

Austin Powder Company ♦ 25800 Science Park Drive ♦ Cleveland, OH 44122
Office: 216.839.5440 ♦ Toll Free: 800.321.0752 ♦ Cell: 216.403.5096 ♦ dave.true@austinpowder.com

Keith Mills

Below is James Nixon's positive response allowi...

03/12/2013 02:21:54 PM

From: Keith Mills/RDN/Austin
To: Dave True/Cle/Austin@Austin,
Cc: Craig Bauman/Cle/Austin@Austin
Date: 03/12/2013 02:21 PM
Subject: Fw: M 6 Letter

Below is James Nixon's positive response allowing us to proceed with receiving product from Explo. I have also asked Thomas to report outbound shipments to me weekly so we can monitor and react as needed.

Thanks

Keith Mills

Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

----- Forwarded by Keith Mills/RDN/Austin on 03/12/2013 02:20 PM -----

From: James Nixon <jnixon@highlandinc.net>
To: <Keith.Mills@austinpowder.com>
Date: 03/12/2013 02:00 PM
Subject: RE: M 6 Letter

Keith:

It was good to speak with you this morning. I have reviewed the letter and found that Explo does have a plan to move the M-6 Propellant. It also helps to know Austin has reviewed the test data for the M-6 Propellant and found the material to have Class A stability. Highland will allow Austin to accept product from Explo Systems, however if in the near future for some unforeseen reason shipments stop please let me know so we can discuss.

Highland has enjoyed a long standing business relationship with Austin Powder. If you ever need anything please call me anytime at (870) 833-2007.

James Nixon
Manager

-----Original Message-----

From: Keith.Mills@austinpowder.com [mailto:Keith.Mills@austinpowder.com]
Sent: Tuesday, March 12, 2013 10:34 AM
To: jnixon@highlandinc.net
Cc: Thomas.Ethridge@austinpowder.com

Subject: Fw: M 6 Letter

James,

It was a pleasure talking with you this morning. Please find attached the letter from Explo's Dave Smith explaining the shipment of M6 propellant out of our East Camden facility going forward. Please let me know if you need anything else.

Please don't hesitate to contact me directly if you have any other issues or concerns.

Thank you,
Keith

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ◊ 430 Powder Plant Road ◊ McArthur, OH
45651-0317
Office: 740.596.5286 ext 7412 ◊ Cell: 614.569.1783 ◊
Keith.Mills@austinpowder.com
----- Forwarded by Keith Mills/RDN/Austin on 03/12/2013 11:27 AM -----

From: David Smith <davidalansmith@bellsouth.net>
To: <keith.mills@austinpowder.com>
Date: 03/12/2013 11:06 AM
Subject: M 6 Letter

Keith: Please see attached. Hope that it meets your requirements.

Thanks,

Dave(See attached file: Austin Powder M6 Letter.pdf)



Re: Fw: Explo Update 
Randy Wicks to: Dave True
Cc: "Keith P. Mills"

05/08/2013 02:46 PM

Wire payment will go out tomorrow.

Dave True

Ok to process. Thanx ----- Original Message -----

05/08/2013 02:41:08 PM

From: Dave True/Cle/Austin
To: "Randy Wicks" <randy.wicks@austinpowder.com>
Cc: "Keith P. Mills" <keith.mills@austinpowder.com>
Date: 05/08/2013 02:41 PM
Subject: Fw: Explo Update

Ok to process. Thanx

From: David Smith [davidalansmith@bellsouth.net]
Sent: 05/08/2013 02:03 PM AST
To: Dave True
Subject: RE: Explo Update

Dave: Large part of the 1st ship is in process of delivery and we have fixed over 1,200,000 lbs. for the next ship in a few weeks.

We will have over 250 MT of RDX based material on the next ship with quite a bit more in late July early August. We are keeping Keith and Nick in the loop on details.

We will need 575,000 Euros by Friday to pay for the rest of the next ship. I have attached an invoice to cover this amount.

Back to work this week in one section of the plant and should be in full swing next week. Will be down there most of next week to help coordinate.

Thanks again for your help in getting us back to work we will strive to exceed you expectations of what we can do to assist you however we can.

Best Regards,

Dave

From: Dave True [mailto:dave.true@austinpowder.com]
Sent: Monday, May 06, 2013 5:40 PM
To: David Smith
Subject: Re: Explo Update

Hey,
Thanx for your note and your continued efforts to keep things moving.

I know it hasn't been easy and glad to see you and team persevere.
We have been lucky and believe Brian is a solid addition. Thanx for your compliment.

Talk soon

Dave

David P. True

Austin Powder Company ◇ 25800 Science Park Drive ◇ Cleveland, OH 44122
Office: 216.839.5440 ◇ Toll Free: 800.321.0752 ◇ Cell: 216.403.5096 ◇ dave.true@austinpowder.com

From: David Smith <davidalansmith@bellsouth.net>
To: <dave.true@austinpowder.com>,
Date: 05/02/2013 06:31 PM
Subject: Explo Update

Dave: Just a quick note to let you know what is happening.

Will have all the propellant stored tomorrow and have control of the facility back. Obviously could not have done that without your help for which we are deeply grateful.

Will start back working on Monday and will start processing the material coming in on the first ship which will be in port tonight and start discharging tomorrow morning. Next shipment will start to load in four weeks and have some good RDX material for you on that one. All of this material you will be able to us "as is".

Will start pulling two loads of M6 out of your storage in Camden next week. Have call with Keith tomorrow to go over schedules of incoming and outgoing shipments.

Heard that you have hired Brian Wallace. How is it that you hire all of the good explosives people that your competitions have spent millions of dollars training? Worked with Brian for a bit at ICI and think you got a good man.

Thanks again for all of your help.

Best Regards,

Dave

Sent from my iPad[attachment "Austin Invoice 3314.pdf" deleted by Randy Wicks/Cle/Austin]

M6 Propellant Slurry
David Smith
to:
keith.mills
05/20/2013 04:09 PM
Show Details

History: This message has been replied to.

Keith: Know that you are moving forward with your M6 packaged propellant facility, could you give us an update

For our Army reports where you are and potential timeframes for startup.

Thanks,

Dave

Fw: M6 Propellant Inquiry (UNCLASSIFIED)

Bob Hivick to: Dennis Schulz, Keith Mills

05/21/2013 02:04 PM

Latest Saga regarding getting the near infrared data from the Army for propellants. It looks like Terry is the only viable "requestor" provided his company is a direct Demil contractor and not just a subcontractor.

Bob

----- Forwarded by Bob Hivick/RDN/Mfg/Austin on 05/21/2013 02:01 PM -----



Simpson Fred
<simpson.f@buchi.com>
05/21/2013 11:50 AM

To "Bob.Hivick@austinpowder.com"
<Bob.Hivick@austinpowder.com>
cc

Subject FW: M6 Propellant Inquiry (UNCLASSIFIED)

Hello Bob.

I just received the email below from the Head of the DoD's Demil group.

I've done as much as I can with this, and it looks like if you follow her directions, you should be able to secure a copy of the calibration.

I think that it's going to be very important to use her terminology as "GFM" for the calibration.

Please let me know if this is still an active project and you're able to move further with this.

Thanks,

Fred.

Fred W. Simpson
Account Manager
T: 724-745-9631
M: 724-810-1180
simpson.f@buchi.com

Buchi Corporation
19 Lukens Drive, Suite 400
New Castle, DE 19720
T: 302-652-7000
F: 302-652-8777
www.mybuchi.com

<http://kjeldahl.buchi.com/>

-----Original Message-----

From: Holkum, Jacqueline H CIV (US) [mailto:jacqueline.h.holkum.civ@mail.mil]
Sent: Tuesday, May 21, 2013 11:45 AM
To: Simpson Fred
Cc: Roe, Michael R CIV (US)
Subject: FW: M6 Propellant Inquiry (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Hello Fred,

I asked Michael to elevate this to me as I believe we need to take a different path to reach an agreeable conclusion to your request.

We cannot 'release' the calibration curves to Austin Powder since we are not the proponent of the contract they are working under. Instead, Austin Powder should work through their contract POC at Picatinny to have Picatinny Contracting request the calibration curve. It can then be provided as government furnished equipment (GFM) under the contract.

Regards,
Jackie Holkum
Chief, Technology Division (AMSJM-LIB-T) Engineering and Demil Technology
Office Logistics Integration Directorate Joint Munitions Command
918-420-8103 comm
956-8103 DSN

-----Original Message-----

From: Roe, Michael R CIV (US)
Sent: Tuesday, May 21, 2013 10:33 AM
To: Holkum, Jacqueline H CIV (US)
Subject: FW: M6 Propellant Inquiry (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

-----Original Message-----

From: Simpson Fred [mailto:simpson.f@buchi.com]
Sent: Tuesday, May 21, 2013 10:00 AM
To: Roe, Michael R CIV (US)
Cc: Bob.Hivick@austinpowder.com; Miller Brad
Subject: M6 Propellant Inquiry

Good morning, Michael.

The last time that we communicated was in early March.

Just to refresh the topic of our communication, I'm working with Austin Powder Company, in Southeastern Ohio, on an M6 reclamation project that they are involved in with the US Army's Picatinny Arsenal.

Buchi, in conjunction with one of the Army's contractors, SAIC, developed the calibrations for determining the grade of M6 propellant for this facility.

While the Army provided the samples and SAIC personnel performed the scans on their Buchi NIRFlex N-500 spectrometers, Buchi personnel provided the technical expertise to incorporate these spectra into calibrations, leading to the publication of the data that I had forwarded to you in a previous email.

Austin Powder, as a contractor to the DoD, is in the process of accepting M6 into their facility and is very interested in procuring one of our FT/NIR spectrometers to duplicate this analytical process.

We are requesting that Dr. Paritosh Dave, of SAIC, be permitted to email the calibration to either Sean Xiong or Mark Terrell, Buchi's FT/NIR technical experts in our New Castle, Delaware corporate headquarters for use on the Austin Powder system for this application.

If it would make it a more acceptable transition, the calibration could be emailed to Mr. Robert Hivick, of Austin Powder directly.

We have no interest in this calibration other than to help a prospective customer solve his analytical challenges.

We're very anxious to move forward with this project and would like to know if you have been successful in learning anything more about this.

Best regards,

Fred W. Simpson

Account Manager

T: 724-745-9631

M: 724-810-1180

simpson.f@buchi.com <<mailto:simpson.f@buchi.com>>

Buchi Corporation

19 Lukens Drive, Suite 400

New Castle, DE 19720

T: 302-652-7000

F: 302-652-8777

www.mybuchi.com <<http://www.mybuchi.com/>>

EmailFooter_KjeldahlSystems_35x40_1

<http://kjeldahl.buchi.com/> <<http://kjeldahl.buchi.com/>>

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE



Re: FW: M 6 Letter 
Dave True to: Keith Mills

06/05/2013 06:22 PM

History: This message has been replied to.

Be certain he has a sense of single based versus triple based propellant.

David P. True

Austin Powder Company ♦ 25800 Science Park Drive ♦ Cleveland, OH 44122
Office: 216.839.5440 ♦ Toll Free: 800.321.0752 ♦ Cell: 216.403.5096 ♦ dave.true@austinpowder.com

Keith Mills FYI I'll respond to James tomorrow... 06/05/2013 05:31:43 PM

From: Keith Mills/RDN/Austin
To: Dave.True@austinpowder.com,
Date: 06/05/2013 05:31 PM
Subject: FW: M 6 Letter

FYI

I'll respond to James tomorrow...

Keith Mills
Austin Powder Company
Phone 740.596.5286 ext 7412
Cell 614.569.1783

-----Original Message-----

From: James Nixon [jnixon@highlandinc.net]
Received: Wednesday, 05 Jun 2013, 4:45pm
To: Keith.Mills@austinpowder.com
Subject: RE: M 6 Letter

Afternoon Keith:

I have been in regular contact with Thomas regarding the M-6 propellant stored for Explo. I believe there have been only 3 shipments at the time. Have you received an updated plan as to when they expect to start shipping regularly. I know Explo is dealing with a lot right now, however history relating to long term storage of propellant has my attention. Thanks for allowing me to stay in touch on this issue.

Have a Great Rest of the week.

James Nixon
Manager

Highland Industrial Park

-----Original Message-----

From: Keith.Mills@austinpowder.com [mailto:Keith.Mills@austinpowder.com]
Sent: Tuesday, March 12, 2013 1:20 PM
To: James Nixon
Subject: RE: M 6 Letter

James,

Thank you for the timely feedback. It is appreciated.

I have also asked for Thomas Ethridge to report to me weekly the amount of outbound M6 product so we have more than one set of eyes on the situation.

Thanks again.

Keith

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ◊ 430 Powder Plant Road ◊
McArthur, OH
45651-0317
Office: 740.596.5286 ext 7412 ◊ Cell: 614.569.1783 ◊
Keith.Mills@austinpowder.com

From: James Nixon <jnixon@highlandinc.net>
To: <Keith.Mills@austinpowder.com>
Date: 03/12/2013 02:00 PM
Subject: RE: M 6 Letter

Keith:

It was good to speak with you this morning. I have reviewed the letter and found that Explo does have a plan to move the M-6 Propellant. It also helps to know Austin has reviewed the test data for the M-6 Propellant and found the material to have Class A stability. Highland will allow Austin to accept product from Explo Systems, however if in the near future for some unforeseen reason shipments stop please let me know so we can discuss.

Highland has enjoyed a long standing business relationship with Austin Powder. If you ever need anything please call me anytime at (870) 833-2007.

James Nixon
Manager

-----Original Message-----

From: Keith.Mills@austinpowder.com [mailto:Keith.Mills@austinpowder.com]
Sent: Tuesday, March 12, 2013 10:34 AM
To: jnixon@highlandinc.net
Cc: Thomas.Ethridge@austinpowder.com
Subject: Fw: M 6 Letter

James,

It was a pleasure talking with you this morning. Please find attached the letter from Explo's Dave Smith explaining the shipment of M6 propellant out of our East Camden facility going forward. Please let me know if you need anything else.

Please don't hesitate to contact me directly if you have any other issues or concerns.

Thank you,
Keith

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦
McArthur, OH
45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦
Keith.Mills@austinpowder.com
----- Forwarded by Keith Mills/RDN/Austin on 03/12/2013 11:27 AM

From: David Smith
<davidalansmith@bellsouth.net>
To: <keith.mills@austinpowder.com>
Date: 03/12/2013 11:06 AM
Subject: M 6 Letter

Keith: Please see attached. Hope that it meets your requirements.

Thanks,

Dave(See attached file: Austin Powder M6 Letter.pdf)



Re: FW: Work area 
Dave True to: Terry Wright
Cc: Keith Mills

06/06/2013 11:03 AM

History: This message has been replied to.

Terry,

Fundamentally I agree that this could be done, Safely, rather easily. The issue is the Camden Facility management has authority over allowed activities and they have great concern over propellant products. Justified or not, I think they 'view' all as 'triple base'. They don't like the fact we are storing M-6 and check in daily to see how much we have shipped out, Hence I don't see an opportunity to bag.

Dave

David P. True

Austin Powder Company ♦ 25800 Science Park Drive ♦ Cleveland, OH 44122
Office: 216.839.5440 ♦ Toll Free: 800.321.0752 ♦ Cell: 216.403.5096 ♦ dave.true@austinpowder.com

Terry Wright

Dave:

06/06/2013 08:21:31 AM

From: Terry Wright <terrywright@explosystems.com>
To: <dave.true@austinpowder.com>,
Date: 06/06/2013 08:21 AM
Subject: FW: Work area

Dave:

Any thoughts on the below request?

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

From: Terry Wright [<mailto:terrywright@explosystems.com>]
Sent: Tuesday, June 04, 2013 7:41 AM
To: dave.true@austinpowder.com; Keith.Mills@austinpowder.com
Subject: Work area

Dave and Keith:

We have several customers that require the M6 propellant in WPP shot bags. Is it possible or even

feasible to do repack at East Camden? I would bring up the packaging material and bin and laborers. It would take us two days to complete this task. I would only need access to the M6, a place to put the bin and scale and access to a forklift. Your thoughts, and thank you again for all your help.

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell



M6 Product Flow Diagram
Broderick Speraw to: Keith Mills
Cc: Tom Justice, Tom Reed

06/20/2013 08:57 AM

Keith,

I have attached a copy of the proposed product flow diagram for M6 propellant. Please let me know if it needs any revision.



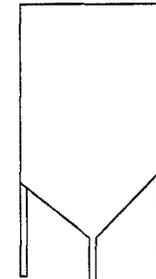
Propellant Product Flow Diagram Layout3 (1).pdf

Thanks,

Broderick Speraw
Project Engineer
Austin Powder Company
Phone: 740-596-5286 ext. 7415
Fax: 740-596-5396
Email: broderick.speraw@austinpowder.com

No.	DATE	REVISION	BY

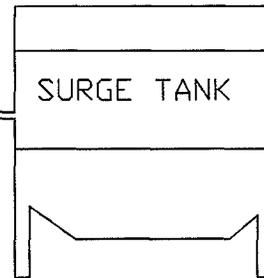
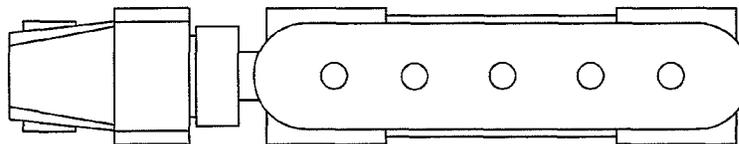
PROPELLANT
HOPPER



ROTARY VALVE



503 TANKER



SURGE TANK

PUMP

HAND PACK
STATION

**PROPRIETARY AND
CONFIDENTIAL**

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Austin Powder Co.
Red Diamond
Plant
McArthur, OH

PROPELLENT PFD

Date	08/10/2009	Scale	SC	File No.	01
Drawn By	B. SPERAW	Engineer	B. SPERAW	Approved By	

PRODUCTION BUILDING

A1

EXP_000393



RE: M6 & Emulsion Product Letter and Process Flow Diagram

David Smith to: Keith.Mills

06/25/2013 09:39 AM

History:

This message has been replied to.

Keith: In your letter about the market for M6 you stated 40% propellant and that the market was 5,000,000 to 10,000,000 lbs per year

But the propellant usage was 1.2 to 2.5 million pounds. Should that be 2,000,000 to 4,000,000 lbs. of propellant. If so can get a revised letter?

Would be available to discuss if you like.

We will be submitting this plan to State of Louisiana later today,

Thanks,
Dave

-----Original Message-----

From: Keith.Mills@austinpowder.com [mailto:Keith.Mills@austinpowder.com]

Sent: Thursday, June 20, 2013 9:39 AM

To: David Smith

Cc: Dennis.Schulz@austinpowder.com; Dave.True@austinpowder.com

Subject: M6 & Emulsion Product Letter and Process Flow Diagram

David,

Glad to hear your discussions with the officials went well yesterday. As we discussed this morning, please find attached the letter and process flow diagram.

Thanks

(See attached file: M6 Propellant Project.pdf) (See attached file: M6 & Emulsion Process Flow.pdf)

Keith Mills

Director of Manufacturing

Austin Powder Company - Red Diamond ◊ 430 Powder Plant Road ◊ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ◊ Cell: 614.569.1783 ◊

Keith.Mills@austinpowder.com

M6 Propellant stored in East Camden, AR
Delgado, Paige

to:

keith.mills@austinpowder.com

08/08/2013 03:25 PM

Cc:

"Elizabeth.Chatelain@atf.gov", "Malone, George"

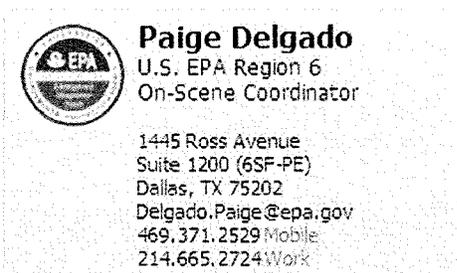
Show Details

History: This message has been forwarded.

Thank you Keith for speaking with me about the approximately 3 million lbs. of M6 propellant, owned by EXPLO Systems, stored at Highland Industrial Park in Camden, AR, in magazines currently leased by Austin Powder. I left Beth Chatelain a voicemail informing her of the situation, so that she may contact you and answer any questions you may have regarding ATF's procedures.

Beth – Keith's direct line is 740.596.5286 Ext 7412.

Let me know if you have any additional questions for me at this time.



Fw: M6 Propellant
Dave True
to:
Keith Mills
08/28/2013 06:34 PM
Cc:
Craig Bauman
Show Details

From: davidalansmith@bellsouth.net [mailto:davidalansmith@bellsouth.net]
Sent: Wednesday, August 28, 2013 05:32 PM Eastern Standard Time
To: True, Dave
Subject: Re: M6 Propellant

Dave: agreed, getting someone in the USG to make a decision very difficult. Would not surprise me that decision is going all the way to new Director. We have someone in Breakfield today trying to salvage a few days to see if we can make it happen.

Thanks

Dave

From: "True, Dave" <Dave.True@austinpowder.com>
Date: Wed, 28 Aug 2013 21:17:38 +0000
To: 'davidalansmith@bellsouth.net' <davidalansmith@bellsouth.net>
Cc: Mills, Keith <Keith.Mills@austinpowder.com>; Bauman, Craig <Craig.Bauman@austinpowder.com>
Subject: Fw: M6 Propellant

I don't sense ATF understands the importance of moving product. We'll see what they come back with. Just want to be transparent.

Dave

From: True, Dave
Sent: Wednesday, August 28, 2013 05:03 PM Eastern Standard Time
To: 'William.J.O'Brien@usdoj.gov' <William.J.O'Brien@usdoj.gov>; Bauman, Craig; Mills, Keith
Cc: 'Matthew.D.Wren@usdoj.gov' <Matthew.D.Wren@usdoj.gov>; 'Debra.S.Satkowiak@usdoj.gov' <Debra.S.Satkowiak@usdoj.gov>; 'Michael.J.O'Lena@usdoj.gov' <Michael.J.O'Lena@usdoj.gov>
Subject: Re: M6 Propellant

Bill,

While I understand your comments the added responsibility of owning the M-6 is not what we bargained for. We were trying only to provide temporary storage (have max 90 day agreement with Explo).

I guess my interpretation that an APC to ATF licensee transfer of material does not reflect any ownership status is incorrect and the bankruptcy status (or other) of Explo would disallow APC direct from legally transferring product to the coal mine.

We don't have any assurance that this 3 mil pounds of M-6 will eventually be taken by this customer consequently I don't want an ownership position not knowing what potential liabilities we are taking on.

file://C:\Documents and Settings\KeithM\Local Settings\Temp\notes49546A\~web1391.htm 10/1/2013

Although I am beginning to sense our willingness to help is not going to have a good outcome!!
I would prefer owning product on load by load basis to help effort of disposal.

What a mess!

Thank for your help. I am open to any discussions on this issue.

Thank,
Dave

From: William.J.O'Brien@usdoj.gov [mailto:William.J.O'Brien@usdoj.gov]
Sent: Wednesday, August 28, 2013 04:14 PM Eastern Standard Time
To: True, Dave; Bauman, Craig; Mills, Keith
Cc: Matthew.D.Wren@usdoj.gov <Matthew.D.Wren@usdoj.gov>; Debra.S.Satkowiak@usdoj.gov <Debra.S.Satkowiak@usdoj.gov>; Michael.J.O'Lena@usdoj.gov <Michael.J.O'Lena@usdoj.gov>
Subject: M6 Propellant

David, this is to recap our discussions regarding the M-6 propellant you have in storage on behalf of Explo in Louisiana.

It is our understanding that Austin previously agreed to store approximately 3 million pounds of M6 propellant on behalf of Explo, who has now declared bankruptcy. Austin completed ATF-required acquisition records, and the material remains under Austin's dominion and control. Austin would like to gain title to the material from Explo and transfer it to a coal company who will use it in blasting. We have determined that a one-time transfer (from Explo to Austin Powder) of title to 3 million pounds of M6 propellant currently stored by Austin in East Camden, Arkansas, for the purpose of inventory liquidation does not constitute engaging in the business of dealing in explosives. Therefore, Explo is not prohibited from making this title transfer under these circumstances. Of course, this determination is solely an application of the regulations under 27 CFR, Part 555, and does not have any bearing on bankruptcy considerations or other applicable State or local laws or requirements. Our presumption in providing this advice is that Austin and Explo will comply with all of these other considerations.

Please let me know if you have any other questions. Bill 202-207-8969

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Re: Fw: M6 Propellant 

Dennis Schulz **To:** Thomas Ethridge, terrywright
Cc: Brian Gilliland, Keith Mills

02/27/2012 03:41 PM

Terry,

Would you supply the current MSDS to all above.

Thanks

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Thomas Ethridge/Mfg/Austin

Thomas Ethridge/Mfg/Austin
02/27/2012 03:14 PM

To: Keith Mills/RDN/Austin@Austin
cc: Brian Gilliland/RDN/Mfg/Austin@Austin, Dennis Schulz/RDN/Austin@Austin
Subject: Re: Fw: M6 Propellant 

Keith

Please let Explo know to send the MSDS with it.

Thanks

Thomas Ethridge, Plant Manager
Austin Powder Company
East Camden, Arkansas
870-574-0580 (Voice)
870-574-2060 (Fax)

Keith Mills Thomas, once this pallet of material arrives from... 02/27/2012 02:12:29 PM

Keith Mills/RDN/Austin
02/27/2012 02:12 PM

To: Thomas Ethridge/Mfg/Austin@Austin, Brian Gilliland/RDN/Mfg/Austin@Austin
cc: Dennis Schulz/RDN/Austin@Austin
Subject: Fw: M6 Propellant

Thomas, once this pallet of material arrives from Explo Systems please let Brain and I know so we can arrange shipment onto RD.

Brian, Once the pallet reaches EC we will need to get it to RD ASAP.

Thanks,

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-8317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

----- Forwarded by Keith Mills/RDN/Austin on 02/27/2012 03:07 PM -----

Dennis Schulz/RDN/Austin

02/27/2012 10:28 AM

To terrywright@explosystems.com

cc Keith Mills/RDN/Austin@Austin, Dave

True/Cle/Austin@Austin

Subject M6 Propellant

Terry,

As we discussed, please prepare 840# (1 pallet with 6 @ 140# drums) for us.

You indicated that you could get it to APC at East Camden and we will decide how to get it up here from there.

Denny

Dennis Schulz

Austin Powder

Office: 740.596.5286

Mobile: 740.649.3933

Re: Fw: M6 Propellant 
Dennis Schulz **to:** Thomas Ethridge
Cc: Brian Gilliland, Keith Mills

02/27/2012 03:41 PM

I will supply a special shipping paper.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Thomas Ethridge/Mfg/Austin

Thomas Ethridge/Mfg/Austin
02/27/2012 03:14 PM

To: Keith Mills/RDN/Austin@Austin
cc: Brian Gilliland/RDN/Mfg/Austin@Austin, Dennis Schulz/RDN/Austin@Austin
Subject: Re: Fw: M6 Propellant 

Keith

Please let Explo know to send the MSDS with it.

Thanks

Thomas Ethridge, Plant Manager
Austin Powder Company
East Camden, Arkansas
870-574-0580 (Voice)
870-574-2060 (Fax)

Keith Mills Thomas, once this pallet of material arrives from... 02/27/2012 02:12:29 PM

Keith Mills/RDN/Austin
02/27/2012 02:12 PM

To: Thomas Ethridge/Mfg/Austin@Austin, Brian Gilliland/RDN/Mfg/Austin@Austin
cc: Dennis Schulz/RDN/Austin@Austin
Subject: Fw: M6 Propellant

Thomas, once this pallet of material arrives from Explo Systems please let Brian and I know so we can arrange shipment onto RD.

Brian, Once the pallet reaches EC we will need to get it to RD ASAP.

Thanks,

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

----- Forwarded by Keith Mills/RDN/Austin on 02/27/2012 03:07 PM -----

Dennis Schulz/RDN/Austin

02/27/2012 10:28 AM

To terrywright@explosystems.com

cc Keith Mills/RDN/Austin@Austin, Dave
True/Cle/Austin@Austin

Subject M6 Propellant

Terry,

As we discussed, please prepare 840# (1 pallet with 6 @ 140# drums) for us.

You indicated that you could get it to APC at East Camden and we will decide how to get it up here from there.

Denny

Dennis Schulz

Austin Powder

Office: 740.596.5286

Mobile: 740.649.3933

Re: M6 Propellant - MSDS 
Dennis Schulz to: Margit Chevalier
Cc: Keith Mills

06/01/2012 01:24 PM

Keith,

Your thoughts?

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Margit Chevalier/RDN/Austin



Margit Chevalier/RDN/Austin
06/01/2012 01:22 PM

To Dennis Schulz/RDN/Austin@Austin
cc

Subject M6 Propellant - MSDS

Dennis,

while over in the lab Bob B called and discussed his opinion about the MSDS on hand. He would like to see a MSDS provided by the actual manufacturer since he sees flaws in the one from EXPLO Systems. I think all concerns by everyone should be brought to the table in an open disussion with someone keeping notes for future reference.

I leave it up to you.

M

Margit Chevalier | Austin Powder Company **R&D** | 430 Powder Plant Rd | McArthur, OH 45651 | (Office) 740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com

Dennis Schulz to: Tom Justice, Shawn Fee, Margit Chevalier, Bob Hivick,
Mike Abele, Broderick Speraw, Tom Reed, Larry
McCorkle

09/10/2012 01:23 PM

Cc: Keith Mills

I have gone over my files and put everything I could find on the Propellant Project on the Rdn Server. I hope this helps everyone become more knowledgeable and so help us design and operate a safe and effective manufacturing system.

\\Rdn-server\Library\Propellant

I am sure I have missed some items, like the results of testing (MC please add). If anyone has additional information, please add it and let everyone know.

If I have left anybody off the list, please forward and let me know.

Thanks!!
Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Burn Test

Dennis Schulz to: Keith Mills

10/09/2012 12:57 PM

History: This message has been forwarded.

Keith,

We would like to do a burn test of a larger amount of the M6 propellant / emulsion product. We think it is appropriate to begin small and then get to a larger sample - perhaps as much as 100 lbs. We also want to try to burn this product with another aluminized product, such as Emulex 927.

I don't see a problem with this, especially if we start small. The data is needed to help APC make an informed decision regarding this product.

We have enough material to begin testing, the smaller quantities, right now. Please let me know what needs to be done to accomplish this task.

Thanks!
Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

M6 Packaging Test

Dennis Schulz to: Tom Justice, Tom Reed, Broderick Speraw, Margit
Chevalier, Steven Dickerson, Brian Bias
Cc: Keith Mills

10/09/2012 04:02 PM

This morning we tested several different potential methods of packaging the material. We made 8 bags - 4" x 20 lbs. (160 lbs.), labelled as AXE bulk - 09OC12A1. The R&D project number for this is C229/41. The product will be stored in ambient until it can be used in a burn test.

Summary:

- It appears that the simultaneous filling of the M6 and emulsion will work. This means it wouldn't be necessary to blend, store, auger or pump the blended product.
- Pumping the emulsion through the inner mandrel appeared to give better mixing and be a cleaner system
- The 0.75" inner mandrel appeared to be better than the 1.5"
- It seems like the product opens the bag well enough that it won't be necessary to push the bag to the top of the mandrel and load from the bottom of the bag.
- Very low pumping pressures and mostly good flow of propellant through the annulus.
- Overall very encouraging.

Next Step

- Repeat the Trials with the emulsion in the 0.75" inner mandrel and the propellant in the annulus using a "warm" Hydromite 600/800 matrix to see what the thicker emulsion does to the mixing and pumping pressures.

Here are my notes from the Trials:

All tests were run using:

1. Nominal 40% M6 and 60% Hydrox 503 at ambient.
2. Filled the 20 lbs. in 13 seconds (92 lb/min. or 4 bags/min.)
3. The propellant (8 lbs) was pre-weighed and misted with water.
4. The propellant was manually poured in the top of the system at a rate to approximate the 13 second filling time.

Trial #1 - Bag #1

- A single 3/4" id mandrel was placed in a bag, to the bottom of the bag.
- The 8 lbs of M6 was poured around the 3/4" mandrel.
- The emulsion was then pumped at the 12 lbs in 13 seconds rate to approximate filling in 13 seconds.
- The bag was lowered as the emulsion filled the bag.

Results:

- The emulsion mixed into the propellant well.
- The extent of mixing was entirely depended on the rate the bag was lowered.
If the bag was lowered too fast, there was unblended propellant
If the bag was lowered too slow, there was a section of mostly emulsion
- Overall a relatively clean system, only a little emulsion stuck to the outside of the mandrel
- For this method to work properly the lowering of the bag would have to be exactly synchronized with the emulsion pumping

Trial #2A - Bag #2

- A two mandrel set-up with a 3" outer mandrel with a 1.5" id inner mandrel was placed in a bag, to the

bottom of the bag.

- The 8 lbs. of M6 was poured in the annulus simultaneous with pumping the emulsion through the inner mandrel.
- The bag was lowered as the M6 and emulsion filled the bag.

Results:

- The emulsion mixed into the propellant well.
- Problems getting the propellant to flow evenly through the entire annulus - it was a problem with the set-up, the inner mandrel had moved over to one side.
- Overall a relatively clean system, very little emulsion dripped after loading
- For this method to work properly the lowering of the bag would have to be exactly synchronized with the emulsion pumping

Trial #2B - Bag #3

- Same two mandrel set-up with a 3" outer mandrel, but an 0.75" id inner mandrel was placed in a bag, to the bottom of the bag.
- The 8 lbs. of M6 was poured in the annulus simultaneous with pumping the emulsion through the inner mandrel.
- The bag was lowered as the M6 and emulsion filled the bag.

Results:

- The emulsion mixed into the propellant well. Perhaps slightly better than Trail #2A with the larger inner mandrel
- Problems
- Overall a very clean system, very little emulsion (even less than #2A) dripped after loading
- For this method to work properly the lowering of the bag would have to be exactly synchronized with the emulsion pumping

Trial #3 - Bag #4

- Same mandrel set-up as in Trial #2B A two mandrel set-up with a 3" outer mandrel with a 1.5" id inner mandrel was placed in a bag.
- The bag was only put a couple inches up the mandrel, with the bottom on the floor.

Results:

- The emulsion mixed into the propellant well.
- Overall a very clean system, very little emulsion dripped after loading. There were no problems with the product not opening the bag or bridging off.
- This method of leaving the bag on the floor and filling from the top will work without the operator needed to gauge the speed of filling.

Trial #4 - Bag #5

- A two mandrel set-up with a 3" outer mandrel with a 2" id inner mandrel was placed in a bag, to the bottom of the bag.
- The 8 lbs. of M6 was poured in the inner mandrel with the emulsion being pumped through the annulus.
- The bag was lowered as the M6 and emulsion filled the bag.

Results:

- The propellant in the center of the bag did not mix as well into the emulsion. In the other cases it appeared the emulsion "seeped" to the outer edge of the bag. In this case we didn't see the M6 migrating to the outer edge of the bag
- Overall not as clean a system as the trials with the emulsion in the middle and the M6 in the annulus.

Trial #5A - Bag #6

- A repeat of the two mandrel set-up with a 3" outer mandrel with a 0.75" id inner mandrel with the bag on the floor. In this case the inner mandrel was centered in the outer mandrel.

- The 8 lbs. of M6 was poured in the annulus simultaneous with pumping the emulsion through the inner mandrel.

Results:

- My initial thought was that the mixing wasn't as good. But looking late indicated good mixing

Trial #5B - Bag #7 - repeat of Trial #5A to see if the results would be the same with better propellant pouring. The results were the same.

Trial #6 - Bag #8

- Brody's set-up with a single 3" mandrel.
- The emulsion was pumped into the middle inlet of a tee at the top of the mandrel and the M6 was poured from the top section of the tee.
- Essentially the emulsion and M6 met and mixed at the top of the 3" mandrel.
- The bag was filled with the bag on the ground.

Results:

- The emulsion mixed into the propellant well.
- A little less consistent filling - more globs of product.
- OK system for the bag, but it looked like the emulsion and propellant that stuck to the side of the mandrel would leak onto the floor over time.

An excellent effort by all involved!

Denny

Dennis Schulz

Austin Powder

Office: 740.596.5286

Mobile: 740.649.3933



M6 004.jpg



M6 001.jpg

Impact test for Propellant Product

Dennis Schulz To: Mike Abele

10/15/2012 12:05 PM

Cc: Larry McCorkle, John Capers, Margit Chevalier, Keith Mills

Mike,

We need some additional data on impact sensitivity for the actual 40% propellant, 60% unsensitized Hydromite 600/800 product.

I am questioning the impact sensitivity when the product is loaded in a blast hole.

What will happen when the product is loaded (drop) into a 60' hole?

The bullet impact data will help.

What I would also like is some actual drop tests of the product.

One possibility is to put a small amount in a 3" valeron or plastic bag (not WPP) and put a lead weight on top of the product to increase the energy.

Then drop this from about 50' or more if possible.

I haven't thought of the perfect way to do this test, but I do think it is important enough to build something if necessary.

Your thoughts?

Denny

Dennis Schulz

Austin Powder

Office: 740.596.5286

Mobile: 740.649.3933

Re: Fw: Explo violations 
Dennis Schulz to: Keith Mills

11/28/2012 03:37 PM

This is almost exactly what happened at SEC when Terry had to leave.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Keith Mills

11/28/2012 03:35:08 PM

From: Keith Mills/RDN/Austin
To: Dennis Schulz/RDN/Austin@Austin
Date: 11/28/2012 03:35 PM
Subject: Fw: Explo violations

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com
----- Forwarded by Keith Mills/RDN/Austin on 11/28/2012 03:34 PM -----

Thomas Ethridge/Mfg/Austin

11/28/2012 02:40 PM

To Keith Mills/RDN/Austin@Austin

cc

Subject Fw: Explo violations

Thomas Ethridge, Plant Manager
Austin Powder Company
East Camden, Arkansas
870-574-0580 (Voice)
870-574-2060 (Fax)

----- Forwarded by Thomas Ethridge/Mfg/Austin on 11/28/2012 01:40 PM -----



James Nixon
<jnixon@highlandinc.net>

11/28/2012 01:30 PM

To <Thomas.Ethridge@austinpowder.com>

cc

Subject FW: Explo violations

From: Betty Winters [mailto:bwinters@highlandinc.net]
Sent: Wednesday, November 28, 2012 8:04 AM
To: James Nixon
Subject: RE: Explo violations

WOW! Do you think thiis is the way they store propellant all the time?

-----Original Message-----

From: James Nixon [mailto:jnixon@highlandinc.net]
Sent: Wednesday, November 28, 2012 7:44 AM
To: bwinters@highlandinc.net; sbutler@highlandinc.net
Subject: Explo violations

Update: Explo accused of violating storage policies

Published On: Nov 27 2012 12:15:31 PM CST Updated On: Nov 27 2012 05:46:52 PM CST

- Small Text
- Medium Text
- Large Text
- Print
- Email
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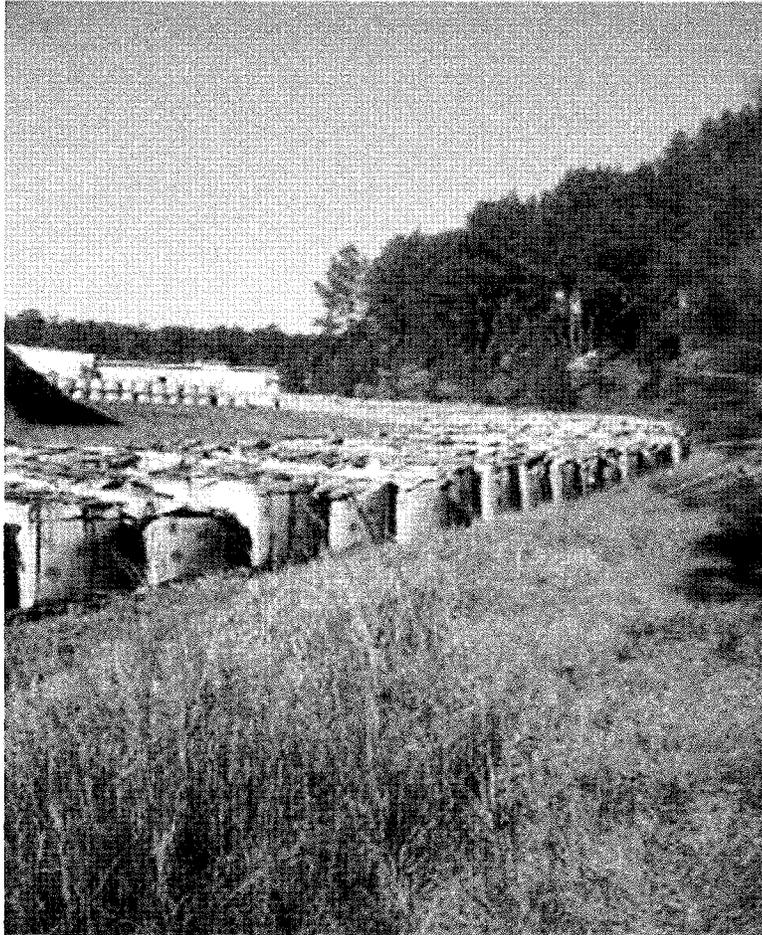


photo courtesy of Louisiana State Police



Advertisement

WEBSTER PARISH, La. -

As part of on-going investigation into a recent explosion at the Explo Systems, Inc., Louisiana State Police Hazardous Materials investigators discovered at least one million pounds of improperly stored explosive materials, Monday.

As a result of the October 15, 2012 explosion on the property leased by Explo Systems, Inc., on November 26, 2012 the Louisiana State Police Emergency Services Unit performed a follow-up inspection when they discovered an undetermined amount of improperly stored regulated propellant. Following that discovery, on November 27, 2012, a search warrant was executed in an extended area of the lease where investigators located at least one million pounds of M6 smokeless gunpowder in the open and in other unapproved locations.

The investigation is a combined effort among Louisiana State Police, Webster Sheriff's Office, Louisiana National Guard, and Alcohol Tobacco and Firearms (ATF). Investigators are conducting an assessment of the improperly stored materials. Upon the completion of this assessment, the site safety plan will be developed to determine the best course of action. The propellant in its current state is considered stable and not an immediate threat to the surrounding area.

The next press conference will take place at Camp Minden at 2 pm on Wednesday, November 28, 2012.

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DNT

Dennis Schulz to: Dave True, Keith Mills

12/05/2012 02:12 PM

History: This message has been replied to.

I am confident we can make the product safely and with no adverse health effects.
But, we will have to be careful.

I have lost some confidence in Explo Systems and that has caused second thoughts.
The Goex incident was identified as M6 initially and that was a major concern, but as we have learned the Goex incident involved black powder and that was a relief.

I remain very confident of the manufacturing process that was invented here for the 60% emulsion / 40% M6 product in WPP bags.
It seems the biggest obstacle to manufacturing here is the state approvals.

Very simplistic what if? (Vic Sterner would be proud of me)

1. Austin were to buy out Explo (less the existing liabilities).
2. Make the product there.

The manufacturing process will only involve an emulsion storage tank (could be run directly from a tanker to start), a feed hopper and special rotary valve for the M6, a simple mandrel and some controls.
Really easy to set up and run. Instead of shipping the M6 here, ship the emulsion to Minden.
I would assume (I know about assumptions) that the fact that the M6 is already approved for manufacturing processes at the site, that this might not be as big a problem there.

If the Explo site is still in operation after this is over, perhaps we can at least discuss making the product there?

Take Care!
Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Re: Stabilizer Analysis
Dennis Schulz to: Keith Mills

02/06/2013 08:20 AM

Yes!

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Keith Mills Thanks Denny. I believe it only confirms we nee...

02/06/2013 07:45:58 AM

From: Keith Mills/RDN/Austin
To: Dennis Schulz/RDN/Austin@Austin
Date: 02/06/2013 07:45 AM
Subject: Re: Stabilizer Analysis

Thanks Denny. I believe it only confirms we need the ability to test ourselves if we proceed with the propellant emulsion based packaged products...

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

Dennis Schulz Sent from my Android phone using TouchDown (...)

02/05/2013 07:32:26 PM

From: Dennis Schulz/RDN/Austin
To: terrywright@explosystems.com
Cc: keith.mills@austinpowder.com, Dave.True@austinpowder.com, Margit.Chevalier@austinpowder.com
Date: 02/05/2013 07:32 PM
Subject: Re: Stabilizer Analysis

Sent from my Android phone using TouchDown (www.nitrodesk.com)

-----Original Message-----

From: terrywright@explosystems.com
Received: Tuesday, 05 Feb 2013, 5:36pm
To: Dennis Schulz [dennis.schulz@austinpowder.com]
Subject: Re: Stabilizer Analysis
You appear to be correct
Sent via BlackBerry by AT&T

From: Dennis Schulz <Dennis.Schulz@austinpowder.com>
Date: Fri, 1 Feb 2013 15:14:14 -0500
To: <terrywright@explosystems.com>
Cc: Bob Hivick<Bob.Hivick@austinpowder.com>; Keith Mills<Keith.Mills@austinpowder.com>; Dave True<Dave.True@austinpowder.com>
Subject: Stabilizer Analysis
Terry,

In going over the stabilizer reports for the M6 material shipped to East Camden, Bob has identified some concerns.

Specifically, he believes there is a problem with the math. We are not questioning the actual HPLC results, as much as the calculations that happen after that. Looking at the form, it appears that the calculation sheet has the constituents in a different order than the HPLC results we see in the example shown in the procedure.

The specific species we are looking at is 2, 2' DNDPA.
Then when the calculations are done, incorrect results are produced.

The good thing is if this is correct, the final amount of stabilizer should be higher than reported.

Additionally, in the DOD documents we have seen, it appears the Army uses a factor to adjust for the mono and di nitro species. As they have already absorbed a nitrate, those species are less functional than the DPA.

Can we get your chemist to talk directly to Bob Hivick.

Bob will be traveling Monday and then will be at the Brownsville, TX plant (office phone 956.831.7751).

Please keep me informed of your progress.

Thanks!!
Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Status of Propellant Project 
Dennis Schulz to: terrywright
Cc: Keith Mills, Dave True

02/18/2013 12:37 PM

Terry,

Austin's regulatory consultant has talked to regulators in the Building Permit and Fire Marshall Offices. We have received a green light so far, but we are waiting on one last individual to sign off before we proceed.

We have expressed our desire to move forward as quickly as possible to our consultant and he is making good progress.

Once we have all parties approving with our intentions, we will begin building equipment and getting product approvals. Timing for production is dependent on the final design, but could be as little as 3 months from start date.

I hope this helps.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Denny Would it be possible for you to write a sh...

02/18/2013 12:12:38 PM

From: <terrywright@explosystems.com>
To: Dennis Schulz <dennis.schulz@austinpowder.com>
Date: 02/18/2013 12:12 PM
Subject: Re:

Denny

Would it be possible for you to write a short status report so I can get a couple of people off my ass
Sent via BlackBerry by AT&T

Propellant Lab Equipment

Dennis Schulz To: Dave True, Keith Mills

03/08/2013 11:08 AM

Attached is a lease agreement for a \$75,000 NIR (Near Infrared) Instrument. This instrument is capable of completing an analysis in about 6 minutes, with minimal extra cost. Put the sample in a special beaker, put the beaker in the machine and push go.

The lease is \$2,400 a month for 3 years - then buy for \$1 or \$3,450 per month for 2 years with the same \$1 buy out. The unit can also be purchased directly.

2,400 x 36 = \$86,400

3,450 x 24 = \$82,800

We started looking at this for the propellant - as we are not completely confident with the analysis that has been supplied by Explo Systems, this seems like a reasonable way to confirm the amount of stabilizer in the propellant.

One issue is that we would need to get someone to force the Army to release their stabilizer calibration program, without this the instrument will require a long and expensive calibration process.

There is a very significant additional benefit.

We have been struggling with our fuel analysis for emulsions.

The more critically we looked at our procedures, the more we understood the lack of accuracy in the data.

This instrument is claimed to be able to do a complete analysis on an emulsion in the same 6 minutes.

Fuel, Emulsifier, AN, SN, Water could be determined in a single run - huge savings in the lab and more accurate data.

Apparently the instrument can accurately determine the oil content of grain and do complete analysis of mayonnaise (an emulsion).

We would need to confirm this, but just the emulsion work alone would be a huge step up.

We are trying to get the company to come out and do a demo and I will let you know how that goes. It may be we would just get the unit with a 30 day return plan.

Please let us know your thoughts and if we need to submit a CAP EX.

Thanks!!

Denny

Dennis Schulz

Austin Powder

Office: 740.596.5286

Mobile: 740.649.3933

----- Forwarded by Dennis Schulz/RDN/Austin on 03/08/2013 10:38 AM -----

From: Bob Hivick/RDN/Mfg/Austin
To: Dennis Schulz/RDN/Austin@Austin
Date: 03/07/2013 01:45 PM
Subject: Fw: Austin Powder Company Financial Proposal

Lease agreement on NIR. Not as cheap as I hoped it would be.

----- Forwarded by Bob Hivick/RDN/Mfg/Austin on 03/07/2013 01:43 PM -----

Marissa Reinhardt



<mreinhardt@captivelease.com>

03/07/2013 01:04 PM

To <bob.hivick@austinpowder.com>

cc Fred Simpson <simpson.f@buchi.com>

Subject Austin Powder Company Financial Proposal

Good morning Bob:

On behalf of Fred Simpson and Vendor Lease Management Group, attached please find our formal financial proposal for the Buchi N500-001 NIRFlex Solids Package.

At Vendor Lease Management Group we offer Lease to Own Financing.

The \$1.00 purchase option is simply a purchase option with a term of 2 or 3 years and at the end of the agreed upon payments and term, you purchase the equipment for \$1.00

I will follow up with you in the next 24-48 hours to address any questions/concerns you may have regarding our financing program.

Regards,

Marissa Reinhardt | Program Manager
Vendor Lease Management Group
1719 Route 10 East, Suite 306
Parsippany, NJ 07054

tel. (973) 292-0025 x 312
fax. (973) 292-0019
email. mreinhardt@captivelease.com



Austin Powder, Hivick, NIRFlex N-500.pdf



Buchi - Austin Powder Company 341003338.pdf



VLMG Credit App.doc

Propellant

Dennis Schulz to: John Capers
Cc: Keith Mills

03/15/2013 12:19 PM

One of the items we are going to include in the project is testing equipment to determine the level of stabilizer in each 800 lb sack of material we get. The testing would only take about 10 minutes per sample and will give us the confidence needed to handle the propellant and to make the explosive.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Re: Fw: Fw: NIR Equipment for Stabilizer Analysis. 
Dennis Schulz to: terrywright
Cc: Keith Mills, Dave True

04/22/2013 08:29 AM

Terry,

Our problem is:

1. Stabilizer data is in some case 2 years old or more.
2. Calculations to convert from lab raw results to stabilizer amount are incorrect.
3. As the containers aren't completely sealed, there is likelihood of moisture - which accelerates the loss of stabilizer.

We will want to do current stabilizer analysis, before using the material.
No short cuts.

Additionally, has there been work done on the effect of extended storage in an emulsion. Both water and AN could accelerate the loss of stabilizer.
We would want to do that work to ensure a safe finished product and to establish a shelf life value.

The calibration data is critical.
We will spend the \$75,000 to get the equipment, but without the calibration curve it is essentially useless for doing stabilizer level analysis.

Please keep pushing, as this is important to us.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Sent via BlackBerry by AT&T -----Original Mess...

04/20/2013 09:11:40 AM

From: <terrywright@explosystems.com>
To: Dennis Schulz <dennis.schulz@austinpowder.com>
Date: 04/20/2013 09:11 AM
Subject: Fw: Fw: NIR Equipment for Stabilizer Analysis.

Sent via BlackBerry by AT&T

From: "Ken Lampkin, Program Manager" <kenlampkin@explosystems.com>
Date: Fri, 19 Apr 2013 11:13:53 -0500
To: <terrywright@explosystems.com>
Subject: Re: Fw: NIR Equipment for Stabilizer Analysis.

No luck so far. Picatinny is not quick to share this kind of information unless they are directly involved with a specific project. I will let you know if and when I hear something.

Ken Lampkin
Program Manager
Explo Systems, Inc.

(318) 382-8756

On 4/19/2013 8:59 AM, terrywright@explosystems.com wrote:

Sent via BlackBerry by AT&T

From: Dennis Schulz <Dennis.Schulz@austinpowder.com>

Date: Fri, 19 Apr 2013 09:07:39 -0400

To: <terrywright@explosystems.com>

Subject: Fw: NIR Equipment for Stabilizer Analysis.

Any luck with this?

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

----- Forwarded by Dennis Schulz/RDN/Austin on 04/19/2013 09:07 AM -----

From: Dennis Schulz/RDN/Austin
To: terrywright@explosystems.com
Cc: Bob Hivick/RDN/Mfg/Austin@Austin, Margit Chevalier/RDN/Austin@Austin, Keith Mills/RDN/Austin@Austin
Date: 04/12/2013 11:35 AM
Subject: NIR Equipment for Stabilizer Analysis.

Terry,

Things are moving.

As you may know issue is where to make the product - a new building will be needed.

Red Diamond is confident that can be accomplished relatively smoothly.

We hope so. The project has not stopped.

APC is looking at a Buchi NIRFlex N-500 FT-NIR instrument to do stabilizer analysis.

The method is much quicker and more accurate than the other methods and is the preferred method.

This is the method and equipment the Army uses.

What APC needs is someone to push the DOD to provide the calibration curves for M6 propellant for use on the Buchi NIRFlex N-500 FT-NIR.

We are unsure who has to sign off. Bob remembers the commander at Picatinny was the individual who authorized the release of the data.

If you can help with this it would be greatly appreciated - and will ultimately make the project go more smoothly.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

FW: Project
Dennis Schulz
to:
keith.mills
05/21/2013 06:59 AM
Show Details

Dont know if the first request went through

Will you respond this time?

Sent from my Android phone using TouchDown (www.nitrodesk.com)

-----Original Message-----

From: terrywright@explosystems.com
Received: Sunday, 19 May 2013, 6:19pm
To: Dennis Schulz [dennis.schulz@austinpowder.com]
Subject: Project

Denny
Can you give us an update on your project?
Terry
Sent via BlackBerry by AT&T

Dave Smith letter

Dennis Schulz to: Keith Mills

06/17/2013 02:55 PM

Cc: Dave True

History: This message has been forwarded.

Let me know if there are changes needed.



M6 Propellant Product.pdf

AUSTIN POWDER COMPANY



Subject: M6 Propellant Product

10 June 2013

From: Dennis Schulz
Emulsion Development Manager
Austin Powder Company

cc: Dave True
Keith Mills
Dave Smith

Austin Powder Company is interested in contracting Explo Systems, Inc. to manufacture a "private label" product containing M6 Propellant.

Austin Powder Company has a market for a product that contains the M6 propellant. Initial estimates indicate a market for 5MM to 10MM pounds annually of a product containing approximately 40% M6 propellant. This translates to between 1.2MM and 2.5MM pounds of M6 propellant. It is expected the market size will grow as the product gains acceptance.

Initially the product would consist of 40% M6 propellant (US DOT classification: 1.3C, UN0161) and 60% of an (US DOT classification: Oxidizer, 5.1, UN3375). The final product would have an US DOT classification of Blasting Agent, 1.5D, UN0332. To achieve this 1.5D classification, the product must pass a series of tests designed to provide data on sensitivity, high temperature stability and on the outcome of a large scale burn. This testing is underway at a DOT approved testing facility and so far all the tests have indicated a safe, stable product. It seems that once the propellant is surrounded by the insensitive emulsion, the propellant loses sensitivity, allowing for the blended product to meet the lower classification rating.

Additionally, Austin Powder Company has developed a simple, efficient and extremely safe manufacturing method. The advantage of this method is the handling of the M6 propellant is kept to an absolute minimum. The product would be packaged in a woven polypropylene outer bag with an inner polyethylene bag. The packaging will conform to 49CFR 173.62, Packaging instruction 116. Austin Powder Company is prepared to provide the details of this method to Explo Systems once a contract is in place.

While there is much to be done, an excellent opportunity exists for both Austin Powder Company and Explo Systems, Inc.

Please contact me with any questions.

*Austin Powder Company • 430 Powder Plant Rd. • P.O. Box 317 • McArthur, OH 45651
Phone 740 596-5286 • Fax 740 596-9856*

M6 Letter

Dennis Schulz to: Keith Mills

06/20/2013 08:30 AM



M6 Propellant Project.pdf

Denny

Dennis Schulz

Austin Powder Company ♦ P.O. Box 317, 430 Powder Plant Rd. ♦ McArthur, OH 45651
Office: 740.596.5286 ♦ Mobile: 740.649.3933 ♦ Dennis.Schulz@austinpowder.com

AUSTIN POWDER COMPANY



Subject: M6 Propellant Product

10 June 2013

From: Dennis Schulz
Emulsion Development Manager
Austin Powder Company

cc: Dave True
Keith Mills
Dave Smith

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*Austin Powder Company • 430 Powder Plant Rd. • P.O. Box 317 • McArthur, OH 45651
Phone 740 596-5286 • Fax 740 596-9856*

Revised Letter

Dennis Schulz to: Keith Mills

06/26/2013 08:19 AM

History: This message has been replied to and forwarded.

It appears the math was incorrect.
The correct usage is 2MM to 4MM pounds.
I believe that was the only change requested.

Denny

Dennis Schulz

Austin Powder Company ♦ P.O. Box 317, 430 Powder Plant Rd. ♦ McArthur, OH 45651
Office: 740.596.5286 ♦ Mobile: 740.649.3933 ♦ Dennis.Schulz@austinpowder.com



M6 Propellant Project.pdf

AUSTIN POWDER COMPANY



Subject: M6 Propellant Product

10 June 2013

From: Dennis Schulz
Emulsion Development Manager
Austin Powder Company

cc: Dave True
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*Austin Powder Company • 430 Powder Plant Rd. • P.O. Box 317 • McArthur, OH 45651
Phone 740 596-5286 • Fax 740 596-9856*

Fw: LANG seeks Explo's eviction, \$1.4 M in expenses | Shreveporttimes | shreveporttimes.com

Dennis Schulz to: Keith Mills

07/31/2013 09:20 AM

Cc: Dave True

History: This message has been replied to.

Too many players in this for me to keep everything straight.

Denny

Dennis Schulz

Austin Powder Company ♦ P.O. Box 317, 430 Powder Plant Rd. ♦ McArthur, OH 45651
Office: 740.596.5286 ♦ Mobile: 740.649.3933 ♦ Dennis.Schulz@austinpowder.com

----- Forwarded by Dennis Schulz/RDN/Austin on 07/31/2013 09:20 AM -----

From: Tom Zukovich <tomzuk@aol.com>
To: Dennis Schulz <dennis.schulz@austinpowder.com>
Date: 07/27/2013 08:46 AM
Subject: LANG seeks Explo's eviction, \$1.4 M in expenses | Shreveporttimes | shreveporttimes.com

Tom Zukovich
610-653-8821
tomzuk@aol.com

Subject: LANG seeks Explo's eviction, \$1.4 M in expenses | Shreveporttimes | shreveporttimes.com

<http://www.shreveporttimes.com/article/20130723/NEWS01/307230030/LANG-seeks-Explo-s- eviction-1-4-M-in-expenses>

Propellant Packaging

Dennis Schulz to: Dave True, Keith Mills

09/06/2013 02:59 PM

History: This message has been replied to.

The M6 is 1.3C, UN0161

Non-Bulk Packaging is in 173.62 - then 114(b). Bottom.

Based on what I see, standard WPP bags are not approved shipping.

We would need to get a specific approval for shipping the 100% propellant product in WPP bags.

Here is the Shipping Information from the Competent Authority document.

NOTES: This classification is only valid when the smokeless powder has been tested and found to have sufficient residual stabilizers present per US Army Safety Bulletin: "Inspection of Supplies and Equipment, Ammunition Surveillance Procedures" (SB 742-1). The following packaging methods are assigned:

Packaging Method A: Inner Packaging - Not necessary. Outer Packaging - UN 1G fiberdrum, each containing not more than one hundred and forty (140) pounds of smokeless propellant.

Packaging Method B: Inner Packaging: Flexible static-resistant reinforced plastic cloth and strapping lifting bag, each containing not more than eight hundred and eighty (880) pounds of smokeless propellant. Outer Packaging - UN 4G heavy-wall fiberboard box with a volumetric capacity of 119 gallons or less. (see 49 CFR Section 171.8 Definition for "Non-bulk packaging")

114(b)

PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

1. For UN Nos. 0077, 0132, 0234, 0235 and 0236, packagings must be lead free
2. For UN0160 and UN0161, when metal drums (1A2, 1B2 or 1N2) are used as the outer packaging, metal packagings must be so prevented
3. For UN0160, UN0161, and UN0508, inner packagings are not necessary if drums are used as the outer packaging
4. For UN0508 and UN0509, metal packagings must not be used

Inner Package

Bags

paper, kraft
plastics
textile, sift-proof
woven plastics, sift-proof.

Receptacles

fiberboard
metal
paper
plastics
wood
woven plastics, sift-proof.

Outer Package

Boxes

natural wood, ordinary (4C1).
natural wood, sift-proof walls (4C2).
plywood (4D).
reconstituted wood (4F).
fiberboard (4G).

Drums.

steel (1A1 or 1A2).
aluminum (1B1 or 1B2).
other metal (1N1 or 1N2).
plywood (1D).
fiber (1G).
plastics (1H1 or 1H2).

Denny

Dennis Schulz

Austin Powder Company ♦ P.O. Box 317, 430 Powder Plant Rd. ♦ McArthur, OH 45651
Office: 740.596.5286 ♦ Mobile: 740.649.3933 ♦ Dennis.Schulz@austinpowder.com

RE: Propellant Packaging
Dennis Schulz
to:
Keith.Mills
09/06/2013 05:51 PM
Show Details

Out monday and Tuesday am.
In rest of week.

Sent from my Android phone using TouchDown (www.nitrodesk.com)

-----Original Message-----

From: Keith Mills [Keith.Mills@austinpowder.com]
Received: Friday, 06 Sep 2013, 4:42pm
To: Dennis Schulz [Dennis.Schulz@austinpowder.com]
Subject: Re: Propellant Packaging

Thanks Denny.

I'd like to start wrestling this one next week if possible. My discussions with James Nixon at Highland this afternoon wasn't as positive as I had hoped for but I believe we can work through it as he has some invested interest also. Are you at RD next week?

Thanks again and have a good weekend.

Keith

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com
Dennis Schulz---09/06/2013 02:59:51 PM---The M6 is 1.3C, UN0161 Non-Bulk Packaging is in 173.62
- then 114(b). Bottom.

From: Dennis Schulz/RDN/Austin
To: Dave True/Cle/Austin@Exchange, Keith Mills/RDN/Austin@Austin
Date: 09/06/2013 02:59 PM
Subject: Propellant Packaging

The M6 is 1.3C, UN0161

Non-Bulk Packaging is in 173.62 - then 114(b). Bottom.

Based on what I see, standard WPP bags are not approved shipping.

We would need to get a specific approval for shipping the 100% propellant product in WPP bags.

Here is the Shipping Information from the Competent Authority document.

NOTES: This classification is only valid when the smokeless powder has been tested and found to have sufficient residual stabilizers present per US Army Safety Bulletin: "Inspection of Supplies and Equipment, Ammunition Surveillance Procedures" (SB 742-1). The following packaging methods are assigned:

Packaging Method A: Inner Packaging - Not necessary. Outer Packaging - UN 1G fiberdrum, each containing not more than one hundred and forty (140) pounds of smokeless propellant.

Packaging Method B: Inner Packaging: Flexible static-resistant reinforced plastic cloth and strapping lifting bag, each containing not more than eight hundred and eighty (880) pounds of smokeless propellant. Outer Packaging - UN 4G heavy-wall fiberboard box with a volumetric capacity of 119 gallons or less. (see 49 CFR Section 171.8 Definition for "Non-bulk packaging")

114(b)

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1. For UN Nos. 0077, 0132, 0234, 0235 and 0236, packagings must be lead free
2. For UN0160 and UN0161, when metal drums (1A2, 1B2 or 1N2) are used as the outer packaging, metal packagings must be so constructed that the risk of explosion, by reason of increased internal pressure from internal or external causes, is prevented
3. For UN0160, UN0161, and UN0508, inner packagings are not necessary if drums are used as the outer packaging
4. For UN0508 and UN0509, metal packagings must not be used

Inner Package

Bags

paper, kraft

plastics

textile, sift-proof

woven plastics, sift-proof.

Receptacles

fiberboard

metal

paper

plastics

wood

woven plastics, sift-proof.

Outer Package

Boxes

natural wood, ordinary (4C1).

natural wood, sift-proof walls (4C2).

plywood (4D).

reconstituted wood (4F).

fiberboard (4G).

Drums.
steel (1A1 or 1A2).
aluminum (1B1 or 1B2).
other metal (1N1 or 1N2).
plywood (1D).
fiber (1G).
plastics (1H1 or 1H2).

Denny

Dennis Schulz

Austin Powder Company ♦ P.O. Box 317, 430 Powder Plant Rd. ♦ McArthur, OH 45651
Office: 740.596.5286 ♦ Mobile: 740.649.3933 ♦ Dennis.Schulz@austinpowder.com

Fw: Propellant Packaging

Dennis Schulz to: Dave True, Keith Mills

09/11/2013 08:54 AM

Looks like at least 25% emulsion is needed to get density above 1.00 g/cc.

The big jump between 80% and 70% emulsion is not uncommon, the process isn't linear.

I will follow-up today with SCE on additional testing. Concern is enough emulsion to downgrade from 1.3 to 1.5.

Denny

Dennis Schulz

Austin Powder Company ♦ P.O. Box 317, 430 Powder Plant Rd. ♦ McArthur, OH 45651
Office: 740.596.5286 ♦ Mobile: 740.649.3933 ♦ Dennis.Schulz@austinpowder.com

----- Forwarded by Dennis Schulz/RDN/Austin on 09/11/2013 08:51 AM -----

From: Margit Chevalier/RDN/Austin
To: Dennis Schulz/RDN/Austin@Austin
Date: 09/10/2013 02:52 PM
Subject: Re: Fw: Propellant Packaging

Dennis,

100% or various blends are packable with the system we intend to use. The issue is more that a sealed plastic lined WPP bag will float unless we blend it with 503 or 1100S, or rupture it while dropping down the hole.

Here are the bulk densities of various blends in ambient 503 (you can look at the samples tomorrow)

M6 % in 503 bulk g/cc

90%	0.85
80%	0.97
70%	1.27
60%	1.31

Hope this helps

M

Margit Chevalier | Austin Powder Company **R&D** | 430 Powder Plant Rd | McArthur, OH 45651 | (Office) 740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com

Nick Rupert/RDN/Mfg/Austin
11/27/2012 12:02 PM

To Keith Mills/RDN/Austin@Austin, Thomas Ethridge/Mfg/Austin
cc
bcc
Subject Fw: Storage

History:  This message has been replied to.

FYI

We have a signed agreement with Explo System.

Nick

----- Forwarded by Nick Rupert/RDN/Mfg/Austin on 11/27/2012 12:51 PM -----



Terry Wright
<terrywright@explosystems.com>
11/27/2012 12:45 PM

To <Nick.Rupert@austinpowder.com>
cc
Subject RE: Storage

Here you go buddy.

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

-----Original Message-----

From: Nick.Rupert@austinpowder.com [mailto:Nick.Rupert@austinpowder.com]
Sent: Tuesday, November 27, 2012 8:50 AM
To: Terry Wright
Subject: Storage

Terry,

See attached, if agreed, sign and return!

(See attached file: 12332 Storage Agreement.doc)

Nick



Scan_Doc0008.pdf



AUSTIN POWDER COMPANY

Storage Agreement

CORPORATE PURCHASING (740) 596-5286
 CLEVELAND OFFICE (216) 464-2400

ORDER DATE	TERMS	F.O.B.	DUE DATES		
11/27/12	See Below	East Camden, AR	SEE BELOW		
I S S U E D T O	EXPLO SYSTEMS, LLC 1600 JAVA ROAD MINDEN, LA 71055 (318) 382-8700 318-470-6641 TERRY WRIGHT- CELL 859-842-0980 FAX 318-382-8756 Office		S H I P T O	AUSTIN POWDER COMPANY 7 LC - 10 BLANDY ROAD EAST CAMDEN, AR 71701 870-574-0580	
	SHIP VIA			TAX EXEMPT YES	
ITEM	QUANTITY	U/M	DESCRIPTION	UNIT PRICE	U/M
1			<p>This storage agreement between the Austin Powder Company and Explo System is for a 90 day period, to commence on the first delivery of Propellant to our East Camden, AR site. Storage cost will include the following:</p> <p>Rental on seven (7) magazines for 90 days (storage of 1,000,000 pounds) \$8,106.00</p> <p>Cost to unload and reload Propellant from 25 loads (4 man-hours to unload & 4 man-hours to reload trailer) inbound loads are not to exceed 3 per day and must be coordinated with our plant manager. \$5,200.00</p> <p>Cost to maintain Bi-Weekly inventor as per APC - SOP \$1,248.00</p> <p><u>NOTE</u></p> <p>EACH BOX WILL BE MARKED TO COMPLY WITH ALL CURRENT US DOT REQUIREMENTS FOR TRANSPORT AND STORAGE IN THE USA (i.e. 1.1D label, EX number, proper shipping name, NEQ per box, Lot # and DSC).</p> <p style="text-align: right;">TOTAL COST: \$14,554.00</p> <p>Payment Terms: Explo will invoiced on a monthly basis at \$4,851.33, payable in 30 days.</p> <p>Terms and conditions are agreed to by:</p> <p style="text-align: right;">Nick Rupert APC _____ date</p> <p><i>Wright</i> Terry Wright Explo Systems <u>12/29/12</u> date</p>		LBS
AUSTIN POWDER COMPANY P.O. BOX 317 MCARTHUR, OH 45651			AUSTIN POWDER COMPANY PER _____ NICK RUPERT, MANAGER OF PURCHASING		

Keith Mills/RDN/Austin
03/12/2013 10:34 AM

To jnixon@highlandinc.net
cc Thomas Ethridge/Mfg/Austin@Austin
bcc
Subject Fw: M 6 Letter

James,

It was a pleasure talking with you this morning. Please find attached the letter from Explo's Dave Smith explaining the shipment of M6 propellant out of our East Camden facility going forward. Please let me know if you need anything else.

Please don't hesitate to contact me directly if you have any other issues or concerns.

Thank you,
Keith

Keith Mills**Director of Manufacturing**

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

----- Forwarded by Keith Mills/RDN/Austin on 03/12/2013 11:27 AM -----

From: David Smith <davidalansmith@bellsouth.net>
To: <keith.mills@austinpowder.com>
Date: 03/12/2013 11:06 AM
Subject: M 6 Letter

Keith: Please see attached. Hope that it meets your requirements.

Thanks,



Dave Austin Powder M6 Letter.pdf



March 12, 2013

Mr. Keith Mills
Director of Manufacturing
Austin Powder Company
PO Box 317
McArthur, OH 45651

Dear Keith:

This letter will serve to clarify the movement of M6 Propellant from your storage location at the Highlands Industrial Park. Once the quantity of M6 propellant is removed from our facility over the next two to three weeks to your storage location in Arkansas we will start to ship *all* out bound shipments to our two surface coal customers in Oklahoma that have been receiving M6 from Explo for over the last two years. These two customers have averaged 80,000 to 100,000 lbs per week over the last year. We will also agree to ship additional quantities from new customers as they are acquired.

We hope that this letter will better clarify our position as to how the M6 propellant will be shipped once it arrives at your storage facility.

Sincerely,

A handwritten signature in black ink, appearing to read "D. A. Smith", is written over a light blue horizontal line.

David A. Smith, PE
Vice President

Keith Mills/RDN/Austin
03/12/2013 01:13 PM

To: David Smith <davidalansmith@bellsouth.net>
cc
bcc: Thomas Ethridge/Mfg/Austin
Subject: Re: Explo M6

Dave,

Just got feedback from James Nixon at Highland. He has reviewed the letter and agreed to allow Austin to accept the M6 product from Explo. As we discussed, their biggest concern is to see consistency in outbound shipments. They will be monitoring the outbound shipments. Explo needs to make sure we have a steady flow back out so as not to jeopardize APC's relationship with Highland.

Thanks for the quick response and turnaround today so we can keep the project moving forward. It is appreciated.

Keith Mills

Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

David Smith

Keith: Did the letter met Highlands requirements?

03/12/2013 01:07:40 PM

From: David Smith <davidalansmith@bellsouth.net>
To: <keith.mills@austinpowder.com>
Date: 03/12/2013 01:07 PM
Subject: Explo M6

Keith: Did the letter met Highlands requirements?

Thanks,

Dave

Keith Mills/RDN/Austin
03/12/2013 01:17 PM

To: Thomas Ethridge/Mfg/Austin@Austin
cc
bcc
Subject: Fw: M 6 Letter

Thomas,

Here is the response from James Nixon regarding the incoming M6 propellant. I would like for you to start and report weekly on an Excel spreadsheet the total M6 product outbound shipped weekly. That way we both can monitor and react as needed...

Thanks

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com
----- Forwarded by Keith Mills/RDN/Austin on 03/12/2013 02:14 PM -----

From: James Nixon <jnixon@highlandinc.net>
To: <Keith.Mills@austinpowder.com>
Date: 03/12/2013 02:00 PM
Subject: RE: M 6 Letter

Keith:

It was good to speak with you this morning. I have reviewed the letter and found that Explo does have a plan to move the M-6 Propellant. It also helps to know Austin has reviewed the test data for the M-6 Propellant and found the material to have Class A stability. Highland will allow Austin to accept product from Explo Systems, however if in the near future for some unforeseen reason shipments stop please let me know so we can discuss.

Highland has enjoyed a long standing business relationship with Austin Powder. If you ever need anything please call me anytime at (870) 833-2007.

James Nixon
Manager

-----Original Message-----

From: Keith.Mills@austinpowder.com [mailto:Keith.Mills@austinpowder.com]
Sent: Tuesday, March 12, 2013 10:34 AM
To: jnixon@highlandinc.net
Cc: Thomas.Ethridge@austinpowder.com
Subject: Fw: M 6 Letter

James,

It was a pleasure talking with you this morning. Please find attached the letter from Explo's Dave Smith explaining the shipment of M6 propellant out of our East Camden facility going forward. Please let me know if you need anything else.

Please don't hesitate to contact me directly if you have any other issues or concerns.

Thank you,
Keith

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ◊ 430 Powder Plant Road ◊ McArthur, OH
45651-0317
Office: 740.596.5286 ext 7412 ◊ Cell: 614.569.1783 ◊
Keith.Mills@austinpowder.com
----- Forwarded by Keith Mills/RDN/Austin on 03/12/2013 11:27 AM -----

From: David Smith <davidalansmith@bellsouth.net>
To: <keith.mills@austinpowder.com>
Date: 03/12/2013 11:06 AM
Subject: M 6 Letter

Keith: Please see attached. Hope that it meets your requirements.

Thanks,

Dave(See attached file: Austin Powder M6 Letter.pdf)



Lionel Koons
<lionelkoons@explosystems.com>

03/13/2013 02:55 PM

To: 'Thomas Ethridge' <Thomas.Ethridge@austinpowder.com>
cc
bcc
Subject: RE: M-6 Loads

Thomas,

Our forklift operator will be there between 7 and 7:30 Thursday morning.

His name is Carl Black, phone number is 318- 617-7985.

Thanks

Lionel

From: Thomas Ethridge [mailto:Thomas.Ethridge@austinpowder.com]
Sent: Wednesday, March 13, 2013 12:53 PM
To: lionelkoons@explosystems.com
Cc: Keith Mills
Subject: M-6 Loads

Lionel

If you could. Get the people loading the pallets to verify that there is no loose product on the pallets. We had loose product all over the trailer but none of the drums were busted.

Thanks

Thomas Ethridge, Plant Manager
Austin Powder Company
East Camden, Arkansas
870-574-0580 (Voice)
870-574-2060 (Fax)

Keith Mills/RDN/Austin
03/15/2013 09:08 AM

To: davidalansmith@bellsouth.net
cc: Thomas Ethridge/Mfg/Austin@Austin
bcc:
Subject: Fw: Emailing: SANY0023.JPG, SANY0020.JPG,
SANY0021.JPG

Dave,

We have issues. Please take a look at the containers we received this week from Minden. This was not what we agreed to. The containers must be legal and in good condition containers. These obviously are not in good shipping condition. Several of them you cannot even read the print on the outside of the container. We are going to need to stop until we get this under control. Please call me when you get a free moment so we can discuss.

Thanks

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com
----- Forwarded by Keith Mills/RDN/Austin on 03/15/2013 10:03 AM -----

From: Thomas Ethridge/Mfg/Austin
To: Keith Mills/RDN/Austin@Austin
Date: 03/15/2013 09:48 AM
Subject: Emailing: SANY0023.JPG, SANY0020.JPG, SANY0021.JPG

The message is ready to be sent with the following file or link attachments:

SANY0023.JPG
SANY0020.JPG
SANY0021.JPG

Note: To protect against computer viruses, e-mail programs may prevent sending or receiving certain types of file attachments. Check your e-mail security settings to determine how attachments are handled.

Thomas Ethridge, Plant Manager
Austin Powder Company
East Camden, Arkansas
870-574-0580 (Voice)
870-574-2060 (Fax)



- SANY0023.JPG

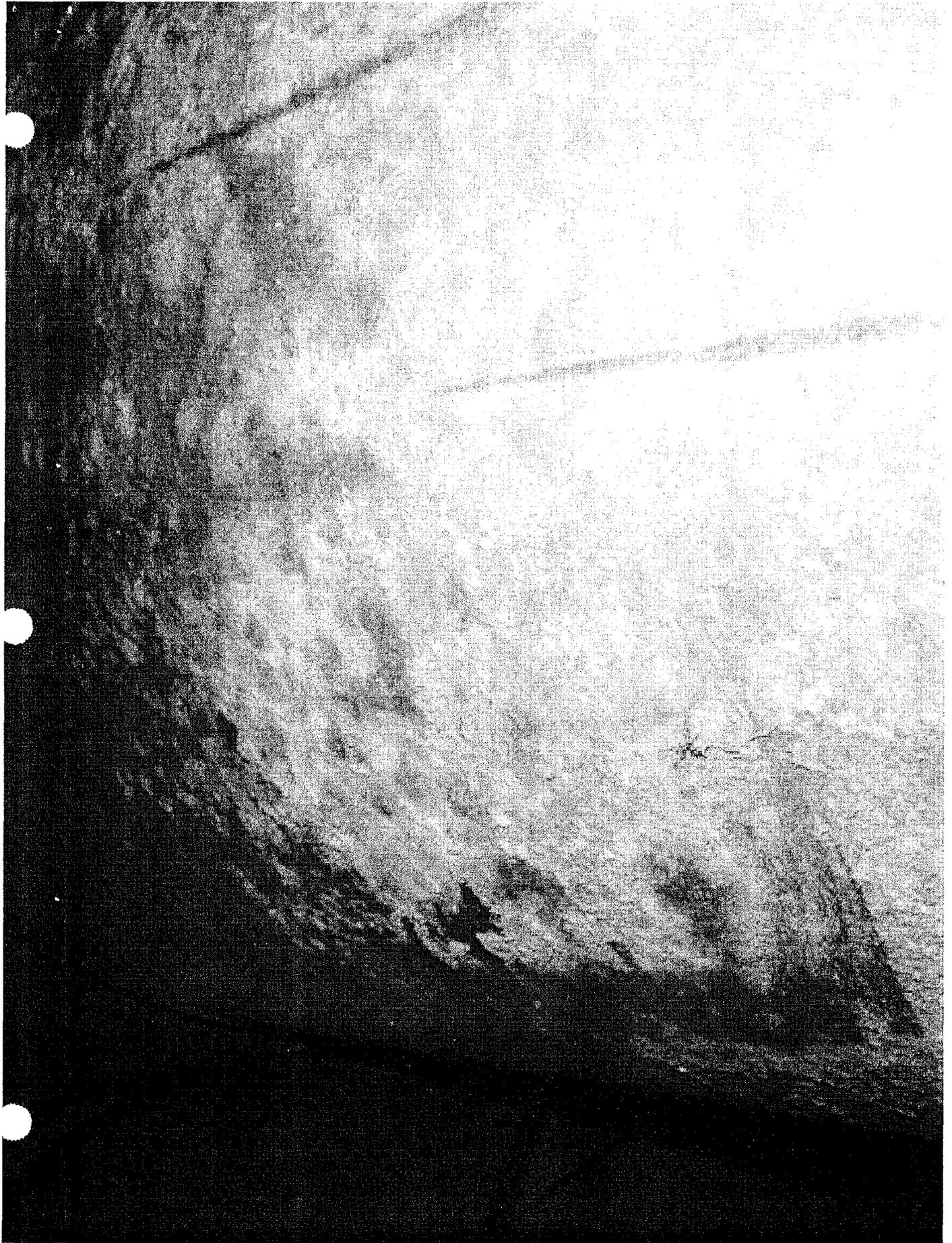


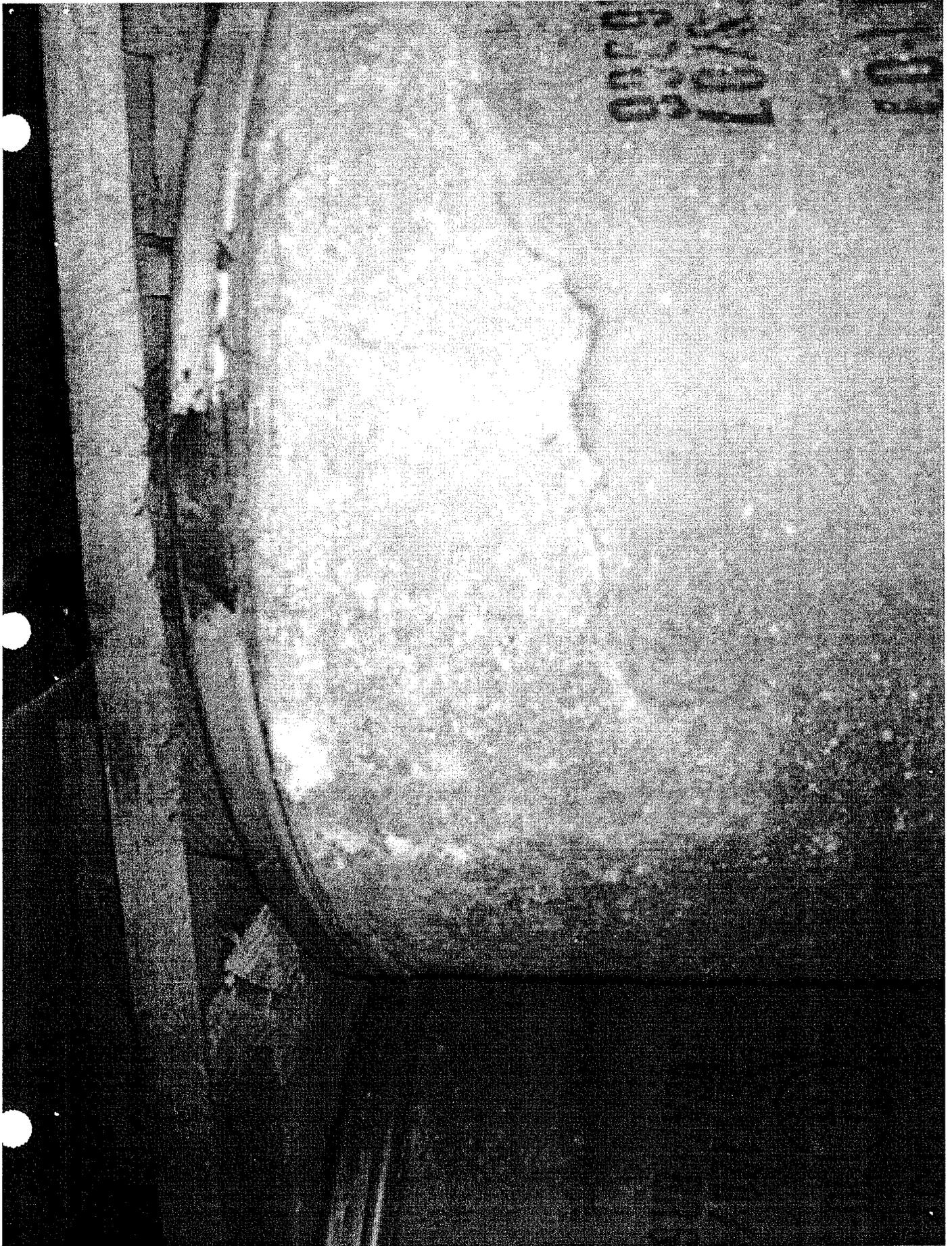
- SANY0020.JPG



- SANY0021.JPG







Keith Mills/RDN/Austin
03/15/2013 10:16 AM

To Thomas Ethridge/Mfg/Austin@Austin
cc Bob Hivick/RDN/Mfg/Austin@Austin, Mike
Abele/RDN/Mfg/Austin@Austin
bcc

Subject Re: Fw: Emailing: SANY0023.JPG, SANY0020.JPG,
SANY0021.JPG

History: This message has been replied to.

Thomas,

Please review Mike and Bob's feedback. Can you provide some of the answers to their questions.

Thanks

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

Mike Abele Keith We need the following information: 03/15/2013 11:12:36 AM

From: Mike Abele/RDN/Mfg/Austin
To: Keith Mills/RDN/Austin@Austin
Cc: Bob Hivick/RDN/Mfg/Austin@Austin
Date: 03/15/2013 11:12 AM
Subject: Re: Fw: Emailing: SANY0023.JPG, SANY0020.JPG, SANY0021.JPG

Keith

We need the following information:

1. Is the white material only on the outside of drum? Or is it on the outside and inside of drum.
2. Is there a liner?
3. Is the white material on the outside of the liner?
4. Is the white material on the inside of the liner on the product?
5. How many barrels involved and what are the barrel codes(If they can read them.)

This would be the action if mold on only outside of drum. We do not want to spray propellant with bleach.

After looking at the photos. Barrels need to be examined to make sure there are liners in the drums and that the white substance is not in the containers or inside the liner. If the propellant is in a sealed bag/liner, then try wiping the white material with a damp paper towels (wearing gloves). If the material removes easily with a damp paper towel, then try some water in a spray bottle to aid in removal. If the material does not come off and they can confirm product is sealed in a plastic liner, then try dilute bleach (10 water to 1 chlorox) on a paper towel first and try to remove. If successful use dilute chlox (bleach) in spray bottle. (10 to 1). After using bleach remove any leftover bleach remaining on the drum with water.

Please Advise.

Thanks Bob and Mike

Thomas Ethridge/Mfg/Austin
03/15/2013 10:35 AM

To Keith Mills/RDN/Austin@Austin
cc Bob Hivick/RDN/Mfg/Austin@Austin, Mike
Abele/RDN/Mfg/Austin@Austin
bcc
Subject Re: Fw: Emailing: SANY0023.JPG, SANY0020.JPG,
SANY0021.JPG

There is no liners in the drums. The drums that we have had to open don't have any residue on the inside only the out side. As far as the number, we don't have a count however the first million lbs had some of the same problems but not near as bad as the last loads we have been getting. I would guess that 10 % to 15 % of all the drums that we have have something on them, and 30% to 40% have been wet. Looks like all the drums have been reused a number of times. We don't know if this is mold or explosive residue.

Thomas Ethridge, Plant Manager
Austin Powder Company
East Camden, Arkansas
870-574-0580 (Voice)
870-574-2060 (Fax)

Keith Mills Thomas, Please review Mike and Bob's feedback... 03/15/2013 10:16:03 AM

Keith Mills/RDN/Austin
03/15/2013 10:16 AM

To Thomas Ethridge/Mfg/Austin@Austin
cc Bob Hivick/RDN/Mfg/Austin@Austin, Mike
Abele/RDN/Mfg/Austin@Austin
Subject Re: Fw: Emailing: SANY0023.JPG, SANY0020.JPG,
SANY0021.JPG

Thomas,

Please review Mike and Bob's feedback. Can you provide some of the answers to their questions.

Thanks

Keith Mills

Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

Mike Abele Keith We need the following information: 03/15/2013 11:12:36 AM

From: Mike Abele/RDN/Mfg/Austin
To: Keith Mills/RDN/Austin@Austin
Cc: Bob Hivick/RDN/Mfg/Austin@Austin
Date: 03/15/2013 11:12 AM
Subject: Re: Fw: Emailing: SANY0023.JPG, SANY0020.JPG, SANY0021.JPG

Keith

We need the following information:

- 1: Is the white material only on the outside of drum? Or is it on the outside and inside of drum.
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5. How many barrels involved and what are the barrel codes(If they can read them.)

This would be the action if mold on only outside of drum. We do not want to spray propellant with bleach.

After looking at the photos. Barrels need to be examined to make sure there are liners in the drums and that the white substance is not in the containers or inside the liner. If the propellant is in a sealed bag/liner, then try wiping the white material with a damp paper towels (wearing gloves). If the material removes easily with a damp paper towel, then try some water in a spray bottle to aid in removal. If the material does not come off and they can confirm product is sealed in a plastic liner, then try dilute bleach (10 water to 1 chlorox) on a paper towel first and try to remove. If successful use dilute chlrox (bleach) in spray bottle. (10 to 1). After using bleach remove any leftover bleach remaining on the drum with water.

Please Advise.

Thanks Bob and Mike

Keith Mills

03/15/2013 10:49:12 AM

Keith Mills/RDN/Austin
03/15/2013 03:25 PM

To <terrywright@explosystems.com>
cc davidalansmith@bellsouth.net, Thomas
Ethridge/Mfg/Austin@Austin
bcc
Subject Re: Loads 

The concern I have is these drums on the end of the trailer look good. If every drum on that trailer is in that condition that is fine. While I understand, per Dave Smith, there may not be a safety or environmental concern. I am concerned regarding the physical integrity and condition of the legal shipping containers. We cannot even read the DOT cert number on some of the drums. As you know we are already under the microscope with Highland as they are not happy that we are supporting Explo. We do not want to jeopardize that relationship. Nor do we want to not be DOT compliant when shipping these drums back out. Sorting the good, bad, and ugly at East Camden is not an option. What ever trailers are at R&R currently needs to be sorted through before coming into APC-EC. We also need to get the drums current;y at APC-EC that is in poor condition removed.

Don't get me wrong. We are dedicated to supporting Explo. But we need to make absolutely sure that anything going into our magazines are in good condition and DOT compliant.

Keith Mills**Director of Manufacturing**

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

These are ready to ship. Can I wipe those down...

03/15/2013 03:45:17 PM

From: <terrywright@explosystems.com>
To: <keith.mills@austinpowder.com>
Date: 03/15/2013 03:45 PM
Subject: Loads

These are ready to ship. Can I wipe those down and make this happen.



Sent via BlackBerry by AT&T IMG-20130315-00054.jpg IMG-20130315-00053.jpg

Thomas Ethridge/Mfg/Austin

03/15/2013 10:35 AM

To Keith Mills/RDN/Austin@Austin

cc Bob Hivick/RDN/Mfg/Austin@Austin, Mike
Abele/RDN/Mfg/Austin@Austin

bcc

Subject Re: Fw: Emailing: SANY0023.JPG, SANY0020.JPG,
SANY0021.JPG

There is no liners in the drums. The drums that we have had to open don't have any residue on the inside only the out side. As far as the number, we don't have a count however the first million lbs had some of the same problems but not near as bad as the last loads we have been getting. I would guess that 10 % to 15 % of all the drums that we have have something on them, and 30% to 40% have been wet. Looks like all the drums have been reused a number of times. We don't know if this is mold or explosive residue.

Thomas Ethridge, Plant Manager
Austin Powder Company
East Camden, Arkansas
870-574-0580 (Voice)
870-574-2060 (Fax)

Keith Mills

Thomas, Please review Mike and Bob's feedback...

03/15/2013 10:16:03 AM

Keith Mills/RDN/Austin

03/15/2013 10:16 AM

To Thomas Ethridge/Mfg/Austin@Austin

cc Bob Hivick/RDN/Mfg/Austin@Austin, Mike
Abele/RDN/Mfg/Austin@Austin

Subject Re: Fw: Emailing: SANY0023.JPG, SANY0020.JPG,
SANY0021.JPG

Thomas,

Please review Mike and Bob's feedback. Can you provide some of the answers to their questions.

Thanks

Keith Mills

Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

Mike Abele

Keith We need the following information:

03/15/2013 11:12:36 AM

From: Mike Abele/RDN/Mfg/Austin
To: Keith Mills/RDN/Austin@Austin
Cc: Bob Hivick/RDN/Mfg/Austin@Austin
Date: 03/15/2013 11:12 AM
Subject: Re: Fw: Emailing: SANY0023.JPG, SANY0020.JPG, SANY0021.JPG

Keith

We need the following information:

- 1: Is the white material only on the outside of drum? Or is it on the outside and inside of drum.
2. Is there a liner?
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4. Is the white material on the inside of the liner on the product?
5. How many barrels involved and what are the barrel codes(If they can read them.)

This would be the action if mold on only outside of drum. We do not want to spray propellant with bleach.

After looking at the photos. Barrels need to be examined to make sure there are liners in the drums and that the white substance is not in the containers or inside the liner. If the propellant is in a sealed bag/liner, then try wiping the white material with a damp paper towels (wearing gloves). If the material removes easily with a damp paper towel, then try some water in a spray bottle to aid in removal. If the material does not come off and they can confirm product is sealed in a plastic liner, then try dilute bleach (10 water to 1 chlorox) on a paper towel first and try to remove. If successful use dilute chlorox (bleach) in spray bottle. (10 to 1). After using bleach remove any leftover bleach remaining on the drum with water.

Please Advise.

Thanks Bob and Mike

Keith Mills

03/15/2013 10:49:12 AM

Keith Mills/RDN/Austin
03/18/2013 07:07 AM

To: Thomas Ethridge/Mfg/Austin@Austin
cc
bcc
Subject: Fw: Emailing: SANY0023.JPG, SANY0020.JPG,
SANY0021.JPG

FYI

Keith Mills

Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

----- Forwarded by Keith Mills/RDN/Austin on 03/18/2013 08:07 AM -----

From: <davidalansmith@bellsouth.net>
To: Keith Mills <keith.mills@austinpowder.com>
Date: 03/15/2013 03:41 PM
Subject: Re: Emailing: SANY0023.JPG, SANY0020.JPG, SANY0021.JPG

Keith: this is where the drums have sweated in the high humidity. We will hand pick to see that at possible you get the best drums possible. This is not a safety or environmental concern. The drums all have an inner coating that would prevent any migration. I will call you in an hour to discuss further.

Dave

-----Original Message-----

From: <Keith.Mills@austinpowder.com>
Date: Fri, 15 Mar 2013 15:26:53
To: Terry Wright<terrywright@explosystems.com>
Cc: <davidalansmith@bellsouth.net>
Subject: Fw: Emailing: SANY0023.JPG, SANY0020.JPG, SANY0021.JPG

Terry,

I am forwarding per request from Dave Smith

Thanks

Keith Mills

Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦

Keith.Mills@austinpowder.com

----- Forwarded by Keith Mills/RDN/Austin on 03/15/2013 03:25 PM -----

From: Keith Mills/RDN/Austin
To: davidalansmith@bellsouth.net
Cc: Thomas Ethridge/Mfg/Austin@Austin
Date: 03/15/2013 10:08 AM
Subject: Fw: Emailing: SANY0023.JPG, SANY0020.JPG, SANY0021.JPG

Dave,

We have issues. Please take a look at the containers we received this week from Minden. This was not what we agreed to. The containers must be legal and in good condition containers. These obviously are not in good shipping condition. Several of them you cannot even read the print on the outside of the container. We are going to need to stop until we get this under control. Please call me when you get a free moment so we can discuss.

Thanks

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ◊ 430 Powder Plant Road ◊ McArthur, OH
45651-0317
Office: 740.596.5286 ext 7412 ◊ Cell: 614.569.1783 ◊
Keith.Mills@austinpowder.com
----- Forwarded by Keith Mills/RDN/Austin on 03/15/2013 10:03 AM -----

From: Thomas Ethridge/Mfg/Austin
To: Keith Mills/RDN/Austin@Austin
Date: 03/15/2013 09:48 AM
Subject: Emailing: SANY0023.JPG, SANY0020.JPG, SANY0021.JPG

The message is ready to be sent with the following file or link
attachments:
SANY0023.JPG

SANY0020.JPG

SANY0021.JPG

Note: To protect against computer viruses, e-mail programs may prevent sending or receiving certain types of file attachments. Check your e-mail security settings to determine how attachments are handled.
Thomas Ethridge, Plant Manager
Austin Powder Company
East Camden, Arkansas
870-574-0580 (Voice)
870-574-2060 (Fax)
(See attached file: SANY0023.JPG)
(See attached file: SANY0020.JPG)
(See attached file: SANY0021.JPG)

Keith Mills/RDN/Austin
03/18/2013 07:08 AM

To: Thomas Ethridge/Mfg/Austin@Austin
cc
bcc
Subject: Fw: Loads

FYI

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com
----- Forwarded by Keith Mills/RDN/Austin on 03/18/2013 08:08 AM -----

From: <terrywright@explosystems.com>
To: <Keith.Mills@austinpowder.com>
Date: 03/16/2013 10:04 AM
Subject: Re: Loads

Keith

Sorry I didn't get back to you yesterday but I was in the middle of another crisis when all this started. We do appreciate your efforts and support. I have instructed my loading crew to clean the drums with vinegar to remove the salt from the drums. We are having pop mark labels printed to apply to any drums where its not legible. As far as DOT concerns when shipping occurs my intent was for my shipping manager to come to Camden and do the shipping papers. Therefore we would be the shipper of record relieving Austin of any liability. I want to work with you and make this a win win. As far as any material already in magazines can we verify and correct and problems as we ship. In other words draw a line and move forward from here. If Thomas has any legitimate concerns over future drums he can merely set them aside and return them to us or I can have myself or my guy on the ground can fix and satisfy Thomas.

Please keep me in the loop in the future so I can address the situation immediately. Give me a call Monday so we can discuss

Terry
Sent via BlackBerry by AT&T

-----Original Message-----

From: <Keith.Mills@austinpowder.com>
Date: Fri, 15 Mar 2013 16:24:55
To: <terrywright@explosystems.com>
Cc: <davidalansmith@bellsouth.net>; <Thomas.Ethridge@austinpowder.com>
Subject: Re: Loads

The concern I have is these drums on the end of the trailer look good. If every drum on that trailer is in that condition that is fine. While I understand, per Dave Smith, there may not be a safety or environmental concern. I am concerned regarding the physical integrity and condition of the legal shipping containers. We cannot even read the DOT cert number on some of the drums. As you know we are already under the microscope with Highland as they are not happy that we are supporting Explo. We do not want to jeopardize that relationship. Nor do we want to not be DOT compliant when shipping these drums back out. Sorting the good, bad, and ugly at East

Camden is not an option. What ever trailers are at R&R currently needs to be sorted through before coming into APC-EC. We also need to get the drums current;y at APC-EC that is in poor condition removed.

Don't get me wrong. We are dedicated to supporting Explo. But we need to make absolutely sure that anything going into our magazines are in good condition and DOT compliant.

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ◊ 430 Powder Plant Road ◊ McArthur, OH
45651-0317
Office: 740.596.5286 ext 7412 ◊ Cell: 614.569.1783 ◊
Keith.Mills@austinpowder.com

From: <terrywright@explosystems.com>
To: <keith.mills@austinpowder.com>
Date: 03/15/2013 03:45 PM
Subject: Loads

These are ready to ship. Can I wipe those down and make this happen.
Sent via BlackBerry by AT&T(See attached file: IMG-20130315-00054.jpg) (See
attached file: IMG-20130315-00053.jpg)

Keith Mills/RDN/Austin
03/19/2013 06:50 AM

To Terry Wright <terrywright@explosystems.com>
cc davidalansmith@bellsouth.net, Thomas
Ethridge/Mfg/Austin@Austin, Nick
Rupert/RDN/Mfg/Austin@Austin
bcc
Subject Reflection from yesterday's discussion

Good morning Terry,

As I was reflecting on our conversation yesterday. I recalled during the visit to Red Diamond by Dave Smith the discussion was two to three loads per day to be off loaded at East Camden. I confirmed with Nick to make sure I was recalling correctly and he stated yes that is what he wrote down also. If the intent is to do more than that then we need to reconsider also. Our vision was not to off load 4, 5, or 6 loads per day. We are also trying to operate our normal business and operations at East Camden. Not sure what commitments were made by Explo to the regulatory agencies but we need to be methodical and deliberate at EC. I will discuss with Thomas today.

Keith

Keith Mills

Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.co

Keith Mills/RDN/Austin
03/19/2013 07:03 AM

To: Thomas Ethridge/Mfg/Austin@Austin, Nick
Rupert/RDN/Mfg/Austin@Austin
cc
bcc
Subject: Fw: Reflection from yesterday's discussion

FYI

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com
----- Forwarded by Keith Mills/RDN/Austin on 03/19/2013 08:01 AM -----

From: <terrywright@explosystems.com>
To: <Keith.Mills@austinpowder.com>
Date: 03/19/2013 07:57 AM
Subject: Re: Reflection from yesterday's discussion

Keith

First I apologize for maybe being gruff yesterday. I had my lower plate put in yesterday and was really in pain. Secondly I apologize for the misunderstanding about the number of loads to unload. I wasn't there as you know and Dave told me 4. But that being what it is I worked it out last night with R&R to eliminate one of the trucks in the rotation. So if we can maintain the two loads with an occasional third we will be fine. I am sorry for the confusion on my part. I probably should have been in the meeting. Thanks again for the help.

Terry
Sent via BlackBerry by AT&T

-----Original Message-----

From: <Keith.Mills@austinpowder.com>
Date: Tue, 19 Mar 2013 07:50:20
To: Terry Wright<terrywright@explosystems.com>
Cc: <davidalansmith@bellsouth.net>; <Thomas.Ethridge@austinpowder.com>; <Nick.Rupert@austinpowder.com>
Subject: Reflection from yesterday's discussion

Good morning Terry,

As I was reflecting on our conversation yesterday. I recalled during the visit to Red Diamond by Dave Smith the discussion was two to three loads per day to be off loaded at East Camden. I confirmed with Nick to make sure I was recalling correctly and he stated yes that is what he wrote down also. If the intent is to do more than that then we need to reconsider also. Our vision was not to off load 4, 5, or 6 loads per day. We are also trying to operate our normal business and operations at East Camden. Not sure what commitments were made by Explo to the regulatory agencies but we need to be methodical and deliberate at EC. I will discuss with Thomas today.

Keith

Thomas Ethridge/Mfg/Austin
03/27/2013 01:25 PM

To James Nixon <jnixon@highlandinc.net>
cc
bcc
Subject Re: Highland 

As of today we have received 987,840 lbs of the expected 2 million. They will not start shipping until we get the full 2 million. I will send you a spread sheet of everything as soon as we get the last load. It will have currant inventory and how much they ship each time.

Thomas Ethridge, Plant Manager
Austin Powder Company
East Camden, Arkansas
870-574-0580 (Voice)
870-574-2060 (Fax)

James Nixon

Afternoon Thomas:

03/27/2013 01:16:55 PM



James Nixon
<jnixon@highlandinc.net>
03/27/2013 01:16 PM

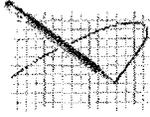
To <Thomas.Ethridge@austinpowder.com>
cc
Subject Highland

Afternoon Thomas:

I was just checking to see if you received all the propellant from Explo and if they had started shipping yet.

Thanks,

James



Thomas Ethridge/Mfg/Austin
03/27/2013 01:27 PM

To jnixon@highlandinc.net
cc
bcc
Subject Emailing: Explo M6 Shipments.xls

This is what we have as of today.

Thomas Ethridge, Plant Manager
Austin Powder Company
East Camden, Arkansas
870-574-0580 (Voice)
870-574-2060 (Fax)



- Explo M6 Shipments.xls

EXPLO PRODUCT

EAST CAMDEN

DATE	INBOUND LOADS	OUT BOUND LOADS	TOTAL STILL IN INVENTORY
As of 3/12/13			1,034,750
3/13/13	70,560		1,105,310
3/14/13	105,840		1,211,150
3/15/13	35,280		1,246,430
3/18/13	70,560		1,316,990
3/19/13	105,840		1,422,830
3/20/13	70,560		1,493,390
3/21/13	211,680		1,705,070
3/22/13	70,560		1,775,630
3/25/13	70,560		1,846,190
3/26/13	105,840		1,952,030
3/27/13	70,560		2,022,590

Thomas Ethridge/Mfg/Austin
04/25/2013 07:46 AM

To terrywright@explosystems.com
cc Keith Mills/RDN/Austin@Austin
bcc
Subject M-6

Terry

When do you think you are going to start shipping this product out. I need to know so I can plan for it. Highland is also wanting an idea of time frame.

Thomas Ethridge, Plant Manager
Austin Powder Company
East Camden, Arkansas
870-574-0580 (Voice)
870-574-2060 (Fax)



<terrywright@explosystems.com>

04/25/2013 08:32 AM

Please respond to
<terrywright@explosystems.com>

To: Thomas Ethridge <Thomas.Ethridge@austinpowder.com>

cc: Keith Mills <Keith.Mills@austinpowder.com>

bcc:

Subject: Re: M-6

The salesman is at the sight now explaining the changes in packaging and carrier. He has two loads sitting there now. I will have a time frame for you this afternoon.
Sent via BlackBerry by AT&T

From: Thomas Ethridge <Thomas.Ethridge@austinpowder.com>

Date: Thu, 25 Apr 2013 07:47:01 -0500

To: <terrywright@explosystems.com>

Cc: Keith Mills <Keith.Mills@austinpowder.com>

Subject: M-6

Terry

When do you think you are going to start shipping this product out. I need to know so I can plan for it. Highland is also wanting an idea of time frame.

Thomas Ethridge, Plant Manager
Austin Powder Company
East Camden, Arkansas
870-574-0580 (Voice)
870-574-2060 (Fax)

Thomas Ethridge/Mfg/Austin
04/26/2013 02:15 PM

To Keith Mills/RDN/Austin@Austin
cc
bcc
Subject m-6 shipment

Keith

Just wanted to keep you in the loop. No word from Explo on shipping the M-6 yet.

Thomas Ethridge, Plant Manager
Austin Powder Company
East Camden, Arkansas
870-574-0580 (Voice)
870-574-2060 (Fax)



Thomas Ethridge/Mfg/Austin

05/20/2013 11:16 AM

To jnixon@highlandinc.net

cc Keith Mills/RDN/Austin@Austin

bcc

Subject Emailing: Explo M6 Shipments.xls

James

Explo moved 2 loads of M-6 last week . Total of the two loads was 70,560 lbs. They are suppose to move 3 loads this week.

Note: To protect against computer viruses, e-mail programs may prevent sending or receiving certain types of file attachments. Check your e-mail security settings to determine how attachments are handled.

Thomas Ethridge, Plant Manager

Austin Powder Company

East Camden, Arkansas

870-574-0580 (Voice)

870-574-2060 (Fax)



- Explo M6 Shipments.xls

Thomas Ethridge/Mfg/Austin

06/05/2013 03:24 PM

To James Nixon <jnixon@highlandinc.net>

cc

bcc

Subject RE: Emailing: Explo M6 Shipments.xls

HOT!!!! Unloading containers. No more M6 has been shipped. I have not heard anything form EXPLO

Thomas Ethridge, Plant Manager
Austin Powder Company
East Camden, Arkansas
870-574-0580 (Voice)
870-574-2060 (Fax)

James Nixon Thomas,

06/05/2013 03:12:45 PM



James Nixon
<jnixon@highlandinc.net>
06/05/2013 03:12 PM

To 'Thomas Ethridge' <Thomas.Ethridge@austinpowder.com>
cc

Subject RE: Emailing: Explo M6 Shipments.xls

Thomas,

Hope you are having a good week. I think summer time has arrived. I was wondering if the M-6 has started moving.

James

From: Thomas Ethridge [mailto:Thomas.Ethridge@austinpowder.com]
Sent: Monday, May 20, 2013 11:17 AM
To: jnixon@highlandinc.net
Cc: Keith Mills
Subject: Emailing: Explo M6 Shipments.xls

James

Explo moved 2 loads of M-6 last week . Total of the two loads was 70,560 lbs. They are suppose to move 3 loads this week.

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Thomas Ethridge, Plant Manager
Austin Powder Company
East Camden, Arkansas
870-574-0580 (Voice)
870-574-2060 (Fax)

Keith Mills/RDN/Austin
06/10/2013 07:21 AM

To Nick Rupert/RDN/Mfg/Austin@Austin, Thomas
Ethridge/Mfg/Austin@Austin
cc
bcc
Subject Fw: Explo

FYI

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com
----- Forwarded by Keith Mills/RDN/Austin on 06/10/2013 08:21 AM -----

From: Dave True/Cle/Austin
To: "Keith P. Mills" <keith.mills@austinpowder.com>
Date: 06/07/2013 07:13 PM
Subject: Fw: Explo

Fyi

----- Original Message -----
From: David Smith [davidalansmith@bellsouth.net]
Sent: 06/07/2013 07:09 PM AST
To: Dave True
Subject: Explo

Dave: We got our State explosives licenses back this afternoon.

Still have to jump through some hoops but making progress.

Hope you have a nice weekend.

Dave

Sent from my iPad

Keith Mills/RDN/Austin
06/12/2013 01:17 PM

To: Thomas Ethridge/Mfg/Austin@Austin
cc: Nick Rupert/RDN/Mfg/Austin@Austin
bcc:
Subject: Fw: Explo Indictments

Had good conversation with James Nixon. He had seen the articles also. He is understanding of the situation and simply wants to be kept in the communication loop. I did discuss with him any additional space at EC. He stated there wasn't currently but if something became available we would be at the top of the list.

Keith Mills

Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com
----- Forwarded by Keith Mills/RDN/Austin on 06/12/2013 02:15 PM -----

From: Keith Mills/RDN/Austin
To: Nick Rupert/RDN/Mfg/Austin@Austin, Thomas Ethridge/Mfg/Austin@Austin
Date: 06/12/2013 01:44 PM
Subject: Fw: Explo Indictments

FYI, proverbial "other shoe" has dropped. I will contact James Nixon yet today.

Keith Mills

Director of Manufacturing

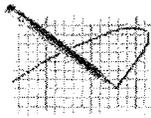
Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com
----- Forwarded by Keith Mills/RDN/Austin on 06/12/2013 01:44 PM -----

From: John Capers/RDN/Mfg/Austin
To: Keith Mills/RDN/Austin@Austin, Dave True/Cle/Austin@Austin
Date: 06/12/2013 01:33 PM
Subject: Explo Indictments

In case you have not seen.....

<http://www.foxnews.com/us/2013/06/10/louisiana-company-employees-indicted-in-explosives-case/?test=latestnews>

John



Thomas Ethridge/Mfg/Austin
07/15/2013 03:15 PM

To jnixon@highlandinc.net
cc
bcc
Subject Emailing: Explo M6 Shipments.xls

James

Attached is the current inventory of M-6. They moved out 4 loads last week on the 9th. I will keep you updated as they move more.

Thanks

Thomas Ethridge, Plant Manager
Austin Powder Company
East Camden, Arkansas
870-574-0580 (Voice)
870-574-2060 (Fax)



- Explo M6 Shipments.xls

EXPLO PRODUCT

EAST CAMDEN

DATE	INBOUND LOADS	OUT BOUND LOADS	TOTAL STILL IN INVENTORY
As of 3/12/13			1,034,750
3/13/13	70,560		1,105,310
3/14/13	105,840		1,211,150
3/15/13	35,280		1,246,430
3/18/13	70,560		1,316,990
3/19/13	105,840		1,422,830
3/20/13	70,560		1,493,390
3/21/13	211,680		1,705,070
3/22/13	70,560		1,775,630
3/25/13	70,560		1,846,190
3/26/13	105,840		1,952,030
3/27/13	70,560		2,022,590
3/28/13	141,120		2,163,710
4/1/13	105,840		2,269,550
4/2/13	141,120		2,410,670
4/3/13	105,840		2,516,510
4/4/13	105,840		2,622,350
4/5/13	105,840		2,728,190
4/8/13	105,840		2,834,030
4/9/13	105,840		2,939,870
4/10/13	105,840		3,045,710
4/15/13		2520	3,043,190
5/16/13		70,560	2,972,630
7/9/13		141,120	2,831,510



T Wright
<tee4texas@att.net>
08/21/2013 11:56 AM

To <Keith.Mills@austinpowder.com>,
<Thomas.Ethridge@austinpowder.com>
cc <Dave.True@austinpowder.com>,
<davidasmith@explosystems.com>
bcc
Subject Brakefield

1 attachment



Brakefield.pdf

Gentlemen

Attached you will find all the necessary paperwork for shipment of M6 to Brakefield. Let me know if you need any further information. I would like to set a load up for Monday and two on Wednesday if at all possible.

Terry Wright

Keith Mills/RDN/Austin
08/22/2013 02:13 PM

To: T Wright <tee4texas@att.net>, Terry Wright
<terrywright@explosystems.com>
cc: <Thomas.Ethridge@austinpowder.com>,
<Dave.True@austinpowder.com>,
<davidasmith@explosystems.com>, Craig
bcc
Subject: Re: Brakefield 

Terry,

Just talked with Craig. We are working our way through some clarifications on our side. Once that is done we will be back in touch to confirm shipping for next week. Please feel free to contact me directly if needed.

Keith

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

T Wright

Gentlemen Attached you will find all the necessa...

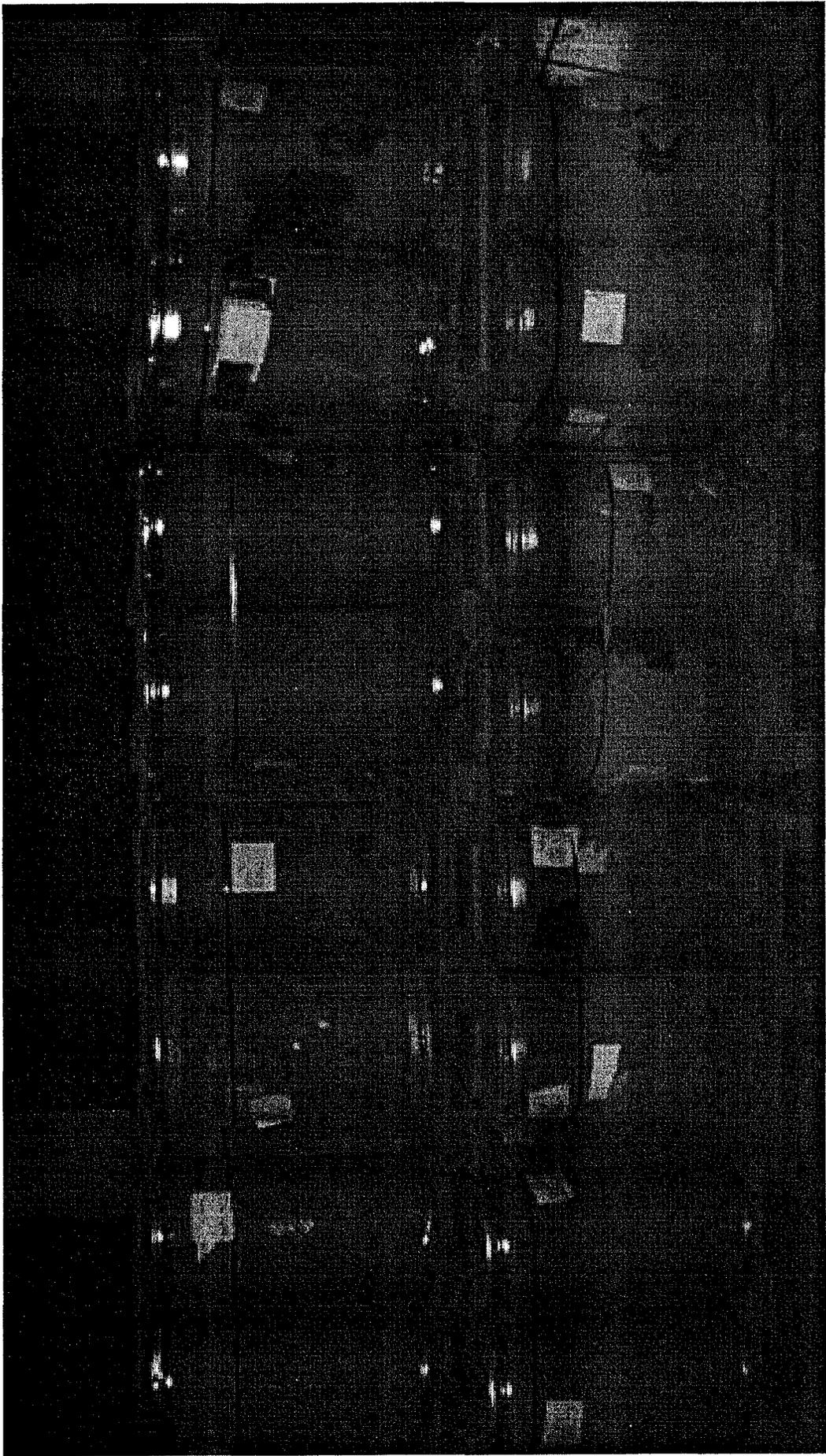
08/21/2013 12:56:41 PM

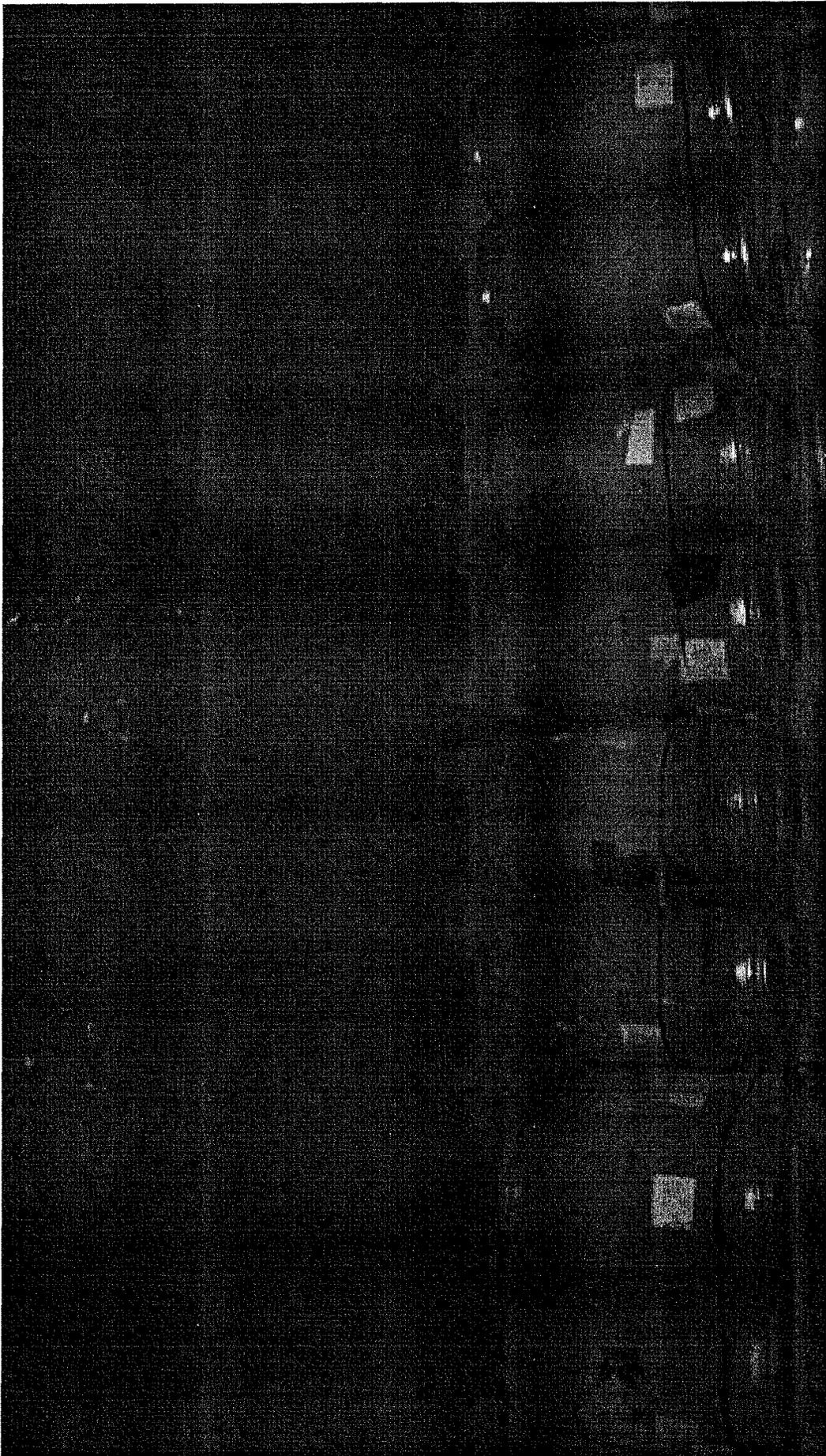
From: T Wright <tee4texas@att.net>
To: <Keith.Mills@austinpowder.com>, <Thomas.Ethridge@austinpowder.com>
Cc: <Dave.True@austinpowder.com>, <davidasmith@explosystems.com>
Date: 08/21/2013 12:56 PM
Subject: Brakefield

Gentlemen

Attached you will find all the necessary paperwork for shipment of M6 to Brakefield. Let me know if you need any further information. I would like to set a load up for Monday and two on Wednesday if at all possible.

Terry Wright[attachment "Brakefield.pdf" deleted by Keith Mills/RDN/Austin]







POWDER, SMOKELESS

1.3C TYPE III

UN01G PG II

NET WT 1.35 NET

NET WT 1.35 GROSS

LOT NUMBER 120878078

DATE CODE 1-17-11



Terry Wright
<terrywright@explosystems.com>

09/07/2012 02:30 PM

To 'Dennis Schulz' <Dennis.Schulz@austinpowder.com>

cc <tom.justice@austinpowder.com>, <margit.chavalier@austinpowder.com>

bcc

Subject RE: Update and Questions

Denny

I am glad to hear everything is moving forward. Here are your answers and have a great weekend.

The stabilizers are in the propellant not on it. The color difference is related to the amount of graphite used to get the flow characteristics necessary for loading the various extruders. Sometimes the coating process is better than others or more or less is needed on a particular machine.

The net weight on the super sacks is 880#.

There is a bottom discharge on the super sack with a flow control throat.

I hope this answers your questions

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

-----Original Message-----

From: Dennis Schulz [mailto:Dennis.Schulz@austinpowder.com]
Sent: Friday, September 07, 2012 9:31 AM
To: terrywright@explosystems.com
Cc: Margit Chevalier; Tom Justice
Subject: Update and Questions

We are moving forward with our plans for making a packaged product. We had a very good Thursday meeting yesterday and we have a couple simple questions.

1. What does the different color indicate? More or Less Stabilizer?
2. What is the net weight for the super sacks?
3. Is there a discharge spout on the bottom of the super sacks?

Thanks!
Denny

Dennis Schulz
Austin Powder

Office: 740.596.5286
Mobile: 740.649.3933

No virus found in this message.

Checked by AVG - www.avg.com

Version: 2012.0.2197 / Virus Database: 2437/5254 - Release Date: 09/07/12



Terry Wright
<terrywright@explosystems.com>

06/20/2013 01:58 PM

To <Tom.Justice@austinpowder.com>

cc

bcc

Subject RE: Building Layout

History:

 This message has been replied to and forwarded.

Mr. Justice

Now I see how you are. We get the opportunity to work together again and you sluff me off on a new guy.

Tom I will be happy to do anything you need. Is there any other views you need? Look forward to the opportunity.

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

-----Original Message-----

From: Tom.Justice@austinpowder.com [mailto:Tom.Justice@austinpowder.com]
Sent: Thursday, June 20, 2013 12:39 PM
To: terrywright@explosystems.com
Cc: Broderick.Speraw@austinpowder.com
Subject: Building Layout

Mr. Wright

I have been informed that we will be working together on the for mentioned emulsion/propellant packaging system. We received the building layouts that you sent but one of my engineers has requested me to find out if there is a way that you might be able to send these to us electronically? He is kind of new to this business and I believe this might be just the project to break him in on.

Thanks

Tom Justice
Project Manager
Austin Powder Co.
Work : 740-596-5286 ext. 7427
Cell : 740-503-4567
Fax : 740-596-4050
Email : tom.justice@austinpowder.com

Mr. Justice

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Tom I will be happy to do anything you need. Is there any other views you need? Look forward to the opportunity.

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

-----Original Message-----

From: Tom.Justice@austinpowder.com [mailto:Tom.Justice@austinpowder.com]
Sent: Thursday, June 20, 2013 12:39 PM
To: terrywright@explosystems.com
Cc: Broderick.Speraw@austinpowder.com
Subject: Building Layout

Mr. Wright

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Thanks

Tom Justice
Project Manager
Austin Powder Co.
Work : 740-596-5286 ext. 7427
Cell : 740-503-4567
Fax : 740-596-4050
Email : tom.justice@austinpowder.com

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2012.0.2242 / Virus Database: 3199/5926 - Release Date: 06/20/13



<terrywright@explosystems.com>

To <Tom.Justice@austinpowder.com>

cc

06/20/2013 02:26 PM

bcc

Please respond to
<terrywright@explosystems.com>

Subject Re: Building Layout

History:

📧 This message has been replied to and forwarded.

I know. It is a high wall single story. Let me see what all we have and ill call you tomorrow to review if that's ok.

Sent via BlackBerry by AT&T

-----Original Message-----

From: <Tom.Justice@austinpowder.com>

Date: Thu, 20 Jun 2013 14:24:00

To: Terry Wright<terrywright@explosystems.com>

Subject: RE: Building Layout

Terry,

No I was just giving you a little crap. I would not really turn this over to a newbey. Any drawings you would have that you could email would be good. If he gets one with the 1/8" scale he could put the dimensions on his self. Do you have one that shows the actual location of the of the crane and it's I beam? I thought that Mills said this was a two story but it looks like a single to me.

Tom Justice
Project Manager
Austin Powder Co.
Work : 740-596-5286 ext. 7427
Cell : 740-503-4567
Fax : 740-596-4050
Email : tom.justice@austinpowder.com

Terry Wright
<terrywright@expl
osystems.com>

To

<Tom.Justice@austinpowder.com>

cc

06/20/2013 01:58
PM

Subject

RE: Building Layout



<terrywright@explosystems.com>

To <Tom.Justice@austinpowder.com>

cc

06/20/2013 02:31 PM

bcc

Please respond to
<terrywright@explosystems.com>

Subject Re: Building Layout

History: This message has been replied to and forwarded.

The crane supported with side beams. It runs full length of building. The lift beam is side to side. The actual lifting is front to back side to side

Sent via BlackBerry by AT&T

-----Original Message-----

From: <Tom.Justice@austinpowder.com>

Date: Thu, 20 Jun 2013 14:24:00

To: Terry Wright<terrywright@explosystems.com>

Subject: RE: Building Layout

Terry,

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Tom Justice
Project Manager
Austin Powder Co.
Work : 740-596-5286 ext. 7427
Cell : 740-503-4567
Fax : 740-596-4050
Email : tom.justice@austinpowder.com

Terry Wright
<terrywright@explosystems.com>
06/20/2013 01:58 PM
Subject RE: Building Layout
To <Tom.Justice@austinpowder.com>
cc

Mr. Justice

Now I see how you are. We get the opportunity to work together again and you sluff me off on a new guy.

Tom I will be happy to do anything you need. Is there any other views you need? Look forward to the opportunity.

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

-----Original Message-----

From: Tom.Justice@austinpowder.com [mailto:Tom.Justice@austinpowder.com]
Sent: Thursday, June 20, 2013 12:39 PM
To: terrywright@explosystems.com
Cc: Broderick.Speraw@austinpowder.com
Subject: Building Layout

Mr. Wright

I have been informed that we will be working together on the for mentioned emulsion/propellent packaging system. We received the building layouts that you sent but one of my engineers has requested me to find out if there is a way that you might be able to send these to us electronically? He is kind of new to this business and I believe this might be just the project to break him in on.

Thanks

Tom Justice
Project Manager
Austin Powder Co.
Work : 740-596-5286 ext. 7427
Cell : 740-503-4567
Fax : 740-596-4050
Email : tom.justice@austinpowder.com

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2012.0.2242 / Virus Database: 3199/5926 - Release Date: 06/20/13



Terry Wright
<terrywright@explosystems.com>

06/24/2013 10:45 AM

To <tom.justice@austinpowder.com>

cc

bcc

Subject FW: Building 1649 Drawings

History:

 This message has been replied to and forwarded.

Tom:

Tom:

See the attached drawings. I have a new set coming without any of the equipment in the building. We have two of these buildings that are identical. The one we are working on with you is totally empty at this time. I WANT LOTS and LOTS of LIGHTS. Let me know if there is a particular view you are looking for. (:

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

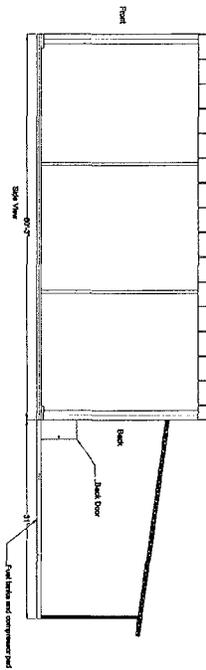
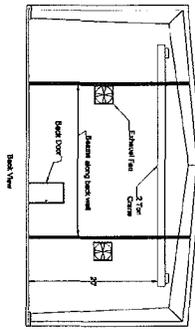
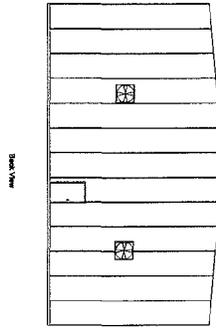
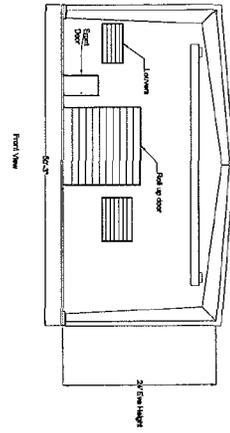
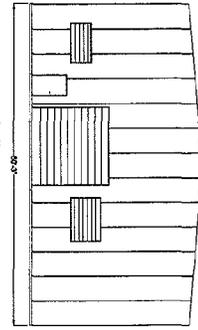
From: Debbie Dietrich [mailto:debshomeinterior@bellsouth.net]
Sent: Monday, June 24, 2013 9:28 AM
To: terrywright@explosystems.com
Subject: Building 1649 Drawings
Importance: High

Here you are. I hope these are what you are looking for.

No virus found in this message.

Checked by AVG - www.avg.com

Version: 2012.0.2242 / Virus Database: 3199/5929 - Release Date: 06/21/13



SCWO Building Elevations

EXPLO
SYSTEMS, INC.

Scale: 1/8" = 1'	Building Sq. Ft. 3,000	Roof: Metal
Drawn By: TBD	Floor: Reinforced Conc.	Walls: Metal
Date: 07/06/2011		



Terry Wright
<terrywright@explosystems.com>

06/24/2013 11:00 AM

To <tom.justice@austinpowder.com>

cc

bcc

Subject FW: Building 1650

History:  This message has been forwarded.

Clean layout

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

From: Debbie Dietrich [mailto:debshomeinterior@bellsouth.net]

Sent: Monday, June 24, 2013 9:55 AM

To: terrywright@explosystems.com

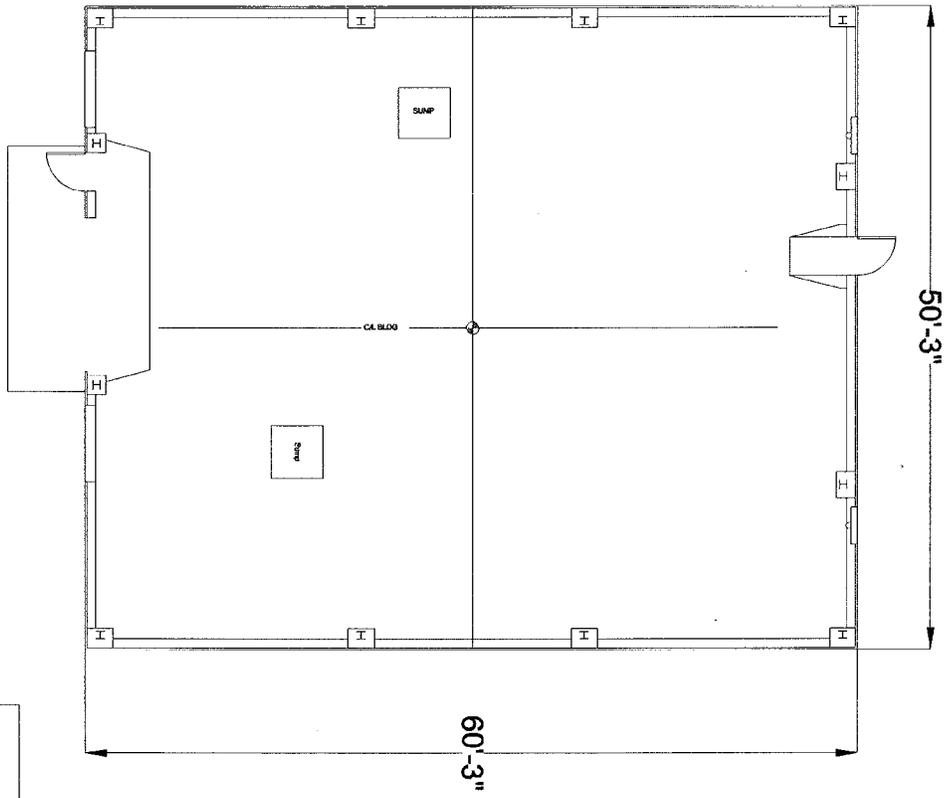
Subject: Building 1650

Importance: High

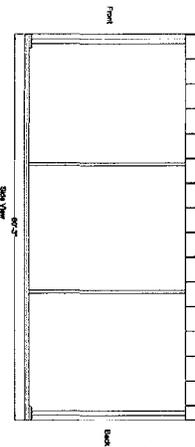
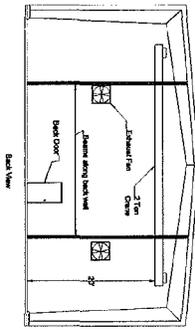
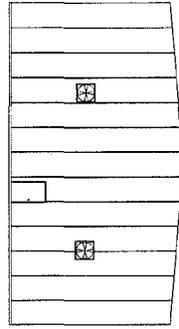
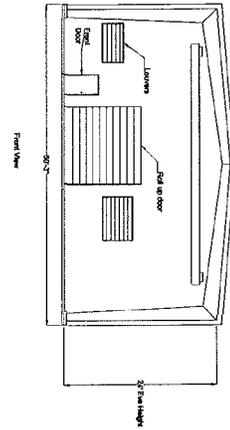
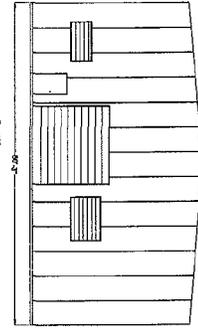
No virus found in this message.

Checked by AVG - www.avg.com

Version: 2012.0.2242 / Virus Database: 3199/5936 - Release Date: 06/24/13

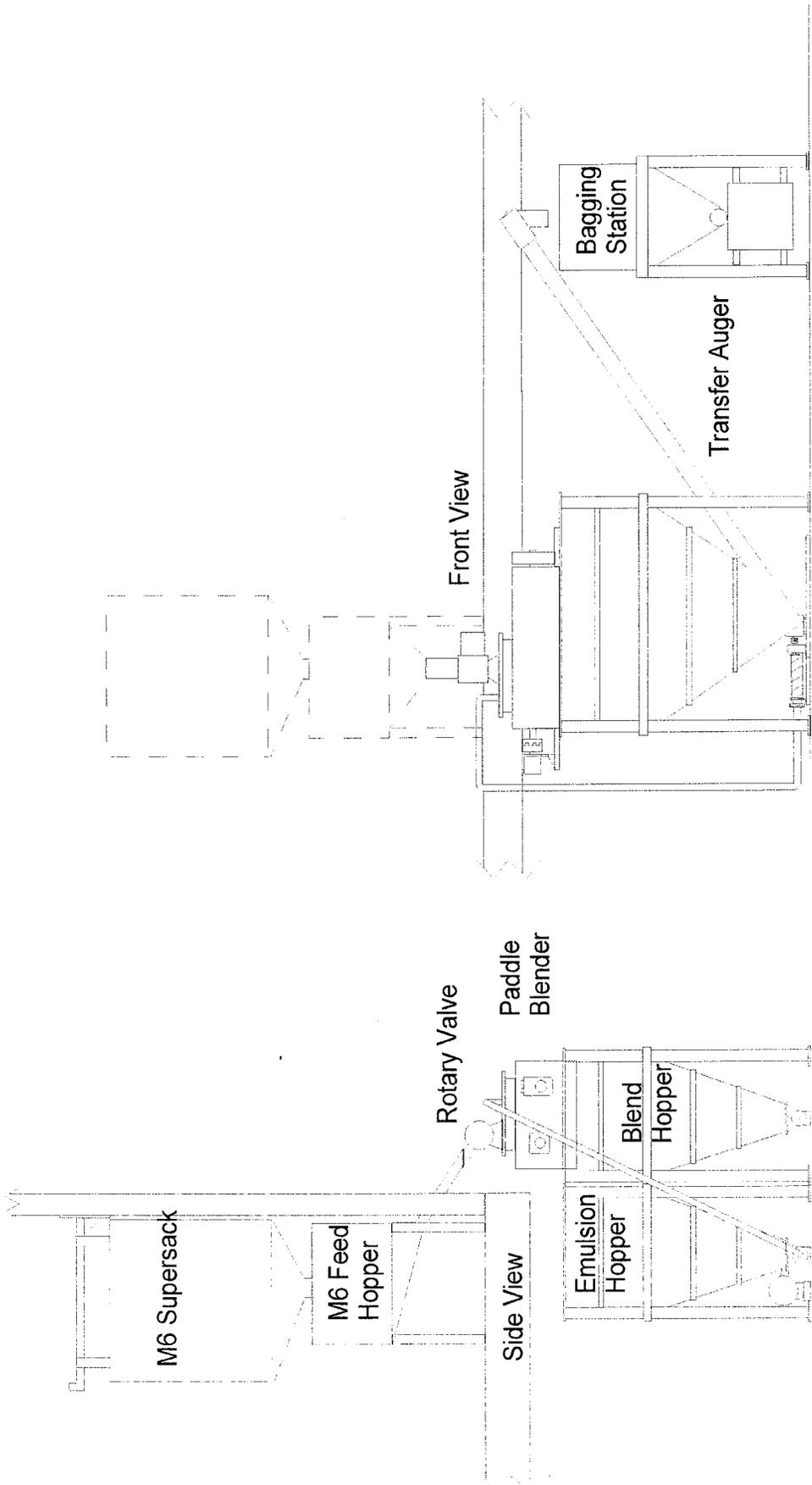


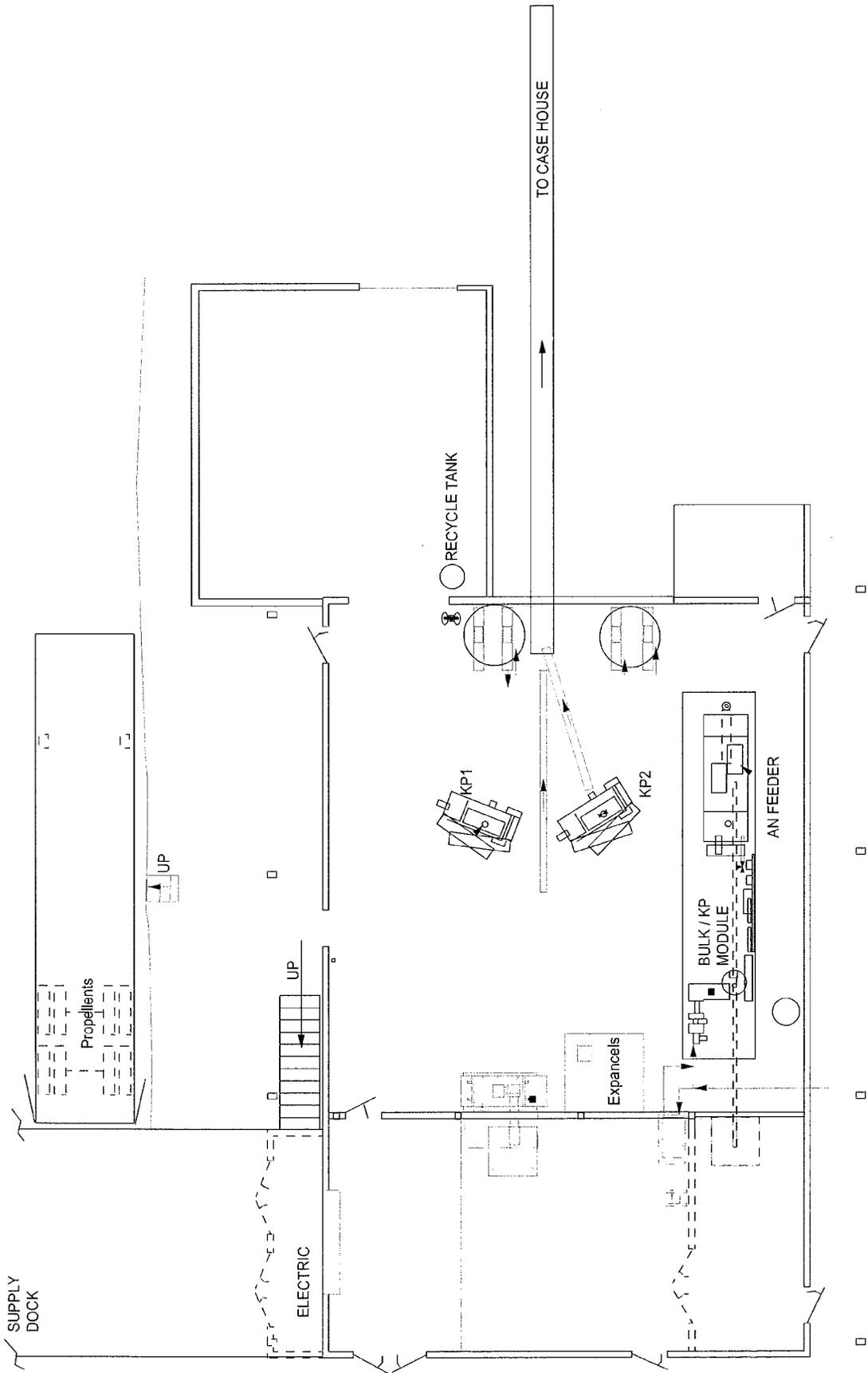
EXPLO SYSTEMS, INC.			
Building 1650			
Scale: 1/8" = 1'	Building Sq. Ft. 3,000	Floor: Reinforced Conc.	Roof: Metal
Drawn By: TRD Date: 07/08/2011			Wall's: Metal

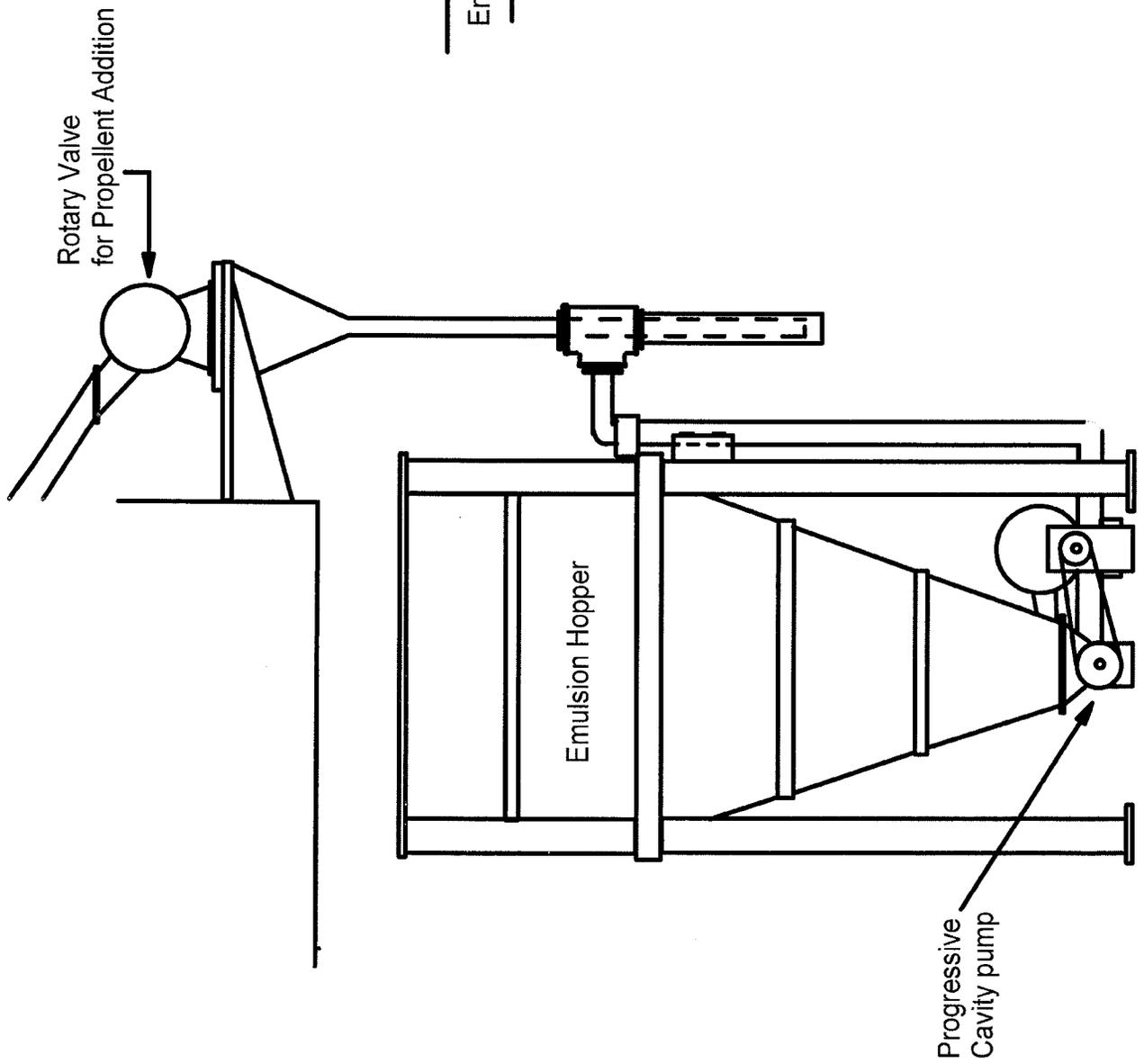
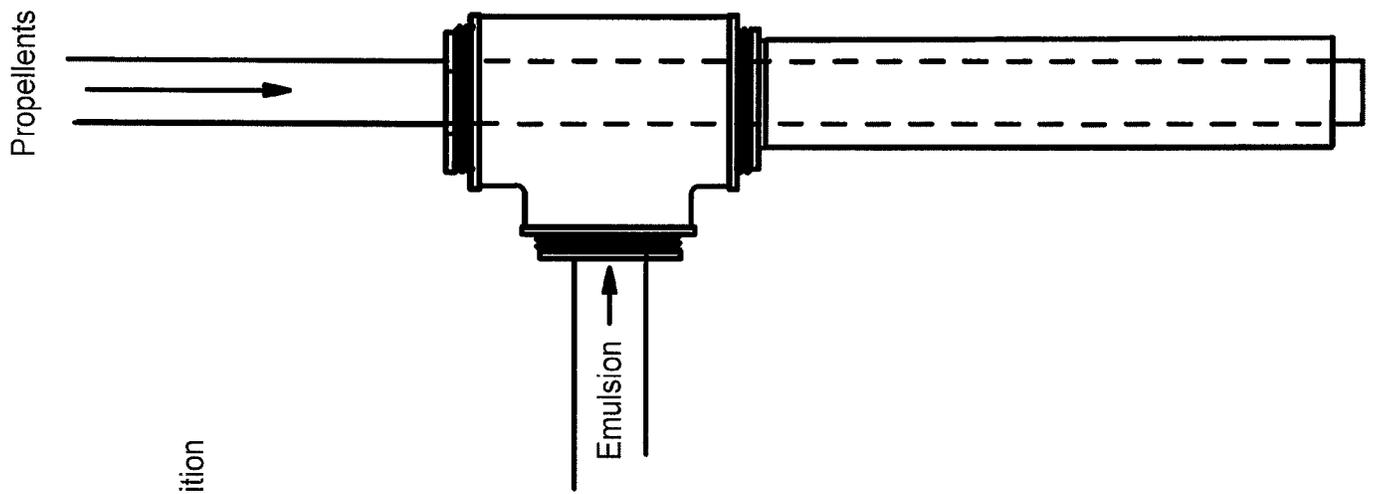


Building 1650 Elevations

	Scale: 1/4" = 1'	Building Sq. Ft. 3,000	Roof: Metal
	Drawn By: TSD Date: 07/09/2011	Floor: Reinforced Conc.	Walls: Metal







This morning we tested several different potential methods of packaging the material. We made 8 bags - 4" x 20 lbs. (160 lbs.), labelled as AXE bulk - 09OC12A1. The R&D project number for this is C229/41. The product will be stored in ambient until it can be used in a burn test.

Summary:

- It appears that the simultaneous filling of the M6 and emulsion will work. This means it wouldn't be necessary to blend, store, auger or pump the blended product.
- Pumping the emulsion through the inner mandrel appeared to give better mixing and be a cleaner system
- The 0.75" inner mandrel appeared to be better than the 1.5"
- It seems like the product opens the bag well enough that it won't be necessary to push the bag to the top of the mandrel and load from the bottom of the bag.
- Very low pumping pressures and mostly good flow of propellant through the annulus.
- Overall very encouraging.

Next Step

- Repeat the Trials with the emulsion in the 0.75" inner mandrel and the propellant in the annulus using a "warm" Hydromite 600/800 matrix to see what the thicker emulsion does to the mixing and pumping pressures.

Here are my notes from the Trials:

All tests were run using:

1. Nominal 40% M6 and 60% Hydrox 503 at ambient.
2. Filled the 20 lbs. in 13 seconds (92 lb/min. or 4 bags/min.)
3. The propellant (8 lbs) was pre-weighed and misted with water.
4. The propellant was manually poured in the top of the system at a rate to approximate the 13 second filling time.

Trial #1 - Bag #1

- A single 3/4" id mandrel was placed in a bag, to the bottom of the bag.
- The 8 lbs of M6 was poured around the 3/4" mandrel.
- The emulsion was then pumped at the 12 lbs in 13 seconds rate to approximate filling in 13 seconds.
- The bag was lowered as the emulsion filled the bag.

Results:

- The emulsion mixed into the propellant well.
- The extent of mixing was entirely depended on the rate the bag was lowered.
If the bag was lowered too fast, there was unblended propellant
If the bag was lowered too slow, there was a section of mostly emulsion
- Overall a relatively clean system, only a little emulsion stuck to the outside of the mandrel
- For this method to work properly the lowering of the bag would have to be exactly synchronized with the emulsion pumping

Trial #2A - Bag #2

- A two mandrel set-up with a 3" outer mandrel with a 1.5" id inner mandrel was placed in a bag, to the bottom of the bag.

- The 8 lbs. of M6 was poured in the annulus simultaneous with pumping the emulsion through the inner mandrel.
- The bag was lowered as the M6 and emulsion filled the bag.

Results:

- The emulsion mixed into the propellant well.
- Problems getting the propellant to flow evenly through the entire annulus - it was a problem with the set-up, the inner mandrel had moved over to one side.
- Overall a relatively clean system, very little emulsion dripped after loading
- For this method to work properly the lowering of the bag would have to be exactly synchronized with the emulsion pumping

Trial #2B - Bag #3

- Same two mandrel set-up with a 3" outer mandrel, but an 0.75" id inner mandrel was placed in a bag, to the bottom of the bag.
- The 8 lbs. of M6 was poured in the annulus simultaneous with pumping the emulsion through the inner mandrel.
- The bag was lowered as the M6 and emulsion filled the bag.

Results:

- The emulsion mixed into the propellant well. Perhaps slightly better than Trail #2A with the larger inner mandrel
- Problems
- Overall a very clean system, very little emulsion (even less than #2A) dripped after loading
- For this method to work properly the lowering of the bag would have to be exactly synchronized with the emulsion pumping

Trial #3 - Bag #4

- Same mandrel set-up as in Trial #2B A two mandrel set-up with a 3" outer mandrel with a 1.5" id inner mandrel was placed in a bag.
- The bag was only put a couple inches up the mandrel, with the bottom on the floor.

Results:

- The emulsion mixed into the propellant well.
- Overall a very clean system, very little emulsion dripped after loading. There were no problems with the product not opening the bag or bridging off.
- This method of leaving the bag on the floor and filling from the top will work without the operator needed to gauge the speed of filling.

Trial #4 - Bag #5

- A two mandrel set-up with a 3" outer mandrel with a 2" id inner mandrel was placed in a bag, to the bottom of the bag.
- The 8 lbs. of M6 was poured in the inner mandrel with the emulsion being pumped through the annulus.
- The bag was lowered as the M6 and emulsion filled the bag.

Results:

- The propellant in the center of the bag did not mix as well into the emulsion. In the other cases it appeared the emulsion "seeped" to the outer edge of the bag. In this case we didn't see the M6 migrating to the outer edge of the bag
- Overall not as clean a system as the trials with the emulsion in the middle and the M6 in the annulus.

Trial #5A - Bag #6

- A repeat of the two mandrel set-up with a 3" outer mandrel with a 0.75" id inner mandrel with the bag on the floor. In this case the inner mandrel was centered in the outer mandrel.
- The 8 lbs. of M6 was poured in the annulus simultaneous with pumping the emulsion through the inner mandrel.

Results:

- My initial thought was that the mixing wasn't as good. But looking late indicated good mixing

Trial #5B - Bag #7 - repeat of Trial #5A to see if the results would be the same with better propellant pouring. The results were the same.

Trial #6 - Bag #8

- Brody's set-up with a single 3" mandrel.
- The emulsion was pumped into the middle inlet of a tee at the top of the mandrel and the M6 was poured from the top section of the tee.
- Essentially the emulsion and M6 met and mixed at the top of the 3" mandrel.
- The bag was filled with the bag on the ground.

Results:

- The emulsion mixed into the propellant well.
- A little less consistent filling - more globs of product.
- OK system for the bag, but it looked like the emulsion and propellant that stuck to the side of the mandrel would leak onto the floor over time.

An excellent effort by all involved!

Denny

Zukovich, Morhard & Wade, LLC.

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29 October 2012

Austin Powder Co.
430 Powder Plant Rd.
McArthur, OH 45651-0317

Attn: Keith Mills

Dear Keith,

APC wishes to produce a blended emulsion / propellant product and package it in shot hole bags.

The blend will contain approximately 30% to 40% propellant and the balance will be either the 500 or 600 emulsion matrix that is un-sensitized.

In order to provide the maximum amount of safety for the employees, we talked about the possibility of using wet propellant. Testing of the dry vs wet propellant should be conducted to determine if this is true and to what extent the margin of safety would be.

The supplier has informed APC that the propellant will contain from 0.5% to 1.5% water. The current design plan is to install a fogger type water spray to the propellant at the point of exposure in the hopper to ensure that there will be no fugitive dust. Actual testing will determine if (and what quantity) any water will be necessary at this point.

Description of the Handling, Blending and Packaging Operation

The M-6 propellant (Class 1.3C) will be delivered in super sacks at 880 lbs to 1200 lbs. The super sacks will be in cardboard on pallets. The propellant will be stored in trailers in safe haven areas within the Red Diamond plant site.

The trailers will be parked at the loading dock at the plant and will be handled with a forklift from the trailer to the hopper area. The super sack will then be lifted out of the cardboard by the lifting hooks and suspended above the feed hopper. The bottom spout will be manually opened and the propellant will gravity feed to a rotary valve, which will meter the propellant to the mixing/package operation.

The feed hopper will have a water spray nozzle that will be available to provide a fine water spray to the exposed propellant to control any dust if it is found to be necessary.

The propellant will be metered with the rotary valve directly into the shot bag. As the propellant is being metered into the shot bag, the emulsion will also be metered into the shot bag via a pipe located in the center of the filling tube. The start / stop of the filling will be via a pre-stop counter tied into the pump revolutions. The operator will press a start button and the pre-stop counter will stop the filling (similar to the wet hole packaging unit at the ANFO plant).

The bags will be closed with a manually operated Tipper Tie machine.

Considerations:

For your reference, I have provided (via email) the "Army Ammunition and Explosives Safety Standards" document. This is an extensive document that covers all aspects of manufacturing and handling propellants. I have briefly looked at the document and would like to point you to a few relevant sections. They are:

For Forklifts

Page 31, Section 2-7 **Material Handling Equipment**

b Specifies the requirements for battery powered forklifts

d (1) states that LPS powered forklifts can only be used for inert materials... and the most important on page 32:

e. Gasoline, diesel-powered and liquid petroleum-gas-powered materiel handling equipment for handling ammunition and explosives AE.

(1) Gasoline, diesel-powered and LP-gas-powered MHE, with the precautionary measures and devices (see paras 2-17c and d above) are appropriate for handling all classes of AE packed per DOT regulations and provided the material is not located in a hazardous location as defined by the NFPA 70. The exterior of any packaging materials or exposed AE (such as, projectiles) must not be visibly contaminated with explosive residues nor have any explosives exposed.

For Deluge Systems

Page 59 – Section **6-18. Automatic sprinkler systems**

Page 60 – Section **6-19. Deluge systems for explosives operations**

Page 61 – Section 6-19 regarding other types of deluge systems, these sections discuss small portable systems.

s. Other types of ultra high-speed deluge systems may be used, if they provide the level of protection required by this standard. Two nontraditional deluge systems are currently available. This does not preclude the use of other type ultra high-speed deluge systems.

(1) The portable deluge system is a transportable self-contained ultra high-speed deluge system. The system uses multiple optical fire detectors, multiple nozzles, and a pressurized water tank (minimum 100 gallons of water). Response time must not exceed 100 ms as outlined above. Test the response time when the system is set up for a new operation. Locate the system so no personnel work directly opposite it. The portable system is intended to protect short-term ammunition operations. It is not a permanent solution for long-term runs or high usage locations. Before

using the portable deluge system, prepare a hazard analysis. It must address hazard being protected, the ability of the portable system to provide the required level of protection, the need for a backup fire protection system or backup water supply, and mitigating factors.

(2) The pressurized sphere deluge system is a small self-contained system. The system uses multiple optical fire detectors and at least one high pressurize water sphere (typically 10 to 30 liters) with a rupture disc and internal squib.

Response time must not exceed 10 ms as outlined above. The sphere discharges water via a rupture disc. A screen breaks the water into small-atomized particles and collection of residual squib fragments. There should be at least 36 inches between the bottom of the sphere and the heads of operators. The sphere system is designed as a standalone unit

for small quantities of energetic materials. For larger quantities of energetic materials use a backup fire protection system (for example, conventional ultra high-speed deluge system, heat-activated system, or automatic sprinkler with

quick response heads). Before using the sphere system, prepare a hazard analysis. It must address hazard being protected, the ability of the sphere system to provide the required level of protection, the need for a backup fire protection system, and other mitigating factors. (NOTE: Extensive test data is available.)

t. The required density will depend upon the type of energetic material involved, process layout, and whether the aim is to extinguish the fire, prevent its propagation, or prevent serious injury, or a combination of these. A commonly

used density for preventing propagation and structural damage is 0.5 gallons per minute (GPM)/ft². To protect personnel and process equipment or extinguish pyrotechnic materials, significantly higher density rates may be necessary. These may be as high as 3.0 GPM/ft² for area coverage or 200 GPM for point-of-operation coverage.

The Electrical classification should be for explosive dust, which is Class II, Div II, Groups E, F & G if the propellant dust is only occasionally present. Or, it should be Class II, Div I, Groups E, F & G if the propellant dust is always present.

The production room that will be used should have a conductive floor anywhere the propellant may be exposed.

The propellant metering should be with a side entry rotary valve. Young Industries (www.younginds.com) can provide a side entry rotary valve. This type of rotary valve does not allow the valve pockets to fill to capacity thereby preventing any "clipping" of the propellant as the valve pockets rotate. The size of the valve needs to be determined by the expected rate of production. Keep in mind that the larger the valve is, the slower it can be run for safety considerations. An additional safety device would be to use the Type D rotor. This is a flexible tip rotor that can reduce the impact of any impingement on the propellant pieces in the event of an equipment or process malfunction.

The rotary valve must also be well grounded – internally and externally meaning that the rotating shaft must be grounded as well as the internal rotor (through the shaft) and the external case.

There are, of course, other rotary valve manufacturers should there be any desire to compare equipment and pricing.

APC has determined that the previously recommended mixing and packaging equipment is not needed. The R&D and engineering personnel have determined by actual testing that the propellant can be adequately mixed with the emulsion by gravity feeding the propellant through a funnel and pumping the emulsion through a pipe located in the center of the funnel. When both ingredients are fed at the proper proportions (by weight) the resulting blend in the bag is surprisingly well mixed!

This breakthrough allows APC to take advantage of the available propellant on the market to make a profitable product while eliminating the two most dangerous parts of the manufacturing operation, which are the mechanical blending of the propellant and emulsion, and the pumping of the blended product into the bags.

A HAZOP 3 will be done after the final design and operating instructions are completed. HAZOP's 1 and 2 should be completed before the design stage is too far advanced. Most of the criteria for HAZOP's 1 and 2 was covered in the design review, but it should be formalized in the HAZOP methodology format.

The Waste Code for the M-6 propellant needs to be identified to determine if any waste can be disposed of at the Red Diamond burning grounds. The existing code (D003) will also be examined to see if the waste propellant can be used within its guidelines.

The stabilizer in the propellant is supposed to be adequate for an additional 5 years from date of shipment to APC. APC should attempt to verify the stabilizer content before handling. This information may be available from the supplier.

Since the propellant will (most likely) be blended with warm or hot emulsion, APC should also verify the time vs temperature profile for stabilizer degradation to ensure that there will be adequate shelf life for the finished product.

Booster Kettle Temperature Sensor

APC has had a minor problem with the temperature control in the Booster kettles. The operators have been trusted to manually open and close a steam valve to keep the molten material at the proper melting temperature, and then lowered to the proper pouring temperature. The Standard Operating Procedures cover the operation properly, but human error can (and sometimes does) leave room to have the improper temperature in the kettle.

Several surface temperature sensing devices have been tried in the past with limited success. The molten material needs to be monitored at the center of the molten mass to be effective.

APC has identified a temperature sensor that can be attached to the stirrer shaft and wirelessly send the information to a receiver. The receiver converts the signal from a J thermocouple to a K thermocouple signal and sends it to a controller with a digital readout. The controller sends a 4-20 mA signal to a steam valve controller that modulates the steam valve to keep the molten material in the kettle at the proper temperature. This relieves the operator from manually trying to maintain the proper temperature in the kettle.

The control box has a selector switch to turn on or off the signal to open or close the steam valve. The valve positioner and the valve actuator are "fail-safe" in that they close automatically on the loss of signal or air supply.

The proposed temperature control system has been tested for several days in a kettle with water and has performed flawlessly.

The system consists of:

Transmitter	Omega Model UWTC-2-NEMA Wireless Transmitter
Receiver	Omega Model UWTC-REC1 Wireless Receiver
Readout/Controller	Digital Precision
Valve Positioner	J-Flow Controls 57 Series
Valve Actuator	J-Flow Controls JFC Series Pneumatic Actuator
Steam Valve	J-Flow Controls 4500 Series steam ball valve

The engineering team has been given (by ZMW) some alternatives to consider before the system is finalized. There seems to be a lot of signal conversions before the steam valve is opened or closed. The team will look at Jordan steam valves, Asco steam valves and possibly Sarco steam valves to see if they can take a 4-20 mA signal directly from the wireless receiver thereby possibly eliminating the signal modifications to make the existing system work.

A Change Notice should be developed and signed of by management, and a subsequent HAZOP needs to be performed before the Temperature control system is put into service.

Change Notice Procedures

Several Change Notice Procedures were reviewed. They were all “catch up” change notices that were from projects completed in the past.

Bulk Emulsion Plant Pin Wheel Mixer.

This equipment was subjected to a HAZOP in October 2011. The Change Notice was correct, except that the drawing submitted with the Notice was changed from the original that was subjected to the HAZOP. Some “paddles” were added between the pins of the mixer on the drawing. Although the paddles were discussed during the HAZOP they were never installed in the mixer. The drawing will be replaced with the original drawing before the Change Notice is submitted for management signatures.

Detonating Cord Manufacturing

There were three Change Notices submitted for review for the new sensors in use at the cord plant. Each Notice mentioned different cord sensor model numbers, with the same justification for each. The justification needs to be expanded to include the need for each sensor and what it is expected to accomplish over what is currently being used, or the existing hazard (or quality problem) it is expected to eliminate.

In reality, the first was installed in the sizer operation after the accident to detect knots in the cord. The second type of sensor was installed to detect the different cord sizes from two different angles – which was a big help in the QC of the cord manufacturing. The third sensor was installed to detect pin holes in the cord.

These three Notices would have been fine if they had been done before the equipment

was installed. Since it is an “after the fact” Change Notice all three Change Notices could be combined into one Change Notice.

As a reminder, all Change Notices should be reviewed and signed off by senior management before the actual change is implemented.

Please feel free to contact us if you have any questions regarding the information in this document.

Regards,

Tom Zukovich
Partner
Zukovich, Morhard & Wade, LLC

cc: Bob Morhard, Partner, Zukovich, Morhard & Wade, LLC
Larry McCorkle, Austin Powder Co.
Dennis Schulz, Austin Powder Co.
Tom Justice, Austin Powder Co.

Dennis Schulz/RDN/Austin
05/15/2012 08:53 AM

To Tom Justice/RDN/Mfg/Austin@Austin
cc
bcc

Subject Fw: Rotary valves, rotary airlocks, rotary airlock feeders, rotary feeders, Model "SE"(Side Entry) rotary valve is designed to feed pellets, cubes, chips, flakes, prills and other granular bulk materials from a silo or hopper without clipping the material or jamming the valve rotor. - Optional features - Young Industries

Click the don't show Java errors and continue loading.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

----- Forwarded by Dennis Schulz/RDN/Austin on 05/15/2012 08:53 AM -----



Tom Zukovich
<ZUKOVICH@EXPLOENERG
Y.COM>
05/10/2012 02:01 PM

To Dennis Schulz <dennis.schulz@austinpowder.com>
cc

Subject Rotary valves, rotary airlocks, rotary airlock feeders, rotary feeders, Model "SE"(Side Entry) rotary valve is designed to feed pellets, cubes, chips, flakes, prills and other granular bulk materials from a silo or hopper without clipping the material or jamming the valve rotor. - Optional features - Young Industries

Denny,
I have requested a quote from Young Ind. But this is what I have in mind for metering the propellant.
Tom Zuk...

**Powder Bulk Solids Handling
Equipment and Systems
Engineered to Increase
Productivity and Built to Last**



Young Industries, Inc.

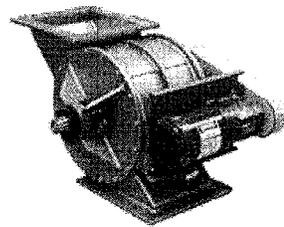
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TransFlow Air Pads
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STINGER Screw Conveyor
DFB with STINGER
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Low Headroom Drop-Thru Rotary Valve
Side Entry Rotary Valve
Cantilevered Rotary Valve
Quick Clean Rotary Valve
Blow-Thru Rotary Valve
RNCP Rotary Valve
High Pressure or High Temperature Rotary Valve
Diverter Valves
Style "B" Swing Gate Diverter Valve
Style "C" Swing Gate Diverter Valve
Rotary Plug Diverter Valve
Rotary Vane Gravity Diverter Valve
Blade Gravity Diverter Valve
Bucket Gravity Diverter Valve
TransVair Mechanical Conveyor
TMC Replacement Ropes

Self-aligning Flange Sets
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Bulk Bag Unloading Frame
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Direct-From-Bulk Bag - DFB Unloader
MultiFill Bulk Bag Filling System
Dust Control Equipment
Bag Dump Station
Uni-Cage Filter-Collector
TransVair Cyclone Collector
TransVair Mechanical Conveyors
style="z-index: 12;">TransVair Mechanical Conveyors
TMC Replacement Ropes
Mixers and Blender
Horizontal Blender
Multi-Shaft Continuous Mixer
Multi-Port Gravity Blender
Self-aligning Flange Sets



Model "SE" Rotary Valve

[Request for more Information or quotation](#)

Model "SE" Rotary Valve
Application Information
Standard Features
Optional Features
Dimensional Information
Download Product Literature

Model "SE" Rotary Feeder Valve Optional Features

The Young Industries Model "SE" Rotary Valve Optional features and accessories meeting your exact plant requirements and enhance your process performance.

The optional features and accessories are:

- High pressure design to 350 PSIG
- High temperature design to 1600°F
- Special sizes available and can be made in double length styles
- Drive and accessories are usually supplied consisting of a right angle gear motor, sprockets chain and safety guard. TEFC or Explosion proof motors, direct connected and other special available
- Special materials of construction including: 316 Stainless steel, Hastelloy, Titanium, engineering plastics
- Interior coating to provide abrasive resistance to material release including: chrome plating, plating, tungsten carbide, Stellite, Teflon
- Interior polishes and cleanup
- Special packing materials as graphite, food grade TPFPE,
- Air purge packing glands
- Lip seal packing
- Self adjusting packing follower
- Mechanical rotor shaft seals
- Shaft seal area polishes
- Inlet material deflector
- Venting Thimble
- Housing vent
- End plate purges
- Rotor tips and edges beveled
- Rigid or flexible tips of brass or polyurethane
- Painted or coated per customers specification

[Request for more Information](#)

[Request for more Information](#)



[SilentFlow Bin Discharger](#)



DFB Unloader with STINGER



Model SE Rotary Valve

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<http://www.exploenergy.com>

Dennis Schulz/RDN/Austin
05/16/2012 12:03 PM

To Tom Justice/RDN/Mfg/Austin@Austin
cc
bcc
Subject Fw: Propellant Blending with Emulsions

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

----- Forwarded by Dennis Schulz/RDN/Austin on 05/16/2012 12:02 PM -----



Tom Zukovich
<zukovich@exploenergy.com>
05/15/2012 05:59 PM

To Dennis Schulz <dennis.schulz@austinpowder.com>
cc <Keith.Mills@austinpowder.com>, <larry.mccorkle@austinpowder.com>, Bob Morhard <morhard@exploenergy.com>
Subject Propellant Blending with Emulsions

Hi Denny,

Sorry to take so long with this but i did a little research on propellants as you can see in the attachments.

APC's initial thought was to use the ANFO Mix Plant to blend the proposed propellant with bulk emulsion. I looked at the building and I cannot recommend that this blending operation be placed there. There is no conductive flooring and too many places for any fugitive propellant dust to accumulate. There is also just not enough room there to add the necessary equipment and operate it safely.

Please review the attachments and let me know if there is anything else I can do to help APC with this project.



Propellant Blending.doc



NASA-Propellant Safety.pdf



Propellant Blending.doc.webarchive



Side Entry Rotary Valve.pdf



APC-001 - PROPELLANT BLENDING Model (1).pdf

Best Regards,

Tom Zukovich
Partner
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+ 1 610-653-8821 Tel
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zukovich@exploenergy.com
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15 May 2012

Austin Powder Co.
430 Powder Plant Rd.
McArthur, OH 45651-0317

Attn: Denny Schulz

Dear Denny,

APC wishes to produce a blended emulsion / propellant product and package it in shot hole bags.

The blend will contain approximately 30% to 40% propellant and the balance will be bulk emulsion that is sensitized with Expancel microballoons.

In order to provide the maximum amount of safety for the employees, we talked about the possibility of using wet propellant. Testing of the dry vs wet propellant should be conducted to determine if this is true and to what extent the margin of safety would be.

Considerations:

For your reference, I have attached a NASA document "SAFETY STANDARD FOR EXPLOSIVES, PROPELLANTS AND PYROTECHNICS". This is an extensive document that covers all aspects of manufacturing and handling propellants. Section 5 describes the requirements for electrical classification, fire protection and lightning protection.

Also attached for your reference is a patent for blending propellants with water gels. I have not located any patents dealing with the mixing of propellants with emulsions.

The handling area should be protected with a deluge system. The exposed propellant needs to be protected which means the feed hopper. Testing should be done on the blended product to determine if it will burn in a fire. If it does, then the blender and storage hopper areas must also be protected.

The Electrical classification should be for explosive dust, which is Class II, Div II, Groups E, F & G if the propellant dust is only occasionally present. Or, it should be Class II, Div I, Groups E, F & G if the propellant dust is always present.

The production room that will be used should have a conductive floor anywhere the propellant may be exposed.

The propellant metering should be with a side entry rotary valve. Young Industries (www.younginds.com) can provide a side entry rotary valve. This type of rotary valve does not allow the valve pockets to fill to capacity thereby preventing any "clipping" of the propellant as the valve pockets rotate. The size of the valve needs to be determined by the expected rate of production. Keep in mind that the larger the valve is, the slower it can be run for safety considerations. An additional safety device would be to use the Type D rotor. This is a flexible tip rotor that can reduce the impact of any impingement on the propellant pieces in the event of an equipment or process malfunction.

The blender can be the in-house blender left over from the wax emulsion plant. The blender agitators need to have clearances between the paddles and the side of the blender equal to, or greater than, the size of the propellant when measured at a diagonal (currently the proposed propellant measures 17mm L x 7mm Dia and 18mm measured diagonally).

An alternative blender can be a U-trough auger with a mixing auger instead of a standard auger. This allows the mixing of the ingredients in a partially filled housing. The top of the U-trough auger should have external hinges and the rubber type of closing device to keep the lid closed during manufacturing. Again the clearance of the auger to the housing must be equal to, or greater than, the size of the propellant when measured at a diagonal.

The pump used to package the blend can be either a PC pump or a Waukesha-Bredel peristaltic pump. The peristaltic pump is recommended because there is very little possibility of crushing the propellant in the pump. There is also this type of pump in house. An encoder can be used on the shaft of the pump tied into a pre-stop counter to stop the pump when the bag is filled.

If a PC pump is used a Fault Tree Analysis should be done on the selected pump to be used. An explanation of Fault Tree Analysis can be found in A Guide to Hazard Quantification for Explosives written by J.F. Buszard and P.E Smith of the former ICI Canada. I believe there is a copy at Red Diamond.

Safety Considerations:

Determine if the propellant is single based or double based.

Determine the static sensitivity of the dry vs wet propellant.

Determine the impact sensitivity of the dry vs wet propellant.

Determine the friction sensitivity of the dry vs wet propellant.

Determine if the wet propellant can burn as compared to the dry propellant.

Determine if the blend of emulsion and propellant will burn (as opposed to an emulsion

by itself).

If wet propellant is used the amount of water on the propellant must be determined to ensure an additional margin of safety during the handling of the propellant, and that amount of water needs to be accounted for in the total blended product.

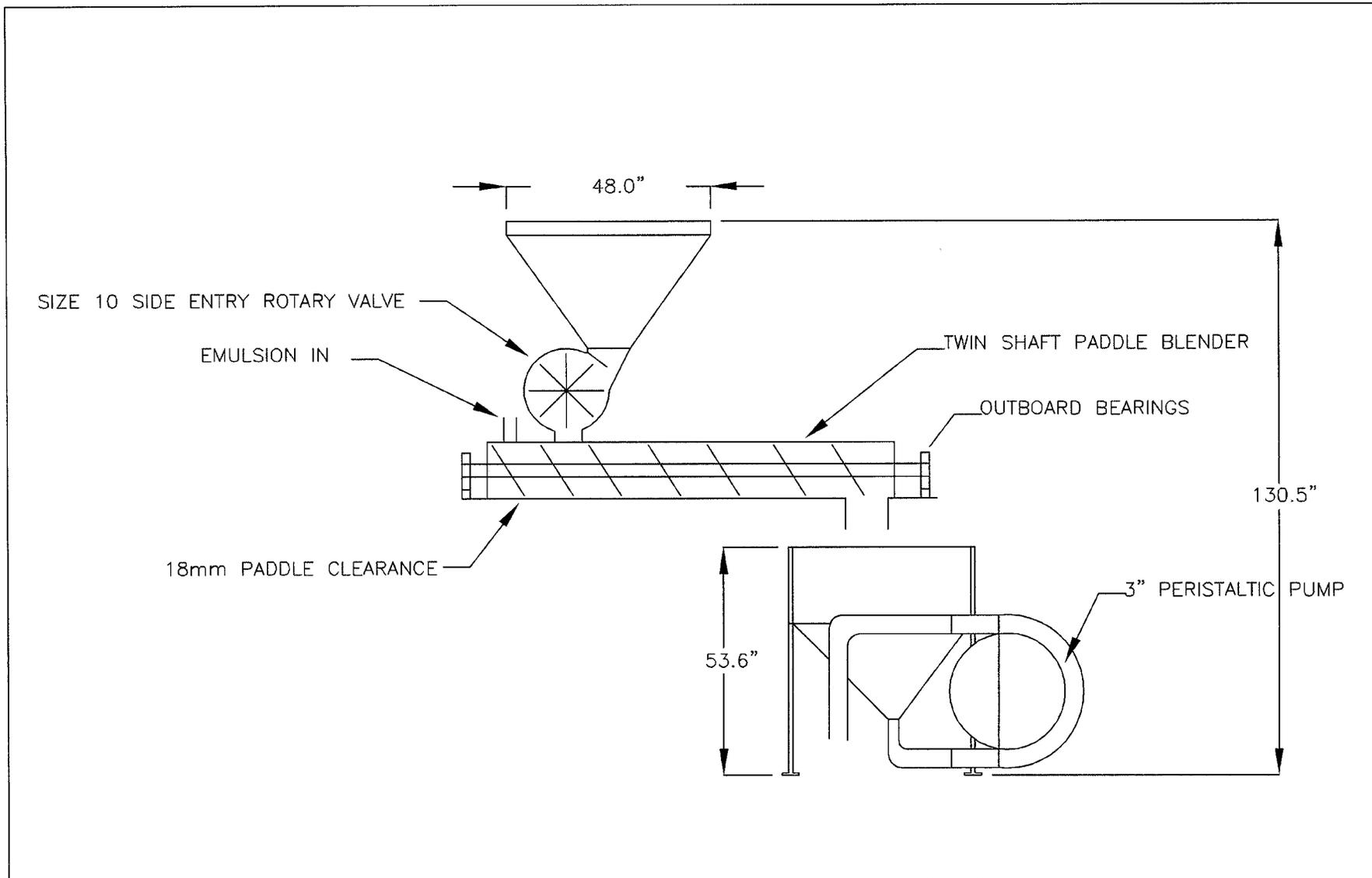
Regards,

Tom Zukovich
Partner
Zukovich, Morhard & Wade, LLC

cc: Bob Morhard, Partner, Zukovich, Morhard & Wade, LLC
Larry McCorkle, Austin Powder Co.
Keith Mills, Austin Powder Co.

Attachments:

- "SAFETY STANDARD FOR EXPLOSIVES, PROPELLANTS AND PYROTECHNICS".
- Patent #5608184 Alternative use of military propellants as novel blasting agents
- Side Entry Rotary Valve Brochure from Young Industries
- Drawing APC-001 – Propellant Blending

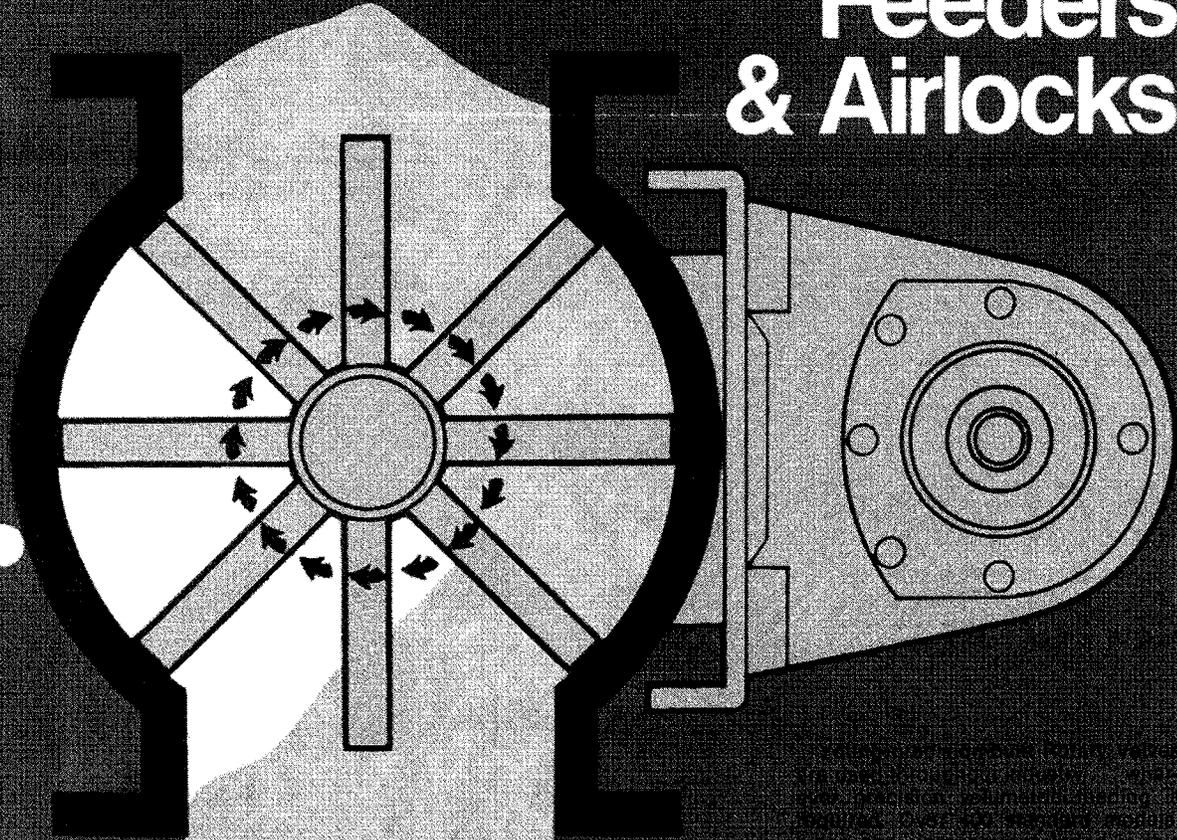


PRELIMINARY
CONFIDENTIAL AND PROPRIETARY INFORMATION

AUSTIN POWDER COMPANY

				SCALE : AS NOTED	TOLERANCES UNLESS NOTED	 ZUKOVICH, MORHARD & WADE, LLC P.O. BOX 177 EAGLEVILLE, PA 19403 USA www.exploenergy.com	PROPELLANT BLENDING	
				DRAWN : T.M.ZUKOVICH	2 PL. DEC. XXXXX			
				DATE : 11 MAY 2012	3 PL. DEC. XXXXX			
				CHKD : none	ANGLES + XXXXX			
				DATE : none	FRACTIONS XXXXX			
				APPVD : none	FINISH XXXXX	SIZE	DRAWING NUMBER	REV
				DATE : none		D	APC-001	0
NO.	DATE	BY	REVISION	REFERENCE DRAWINGS	REFERENCE DRAWINGS	<small>THIS DESIGN IS THE PROPERTY OF ZUKOVICH, MORHARD & WADE, LLC. NO PART OF THIS DESIGN OR INFORMATION CONTAINED HEREIN IS TO BE REPRODUCED, COPIED, OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF ZUKOVICH, MORHARD & WADE, LLC. ALL RIGHTS RESERVED. SEE DRAWING NOTES.</small>		

Rotary Valves Feeders & Airlocks



Young

VALVES

an airlock feeder for every need!

YOUR CHOICE OF ROTORS

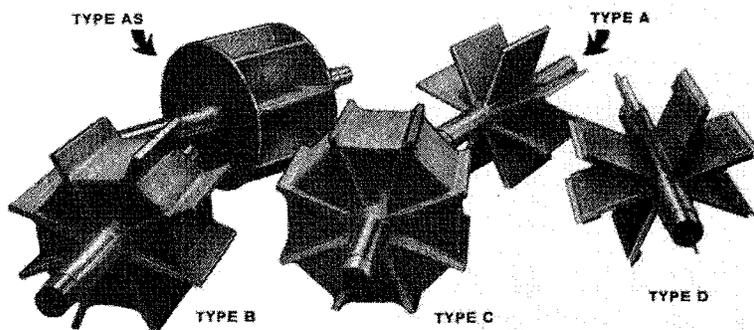
The rotor is the heart of the rotary valve. Some manufacturers use as few as four vanes, and six are in wide use.

At Young, the eight-vane rotor is standard because it provides low operating leakage. An eight-vane rotor always has a minimum of four vanes sealing the valve. For special low leakage requirements a twelve-vane rotor can be supplied.

There are many types and variations of rotors offered by Young. Type A — standard rotor; Types B & C — partially-filled rotors; and Type D — adjustable tip rotor. A partially-

filled rotor is used when a lower throughput is required for a given size of valve. Adjustable tip rotors are available with rigid or flexible tips. Shrouded rotors can be provided in all basic types. Purging is always required with shrouded rotors.

The Young standard design uses a larger diameter rotor and **unrestricted inlet and outlet**. Full-sized openings at the rotor results in "straight through" action and lower operating speeds. Heavy shafts are standard on all valves to eliminate deflection.

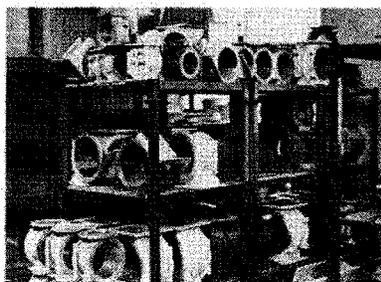


Shown are typical Rotors used in Young Rotary Valves. Type A is standard for most applications. Types B and C are partially filled. Type D is used where adjustable tips are required. Type AS is a Shrouded Rotor for special applications. Types BS and CS (not illustrated) are Shrouded Rotors that are partially filled. Type DS (not illustrated) is a Shrouded Rotor with adjustable tips.

IN STOCK FOR IMMEDIATE DELIVERY

Rotary Valves have generally been considered special order equipment. When you need a rotary valve, you often need it in a hurry. Young has a stocking program for the most frequently used types and sizes; both in Iron and Stainless Steel. When we get your rush order, we can assemble these valves, generally the same day, and get them on their way to you. These "stock" valves are designated in this catalog.

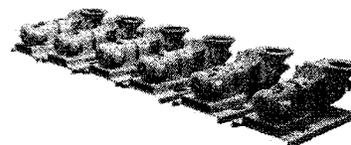
Fast delivery when you need it is part of the service we offer all our customers.



Our Rotary Valve Stocking Program assures fast delivery on the most commonly used types and sizes.

SPECIAL APPLICATIONS

For special requirements, Young offers many options and additions ... special metals of construction, special platings or coatings, choice of rotor designs, inspection ports, purge and vent connections, special bearings and seals, and rotary valves designed for high temperature, high pressure. End Seal designs are available for low-leakage requirements. Consult the Young factory for details.



Direct Drive Side Entry Valves for a customer's special application.



YOUNG ROTARY VALUE CALCULATOR

Our engineers have developed a slide calculator that greatly simplifies the selection of rotary valves. If you know your capacity requirement, the Calculator will show you the right model and size valve, and rotor type. It also gives you the recommended drive assembly for the valve selected.

Ask your Young Representative for your Rotary Valve Calculator, or write or call us at the factory. It's free to all rotary valve users.

PRECISION ROTARY

Young Industries manufactures the market's broadest line of **precision rotary valves**. Rotary valves have always been a major product line at Young, not a side line.

Our engineering laboratory has developed extensive data over the years, based on hundreds of tests with many types of products, each plotted at a full range of operating speeds.

The Young Rotary Valve Product Line includes: Drop-Thru; Side Entry; V-Orifice; Blo-Thru; and Dust Collection models. Each is a

complete series. Each is the best answer to a specific application.

Rotary Valves manufactured by Young Industries are used as metering devices, feeders and rotary airlocks for dry free-flowing materials of varying sizes and shapes. Used with bins, tanks, mixers, silos, classifiers, dryers, collectors, hoppers, cyclone collectors, dust collectors, and other equipment for pneumatic systems and process operations in virtually every industry.

Applications are too numerous to

list but include these products: CHEMICALS, CLAY, COFFEE, COMPOUNDS, DETERGENTS, DRY FOODS, DRUGS, DUST, FLOUR, GRAINS, GRAPHITE, GYPSUM, MEALS, MINERALS, ORES, PLASTICS, POWDERS, POWDERED METALS, SALT, SAWDUST, SOAPS, SPICES, STARCH, SUGAR, ETC.

Should you have questions regarding handling of a specific product, consult your Young Sales Engineer.

BUILT BETTER TO PERFORM BETTER

Each Young Rotary Valve is precision built. Standard housings and end bells are cast in Iron, Aluminum or Stainless Steel; or fabricated of Carbon Steel or Stainless Steel. Special construction materials, platings or coatings are provided when a particular requirement dictates. For example, when a product is known to adhere to metal surfaces, a coating with a low friction coefficient, such as Teflon, can be used. Chrome plating is often used with an abrasive product to reduce valve wear.

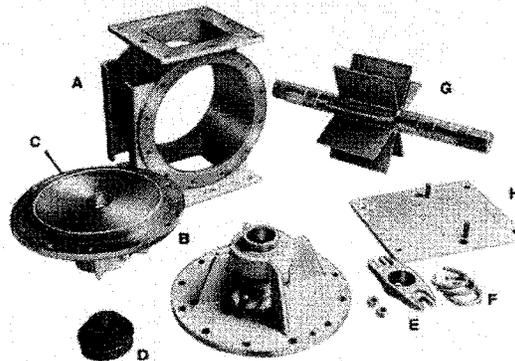
Flanges are available in round, square or rectangular, as shown on the specifications for each model.

All valve components are built rugged for heavy-duty applications, and precision machined to exacting tolerances. *Rotors are fabricated on all models.*

Standard Rotary Valves use heavy-duty ball bearings, outboard mounted for free access to packing and to isolate the bearing from the product area. Lubricated and sealed for life. Generous packing glands accept standard square packing. Units are shipped with braided asbestos and Teflon packing.

Standard Young Rotary Valves are rated at 15 PSIG, and temperatures to 250° F.

Young takes great pride in the quality and precision of these Rotary Valves. The result . . . high performance and long life . . . features for which these products are widely known.



Standard cast Rotary Valve components:
A. Housing; B. End Plates; C. "O" Rings (optional); D. Sealed Ball Bearings; E. Packing Followers; F. Packing Rings; G. Type A Rotor; H. Gear Motor Support.

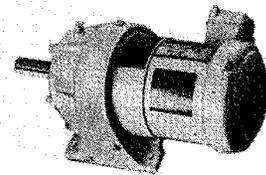
DRIVES AND ACCESSORIES

Young Rotary Valves are usually supplied complete with gear motor, sprockets, drive chain and safety guard to OSHA requirements. We use first quality gear motors from a leading manufacturer. (A different motor can be supplied if the model is specified on your order.)

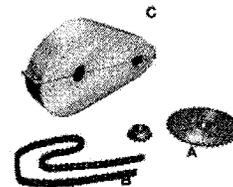
The Drives recommended allow a sprocket change in the field to increase or decrease valve speed.

Our standard drive uses a parallel-shaft gear motor because it delivers full horsepower to the rotary valve.

Other drive configurations, custom mounting plates, and arrangements can be supplied on special order.



Typical Parallel-Shaft Gear Motor.



Drive Components: A. Sprockets; B. Roller Chain; C. Safety Guard.

Side Entry Rotary Valves

This series of valves was designed by Young to overcome serious jamming problems common to conventional feeders when used for some types of cubes, pellets, chips, flakes, prills and other products. These are particularly prevalent in the plastics industry. While these products are free-flowing, they have a tendency to become pinched between rotor and housing at the inlet. The resultant shearing action creates "fines" and can greatly increase load on the drive motor, damage rotor and housing, and jam the valve . . . interrupting the process and greatly increasing maintenance costs.

Young Side Entry Valves are non-jamming and eliminate the need for adjustable or flexible tips, which in most cases, will not satisfactorily solve the problem. The inlet and outlet flanges are offset and the product enters from the side. Side Entry Valves operate at a fixed speed and a maximum of 40% pocket fill with the integral inlet slide fully opened. Lesser throughput can be obtained by slide adjustment.

Type A or AS Rotors of eight-vane design are standard. Rotor always has two vanes sealing each side of the housing for low leakage. Standard Valves are rated at 15 PSIG.

Rectangular Side Entry Valves are specified when extra capacity is required without increasing the flange-to-flange dimension. Double-length valves are cataloged; longer lengths are available on special order.

For applications where the product is heat sensitive and "smears", or is abrasive, a Type AS Shrouded Rotor is supplied. Gas purging is required with the shrouded rotor.

A venting connection can be provided in the valve housing, if required by conditions.

Other special applications are covered on pages 2 & 3.

FEATURES:

- PRECISION CONSTRUCTION
- NON-JAMMING DESIGN
- 15 PSIG AIRLOCK STANDARD OR SHROUDED ROTORS
- 8-VANE ROTOR STANDARD
- OUTBOARD MOUNTED, SEALED BALL BEARINGS
- INSPECTION DOOR STANDARD
- ADJUSTABLE FLOW-CONTROL GATE
- OPTIONAL PURGING
- OPTIONAL VENTING

STANDARD SPECIFICATIONS

OPERATION: Heavy-duty operation up to 15 PSIG, and temperatures up to 250° F.

CONSTRUCTION: Fabricated Carbon Steel or Stainless Steel.

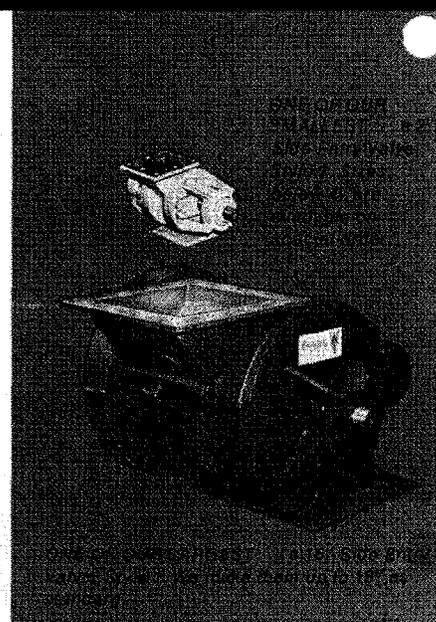
ROTOR: 8 vanes, fabricated construction. Types A (open ends), or AS (shrouded).

FLANGES: Square, Round or Rectangular Inlets; Square or Rectangular Outlets.

BEARINGS: Sealed, heavy duty, ball bearings.

PACKING: Three Ring Shaft Packing Glands with square braided asbestos and Teflon packing.

DRIVE: First quality parallel-shaft gear motor, side mounted, 3 phase, 60 Hertz, 230-460 Volt, totally enclosed. Includes: sprockets, roller chain, and safety guard to OSHA requirements.



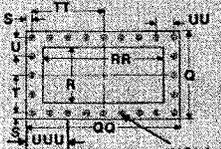
SPECIFICATIONS — SIDE ENTRY VALVES

Style 1 Side Entry Rotary Valves									
Model	Flange	Weight	Motor	Speed	Capacity	Throughput	Throughput	Throughput	Throughput
4-S	6Dx4	.0210	30	1/2	4	2 1/4	100	105	
5-S	8Dx5	.0496	30	1/2	5	2 1/2	150	110	
6-S	10Dx6	.0649	30	1/2	6	3	200	110	
8-S	12Dx8	.1772	30	3/4	8	4	275	120	
10-S	15Dx10	.3688	28	1	9 1/2	5	400	120	
12-S	17Dx12	.5616	28	1	11	6	525	135	
14-S	19Dx13	.7640	28	1	12	6 1/2	750	135	
16-S	23Dx15	1.2768	26	1 1/2	15	7 1/2	1100	160	
18-S	25Dx17	1.7476	26	1 1/2	16	8 1/2	1340	160	
Style 2 Double-Length Side Entry Rotary Valves									
Model	Flange	Weight	Motor	Speed	Capacity	Throughput	Throughput	Throughput	Throughput
4-2-S	6Dx8	.0420	30	1/2	4	2 1/4	150	110	
5-2-S	8Dx10	.0992	30	3/4	5	2 1/2	225	120	
6-2-S	10Dx12	.1896	30	3/4	6	3	300	120	
8-2-S	12Dx16	.3544	30	1	8	4	415	135	
10-2-S	15Dx20	.7176	28	1	9 1/2	5	640	135	
12-2-S	17Dx24	1.1232	28	1 1/2	11	6	840	160	
14-2-S	19Dx26	1.5280	28	1 1/2	12	6 1/2	1200	160	
16-2-S	23Dx30	2.5536	26	2	15	7 1/2	1760	320	
18-2-S	25Dx34	3.4952	26	2	16	8 1/2	2145	320	

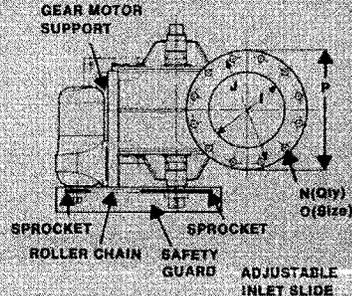
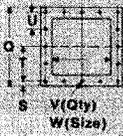
STOCK VALVES—models shown in blue are in stock for immediate shipment.
SPECIFICATIONS: Housings of fabricated stainless steel; Type A Rotor; Square Inlet and Outlet Flanges.



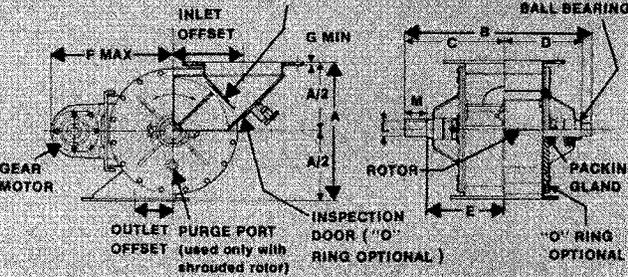
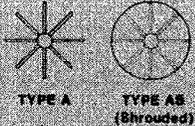
FLANGE DETAILS
Rectangular



Square



ROTORS



DRIVES, SIDE ENTRY VALVES
(Horsepower—Gear Motor Speed)

ROTARY VALVE		GEAR MOTOR	
SIZE (inches)	SPEED (RPM)	HP	SPEED (RPM)
4	30	1/3	100
5	30	1/2	100
6	30	1/2	125
8	30	3/4	125
10	28	3/4	125
12	28	1	125
14	28	1	125
16	26	1 1/2	125
18	26	1 1/2	125

NOTES:
1. Side Entry Rotary Valves are designed to operate at a fixed speed.
2. Larger horsepower gear motors are provided for special applications.

DIMENSIONS — SIDE ENTRY ROTARY VALVES

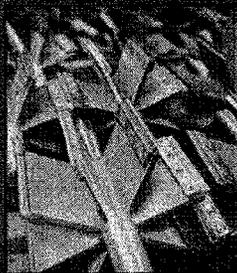
Style 1 Side Entry Rotary Valves																			
4-S	10	18 1/2	10 1/4	7 3/8	7 1/4	15 1/4	13 1/8	1 1/2 x 1/2 x 2 3/8	3/8	4	7 1/2	8	1 1/8	9	7 1/2	4	3/4	3 3/4	8 3/16
5-S	12	20	10 5/8	7 7/8	7 3/4	14 1/2	12 1/8	3/4 x 1/2 x 2 1/2	3/8	5	8 1/2	8	1 1/8	10	8 1/2	5	3/4	3 3/4	8 3/16
6-S	14	22	11 3/8	8 1/4	8 1/4	15 1/2	13 1/8	1/2 x 1/2 x 2 5/8	3/8	6	9 1/2	8	1 1/8	11	8 1/2	5	3/4	4 1/4	8 3/16
8-S	17	24	12 3/8	9 1/4	8 3/4	17 1/2	14 1/8	1/2 x 1/2 x 2 5/8	3/8	8	11 1/4	8	1 1/8	13 1/2	11 1/2	6	3/4	5 1/4	16 3/16
10-S	20	26	13 3/8	10 1/4	10 1/4	18 1/2	15 1/8	1/2 x 1/2 x 2 5/8	3/8	10	14 1/4	12	1 1/8	16	14 1/4	10	1	6 3/4	16 3/16
12-S	22	29 1/4	15 3/8	12 1/4	12 1/4	19 1/2	17 1/8	3/4 x 1/2 x 3 3/8	3/8	12	17 1/2	12	1 1/8	19	16 3/4	12	1	7 3/4	16 3/16
14-S	24	30 1/4	16 1/4	12 3/4	12 3/4	22 1/4	19 1/8	5/8 x 1/2 x 3 3/8	3/8	13	18 3/4	12	1 1/8	21	18	13	1	8	16 3/16
16-S	28	32 3/4	17 1/8	13 1/4	13 1/4	24 3/4	21 1/8	5/8 x 1/2 x 3 1/2	3/8	15	21 1/4	16	1 1/8	23 1/2	20	15	1	9	15 1/16
18-S	30	35 3/8	18 1/8	15 1/8	15 1/8	25 3/4	21 1/8	5/8 x 1/2 x 3 1/2	3/8	17	22 3/4	16	1 1/8	25	22	17	1	10	15 1/16

Style 2 Double-Length Side Entry Rotary Valves																			
4-2-S	10	22 1/2	12 3/8	9 3/4	9 3/4	15 1/4	13 1/8	1/2 x 1/2 x 2 3/8	3/8	—	—	—	—	7 1/2	11 1/2	4	8	3/4	3 3/4
5-2-S	12	26	13 3/8	10 3/4	10 3/4	14 1/2	12 1/8	3/4 x 1/2 x 2 1/2	3/8	—	—	—	—	8 1/2	13 1/2	5	10	3/4	3 3/4
6-2-S	14	28	14 3/8	11 3/8	11 3/8	15 1/2	13 1/8	1/2 x 1/2 x 2 5/8	3/8	—	—	—	—	9 1/2	15 1/2	6	12	5/8	4 1/4
8-2-S	17	32	16 3/8	13 1/4	13 1/4	17 1/2	14 1/8	1/2 x 1/2 x 2 5/8	3/8	—	—	—	—	11 1/2	19 1/2	8	16	3/4	5 1/4
10-2-S	20	36 1/2	18 3/8	15 1/4	15 1/4	19 1/2	15 1/8	1/2 x 1/2 x 2 5/8	3/8	—	—	—	—	14 3/4	24 3/4	10	20	1	6 3/4
12-2-S	22	41 3/4	21 1/8	17 1/4	17 1/4	19 1/2	17 1/8	3/4 x 1/2 x 3 3/8	3/8	—	—	—	—	16 3/4	28 3/4	12	24	1	7 3/4
14-2-S	24	43 3/4	22 1/8	18 1/4	18 1/4	22 3/4	19 1/8	5/8 x 1/2 x 3 3/8	3/8	—	—	—	—	18	31	13	26	1	8 1/4
16-2-S	28	49	25 1/8	22 1/4	22 1/4	24 3/4	21 1/8	5/8 x 1/2 x 3 1/2	3/8	—	—	—	—	20	35	15	30	1	9 1/4
18-2-S	30	53	27 1/8	24 3/4	25 1/4	25 3/4	21 1/8	5/8 x 1/2 x 3 1/2	3/8	—	—	—	—	22	39	17	34	1	10 1/4

NOTES:
1. Side Entry Valves are available only in fabricated construction. Inspection Doors are supplied as standard.
2. We will ship Valves to "Standard Specifications" as shown, unless otherwise specified.
3. For Style 1 Valves, Square or Round Inlets, and Square Outlets are standard. Round Outlets are not recommended. For Style 2 Valves, Rectangular Inlets and Outlets are provided.
4. Larger Gear Motors are provided for special applications.
* Valve size based on flange dimensions. For Style 1 Valves: 1st Designation—Valve Size in inches, 2nd Designation—"S" for Side Entry Valves. For Style 2 Valves: 1st Designation—Valve Width in inches, 2nd Designation—Length 2 times that of Width, 3rd Designation—"S" for Side Entry Valves.
** 40% of capacity. Figures given are maximum input with Inlet Slide wide open. Lesser throughput can be obtained with Slide adjustment.
*** When a Shrouded Rotor is supplied, Dimension B is increased by 3/16". Dimensions C, D & E by 1/16".



**YOUNG
INDUSTRIES
TRUSTED FOR
QUALITY**



WARNING NOTICE

Some machines in this bulletin are shown with guards or covers removed, or partially disassembled for the purpose of illustration. Machines must not be operated with guards, covers, or other protective devices removed or disabled. Machines must not be operated in a partially disassembled condition.

The photographs, illustrations, drawings and descriptions contained in this publication are not intended to depict actual operating conditions or to suggest operating procedures. They are included only for the purpose of portraying the features of the machinery. The manufacturer's installation, operation and maintenance instructions and recommended safety procedures must be expressly followed during installation, operation or maintenance of the equipment.

 **Young**

ROTARY VALVE SPECIFICATION SHEET

BY _____ DATE _____

1	PROPOSAL TYPE: <input type="checkbox"/> FIRM <input type="checkbox"/> BUDGET	DATE REQUIRED:
2	CUSTOMER:	PROJECT NO.:
3		PLANT LOCATION:
4		
5		
6	CONTACT:	PHONE: () -
7		FAX:
8	APPLICATION	
9	<input type="checkbox"/> METERING <input type="checkbox"/> AIRLOCK	CAPACITY: NORMAL LBS/HR
10	MATERIAL HANDLED:	MAX LBS/HR
11	BULK DENSITY:	OPERATION: <input type="checkbox"/> CONTINUOUS
12	MATERIAL TEMPERATURE:	<input type="checkbox"/> INTERMITTENT
13	MATERIAL CHARACTERISTICS:	LOCATION: <input type="checkbox"/> INDOOR
14	<input type="checkbox"/> STICKY <input type="checkbox"/> HYGROSCOPIC	<input type="checkbox"/> OUTDOOR
15	<input type="checkbox"/> TOXIC <input type="checkbox"/> EXPLOSIVE	MATERIAL FEED FROM:
16	<input type="checkbox"/> ABRASIVE <input type="checkbox"/> OTHER	MATERIAL DISCHARGE TO:
17	<input type="checkbox"/> CORROSIVE	DIFFERENTIAL PRESSURE:
18	PARTICLE SIZE:	
19	SPECIAL CONDITIONS:	
20		
21		
22	VALVE DATA	
23	VALVE SIZE:	INLET FLANGE <input type="checkbox"/> ROUND <input type="checkbox"/> SQUARE
24	MODEL:	OUTLET FLANGE: <input type="checkbox"/> ROUND <input type="checkbox"/> SQUARE
25	TYPE:	MATERIAL OF CONSTRUCTION:
26	<input type="checkbox"/> DROP - THRU	<input type="checkbox"/> C/S
27	<input type="checkbox"/> SIDE - ENTRY	<input type="checkbox"/> CAST IRON
28	<input type="checkbox"/> BLOW - THRU	<input type="checkbox"/> ALUM
29	<input type="checkbox"/> QUICK CLEAN	<input type="checkbox"/> 304 S/S
30	<input type="checkbox"/> CANTILEVERED	<input type="checkbox"/> 316 S/S
31	ROTOR TYPE:	<input type="checkbox"/> _____
32	<input type="checkbox"/> OPEN END	DRIVE TYPE: <input type="checkbox"/> FIXED
33	<input type="checkbox"/> CLOSED END	<input type="checkbox"/> VARIABLE
34	ROTOR OPTIONS:	<input type="checkbox"/> NOT REQ'D
35	<input type="checkbox"/> ADJUSTABLE TIPS	<input type="checkbox"/> _____
36	<input type="checkbox"/> BEVELS	MOTOR TYPE: <input type="checkbox"/> TEFC
37	<input type="checkbox"/> FLEX. TIPS	<input type="checkbox"/> MILL & CHEM
38		<input type="checkbox"/> EXPLOSION PROOF
39	ADDITIONAL FEATURES:	XP RATING: <input type="checkbox"/> _____
40	<input type="checkbox"/> INSPECTION DOOR	
41	<input type="checkbox"/> VENT	
42	<input type="checkbox"/> PACKING PURGE	NOTES:
43	<input type="checkbox"/> HARD COATINGS	
44	<input type="checkbox"/> MOTION SWITCH	
45	<input type="checkbox"/> O-RINGS	
46	<input type="checkbox"/> HI-TEMP	
47	<input type="checkbox"/> INVERTER	
48	<input type="checkbox"/> BAFFLE	
49	<input type="checkbox"/> _____	

Dennis Schulz/RDN/Austin

08/14/2012 11:34 AM

To Sandy Seitz/RDN/Mfg/Austin@Austin

cc Tom Justice/RDN/Mfg/Austin@Austin, Margit
Chevalier/RDN/Austin@Austin

bcc

Subject Propellant Handling Guide

Sandy,

Would you print 2 copies of this for us.

1 Copy for Tom and engineering group and 1 Copy for Margit and I.

Thanks

Denny

Dennis Schulz

Austin Powder

Office: 740.596.5286

Mobile: 740.649.3933



DOD_propellant handling guide.pdf



Logistics Review and
Technical Assistance Office

June 1998

PROPELLANT MANAGEMENT **GUIDE**

Prepared By:
U.S. Army Defense Ammunition Center
Logistics Review and Technical Assistance Office
Savanna, Illinois 61074-9639

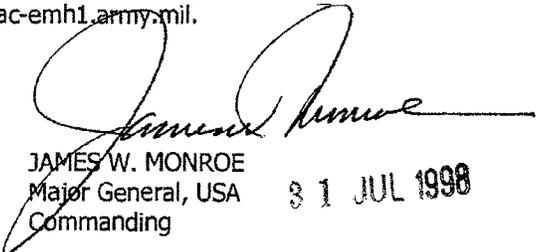


U.S. ARMY INDUSTRIAL OPERATIONS COMMAND
ROCK ISLAND, IL 61299-6000

PROPELLANT MANAGEMENT GUIDE

JUNE 1998

1. In this guide, the U.S. Army Defense Ammunition Center is presenting methods and procedures to aid in the application of the various propellant test programs applicable to our storing installations.
2. We've derived information contained in this publication from U.S. Army Supply Bulletins and Technical Manuals; from the Army Propellant Program Manager at U.S. Army Industrial Operations Command, Rock Island, Illinois; the U.S. Army Propellant Surveillance Laboratory at Picatinny Arsenal, New Jersey; and the U.S. Navy's Naval Surface Warfare Center – Indian Head Division, Indian Head, Maryland. We do not intend for this publication to supersede, contravene, or modify any of these publications or information sources.
3. This publication's intent is to provide the user at a storing installation with essential information for the effective and safe management of propellant and propelling charges. We encourage your comments and suggestions regarding this publication. Furnish your comments to Director, U.S. Army Defense Ammunition Center, ATTN: SIOAC-AV, Savanna, IL 61074-9639, or via E-mail to: gravese@dac-emh1.army.mil.



JAMES W. MONROE
Major General, USA
Commanding

31 JUL 1998

Contents

	<u>paragraph</u>	<u>page</u>
Chapter 1. INTRODUCTION		
Purpose	1-1	1-1
Scope	1-2	1-1
Background	1-3	1-1
Endorsement for Use	1-4	1-2
Chapter 2. PROPELLANT STABILITY PROGRAM		
The Propellant Stability Program	2-1	2-1
Definition: Stabilizers	2-2	2-1
Component Programs of the PSP	2-3	2-1
Master Propellant Program (MPP)	2-4	2-2
Stockpile Propellant Program (SPP)	2-5	2-5
Chapter 3. MANAGING YOUR LOCAL STABILITY PROGRAM		
SPP Sample Test Results	3-1	3-1
Propellant Stability Printout	3-2	3-1
Documentation	3-3	3-3
Chapter 4. NAVY GUN PROPELLANT SAFETY SURVEILLANCE		
Background	4-1	4-1
Master Sample Program	4-2	4-1
Fleet Return Program	4-3	4-2
Administration of Navy Propellant	4-4	4-3
Documentation of Stability Levels	4-5	4-4
Chapter 5. PROPELLANT REASSESSMENT PROGRAM		
Program Definition and Application	5-1	5-1
Propellant Reassessment Tests	5-2	5-1
Loading Authorization	5-3	5-1
Determining Need for Loading Authority (Yes or No)	5-4	5-2
Condition Codes	5-5	5-2
Steps for Issue or Use	5-6	5-2
Test Initiation	5-7	5-4
Review of Records	5-8	5-4

Contents (Continued)

	<u>paragraph</u>	<u>page</u>
Chapter 6. GENERAL PROPELLANT MANAGEMENT		
Propellant Types of Greatest Concern	6-1	6-1
Other Propellants and Propelling Charges	6-2	6-1
Release of Propellant for Shipment	6-3	6-2
Propellant Generation-Demilitarization	6-4	6-2
Demilitarization Planning Actions	6-5	6-4
Sale of Propellant to Commercial Vendor	6-6	6-4
APPENDIX A. ABBREVIATIONS/ACRONYMS		A-1
B. RULES FOR PROPELLANT MANAGEMENT		B-1
C. PROPELLANTS & CHARGES IN THE SPP		C-1
D. COMMON PROPELLANT COMPOSITIONS		D-1
E. POINTS OF CONTACT		E-1

CHAPTER 1

INTRODUCTION

1-1. PURPOSE

This guide provides information and methods for the safe and efficient storage and management of propellants and propelling charges. It supplements information contained in SB 742-1, SB 742-1300-94-895, TM 9-1300-214, SW020-AE-SAF-010 and other sources. Rocket/Guided Missile propellants are not addressed.

1-2. SCOPE

The guidance contained herein may be used by U.S. Army installations which have a receipt, issue and storage mission for Class V materiel.

1-3. BACKGROUND

a. The mere physical presence of propellant at a given location creates interest and concern. Among commonly stored energetic materials, only nitrate ester-based propellants (principally nitrocellulose-based ones) have the propensity to self-ignite (autoignite) without warning while in static storage; catastrophic losses can result. Artillery and Small Arms propellants are perhaps the most dangerous and suspect materials that Army installations regularly and routinely handle and store. Propellant can be unpredictable, decomposing into an unstable condition within four or five years of manufacture. Inadequate propellant safety programs have contributed to several self-ignition incidents at U.S. Army installations.

b. When grains, sticks or sheets of propellant inside a container ignite, sufficient heat and flame is produced to ignite the remaining propellant material in that container. If unstable propellant is present in the smallest amounts (even a single container), its combustion will probably ignite the contents of the entire structure. The propellant burns at a very rapid rate in a process that is known as *deflagration*. Deflagration differs significantly from *detonation* in that deflagration involves very rapid combustion that takes place on the surface and proceeds into the grain; it proceeds the same as normal burning, but at a very accelerated pace. Detonation, on the other hand, occurs due to a completely different process which involves a shock wave moving at supersonic speeds through the explosive material, thereby causing its decomposition. Therefore, *deflagration* operates on the basis of heat transfer, while *detonation* operates on the basis of a shock wave.

(1) During the period 1984 through 1989, five propellant self-ignition events occurred at U.S. Army Materiel Command (AMC) installations. These deflagrations began with the Lake City AAP accidents in 1984 which resulted in the loss of two storage magazines and contents. Other incidents of propellant autoignition resulting in total magazine loss include the 1985 Blue Grass Army Depot event, and a 1987 accident at Lone Star AAP. Another self-ignition accident

at Hawthorne AAP in 1989 involved a relatively small number of Navy separated charges and resulted in damage to, but not destruction of the storage magazine.

(2) Seven years separated the last of the '80's fires with those of the '90's: the 1996 autoignition of M10 powder at Red River Army Depot, and almost exactly one year later, in 1997, a deflagration at Hawthorne Army Depot which was much more devastating than the self-ignition incident which they experienced in 1989.

1-4. ENDORSEMENT FOR USE

Information in the following pages provide the essentials for safe management of your propellant. This LRTAO Information Pamphlet, endorsed by the Propellant Safety Surveillance Board (a Joint Services organization), offers reasonable procedures and guidelines for responsible organizations to effectively manage and safely control in-storage assets of bulk propellant and propelling charges.

CHAPTER 2

PROPELLANT STABILITY PROGRAM

NOTE: Most of the instructional provisions of Chapter 2 do not apply to Navy-owned/developed gun propellants. Special provisions for Navy propellant are found in Chapter 4.

2-1. THE PROPELLANT STABILITY PROGRAM

The Propellant Stability Program (PSP) is a sub-program of the Stockpile Laboratory Test Program (SLTP). The SLTP is one of the three major sub-programs of the Department of Army-directed Ammunition Stockpile Reliability Program (ASRP).

The purpose of the PSP is to provide surveillance of propellant stability through:

- a. Constant predictive laboratory surveillance
- b. Periodic chemical analysis of stabilizer content

2-2. DEFINITION: STABILIZERS

STABILIZERS are chemical ingredients added to propellant to prevent autoignition during the the propellant's expected useful life.

...**EXPLANATION:** As nitrate ester-based propellants decompose, they release nitrogen oxides. If the nitrogen oxides are left free to react in the propellant, they can react with the nitrate ester, causing further decomposition and additional release of nitrogen oxides. The reaction between the nitrate ester and the nitrogen oxides is exothermic, i.e. the reaction produces heat. The exothermic nature of the reaction creates a problem if sufficient heat is generated to initiate combustion. Chemical additives, referred to as *stabilizers*, are added to propellant formulations to react with free nitrogen oxides to prevent their attack on the nitrate esters in the propellant. The stabilizers are scavengers that act rather like sponges, and once they become "saturated" they are no longer able to remove nitrogen oxides from the propellant. At this point self-heating of the propellant can occur unabated. Once begun, the self-heating *may* become sufficient to cause *autoignition*.

2-3. COMPONENT PROGRAMS OF THE PSP

Propellants which are known to be in the ammunition stockpile stored by the Army are monitored and tested for stability. Installations are provided with the information necessary to make sound storage decisions. The PSP produces this information through its two component programs, the *Master Propellant Program* and the *Stockpile Propellant Program*.

2-4. MASTER PROPELLANT PROGRAM (MPP)

a. The oldest continuous Class V laboratory test program within the Army, the Master Propellant Program (sometimes referred to as the Master "Sample" Program) has operated continuously at Picatinny Arsenal for over 75 years, having begun in 1921.

(1) Producers of Army propellant are required to submit a 5-pound master sample within 6 months of manufacture to the Armament Research and Development Center (ARDEC) at Picatinny Arsenal. Until the mid-1990's, a tiny portion from each of the newly received samples would be placed under continuous monitoring inside one of eight large, circular ovens as part of the 65.5 degree Celsius Accelerated Aging Test (AAT). Today, a new Safe Interval Prediction (SIP) test, also conducted at 65.5°C, is replacing the time-honored AAT due to the new test's capability to provide usable predictive safe storage intervals for the propellant. Predictive evaluation wasn't possible under the old 65.5°C AAT.

(2) For many years, all types of single and double base propellant were subjected to the 65.5°C AAT. The samples bottles were usually checked during each duty day for the presence of reddish-brown fumes which indicated that the end of the propellant's stable life was near and could, in fact, be approaching a state of autoignition. Underappreciated during this period was the tendency of many propellant compositions to produce the red fumes and continue to decompose, but after the initial fuming, the fumes would fade and not reappear. So, if a bottle was not checked frequently enough, it was possible that the fuming event would go unobserved. Ultimately this operational shortcoming caught up with Picatinny during the 1970's, when an explosion occurred in a test chamber. The subsequent investigation revealed that each bottle inside each chamber must be visually checked seven days per week, and operational adjustments were implemented. This makes the AAT quite labor intensive. A study of fume times and propellant age revealed that there was no predictive value in those data. The pattern of fume times could not be used to predict propellant safe life or the onset of propellant failure. The test was simply a pass or fail test. The propellant either remained safe or it was no longer safe depending upon a fume time of greater or less than 30 days. Finally, the lack of responsiveness to the AAT by triple base propellant types meant that they could not be tested by the standard procedure. *All* propellant types respond favorably to the new SIP test.

(3) *MPP LABORATORY ACTIVITIES.* The Master Propellant Program generates minimal activity for storing and/or using organizations. Even though it operates seven days per week, personnel at the storing installation level have little contact with the Program, because the test sample quantity seldom requires replenishment, as the initial sample supplied by the manufacturer is usually a sufficient test quantity for the entire stockpile life of the propellant.

b. 65.5°C ACCELERATED AGING TEST CYCLE:

(1) Although the test protocols were developed in the 1910's, the Navy AAT facility at Indian Head was established after the First World War in 1921, while a sister program for the Army followed at Picatinny Arsenal later that same year. It was expected that the AAT could be used to predict a propellant's safe storage life by simply "plugging in" the proper ratio of

days-to-fume in the heat chamber to the actual days storage in the ambient environment. Various attempts over the years to impart a predictive meaning for the AAT have met with frustration. In practice, the AAT has not been used successfully in any predictive manner; it is only used to provide a pass/fail stability determination. Attempts to make the test predictive still occur, and someone may eventually be successful.

(2) The AAT is still used to establish a "base line" for newly received propellants. All new master samples are accelerated aged for 160 days to observe fume behavior. This test assures that newly manufactured propellant has no incompatibility or inhomogeneity present that would affect long term stability.

(3) All propellants which are nearing the end of their safe life are AAT'd for 45 days to observe for possible 30 day fume failures. This procedure allows full compliance with existing Tri-Service criteria.

(4) If the fume time is short (30 days or less) or an unusual result is indicated on an individually tested sample, the propellant lab conducts an analysis of the propellant to determine the percentage of remaining effective stabilizer (RES) to better determine the safety status of the propellant.

(5) If this test, in conjunction with the 65.5°C results, confirms the impending instability of the propellant, the program manager at IOC, Ammunition Surveillance Division, is immediately notified.

c. SAFE INTERVAL PREDICTION TEST:

(1) The SIP test uses zero order reaction kinetics to assess the safe storage condition on all of the Army's 30-plus types of propellant in its inventory. The test generates its own safe storage and retest interval on a lot-to-lot basis.

(2) The test measures the decrease of virgin stabilizer using High Performance Liquid Chromatography (HPLC) at regular intervals. The test is run at 65.5°C, like the AAT. Each sample also is tested prior to aging and the level of remaining effective stabilizer (RES) is determined.

(a) The SIP test is designed to provide the retest intervals normally provided by the certain, yet often capriciously unpredictable fume event. The kinetic calculations estimate the time required to deplete the effective stabilizer to zero concentration. Routinely, fume times for a single propellant lot vary greatly from one cycle to another; the intervals can decrease over time and then increase before failure occurs. The *advantage* of the SIP test is that predictable behavior is being measured that relates chemically to what we understand to be the onset of instability.

(b) The SIP test avoids the problems associated with wide variations in the change in the rate of a reaction for each 10 degree change in reaction temperature by using the kinetic

data it produces to establish reasonably conservative retest intervals (similar to the widely-accepted NATO method). These intervals are fractions of the typical shelf life of the propellant tested. The SIP test data provides an estimate of the time for the effective stabilizer to be depleted at the aging temperature.

(c) Using this SIP information, plus the known average life of propellants under ambient storage conditions, a reasonable factor is used that provides multiple retests over the life of the propellant. For example, a single base propellant generally has a life of 50 to 75 years. The safe interval predicted by the SIP method is not allowed to exceed 15 years. The method then establishes three to five intervals or more over the life of a typical single base propellant. More and closer intervals are usually required as the propellant ages because the predicted safe interval becomes smaller.

(3) No attempt to predict the entire shelf life of a propellant is made. The retest interval represents a period of time where the rate of reaction is such that the effective stabilizer cannot be brought to a dangerously low level. Sufficient stabilizer will be present at the end of the interval, thus no self-ignition can occur.

(4) The largest test interval allowed is 15 years. The safe storage and retest interval decreases over the life of the propellant, increasing the test frequency as the propellant approaches instability. Additional control measures include:

(a) All Stability Category "C" propellant is tested each year for remaining effective stabilizer level and 30-day fume failure; they are not SIP tested.

(b) Propellants with retest intervals of 3 years or less are not SIP tested.

d. *WHEN MPP STABILITY FAILURE OCCURS.* In the case of indication of stability failure for any of the test methods used on the Master Sample, the IOC, Ammunition Surveillance Division is notified. Normally, one of two actions will occur:

(1) IOC will permanently suspend the propellant lot and transmit a Notice of Ammunition Reclassification (NAR) message which will require *immediate destruction* of that lot when packaged as bulk propellant, bulk component charges, or as separate loading propelling charges.

(2) IOC will review the storage records and determine the impact on the stockpile if the lot is destroyed. If the Master Sample test results are considered to *not* be reflective of actual stockpile conditions, a sample (or samples) may be selected from a storing installation for special test. Any action concerning destruction of the lot will be held in abeyance pending stockpile test results.

NOTE: Master Sample test failure usually results in the destruction of a propellant lot, and the second option is seldom taken.

e. *Storing Installation Surveillance Responsibilities* for the Master Propellant Program are quite limited and usually consist of nothing more than the infrequent preparation of a specified quantity (3-5 pounds) of propellant for shipment to Picatinny Arsenal to replace a depleted or missing Master Sample. This action may involve the disassembly of a propelling charge. Assure the Depot Surveillance Record (DSR) card is annotated to the effect that:

(1) the sample was selected and shipped for the Master Propellant Program

(2) *no action* on the propellant lot is pending; sample selection and shipment for the MPP is simply a shipment. You will *not* receive test results or other feedback.

NOTE: The condition code of the parent lot will *not* change due to the sampling. Do *not* apply "CC-D pending test results" unless specifically directed by IOC.

2-5. STOCKPILE PROPELLANT PROGRAM (SPP)

a. The SPP is the more visible arm of the PSP with which the storing installations have the greatest contact. This test program uses small sample quantities which are provided from propellant lots actually in storage. The samples are packaged and sent to Picatinny Arsenal for laboratory analysis of remaining effective stabilizer. Samples are prepared at the request of the IOC Ammunition Surveillance Division, normally on a once-per-year basis in order to limit the workload burden to the storing installations .

(1) The remaining effective stabilizer (RES) level is determined in duplicate for both the field sample and for the Master Propellant sample. A comparison of the results for the two storage sites for the propellant lot identifies errant behavior in the fielded propellant and provides the basis along with SIP testing of the Master Propellant sample for establishing the next field sampling date for the IOC. This next sample date is based on kinetic data and is a true prediction of future behavior. Testing based on the field retest date is less frequent than past criteria and represents a decreased burden to the storing installations.

(2) The current RES, safe storage category, and next field test date for all the lots in the Stockpile Propellant Program are available through the World Wide Web. This data base is provided to the IOC by the Army Propellant Surveillance Laboratory and is available through the IOC web site.

b. *Selection, Preparation and Shipment of Samples* will always be as instructed by SB 742-1, SB 742-1300-94-895, or as directed by special instruction (usually received with sample nomination letter) from HQ IOC. Since those instructions are quite specific, this Pamphlet will not elaborate further, except to point out the following:

(1) Most samples will consist of separate loading propelling charges, normally one complete charge per lot requested, although samples will also be requested from bulk propellant and bulk-packed component charges. Some charges (such as the 105mm M67 charge) are of dual-granulation. Dual granulation charges contain two individual lots of propellant per

propelling charge lot. Ammunition Data Cards should be checked to verify if a loaded charge is/is not a dual grain charge.

(2) It is likely that only a few individual propellant grains will be used for test purposes out of the entire one-pound or complete charge which consists of hundreds to thousands of grains. Good sampling techniques should be used. When removing propellant grains from a bulk container or from charge bags, select the sample from a *single location*, and identify that location on the sample baggie for lab personnel (e.g., "Sample Selected from Top of Drum," "...Center of Drum," "from Charge 3 where it abuts Charge 4," etc.). On occasion the excess material provided is used to supplement the Master Sample when it is expended in testing, thus adding to the importance of good sampling, packing and shipping procedures.

(3) You will want to remark on your DSR card that a sample has been selected and prepared for the SPP.

(4) Samples are often held up for shipment for an indefinite period, resulting in a number of samples sitting idle. These samples are sometimes ignored and/or forgotten. This is unacceptable, and the guidance immediately below should be followed.

(5) *Recommend* samples be tracked by a local suspense so that if Materiel Release Orders are delayed or cancelled, the local Surveillance organization will be "flagged" to take some type of closing action on the sample quantities (i.e., local destruction, request disposition from IOC, etc.).

(6) *Immediate destruction of residue is recommended.* If you have generated propellant residue from your sample preparation, assure the residue (remains of propelling charge) is properly repackaged and identified on stock records if returned to storage. Due to recent changes in procedures for disposition of unwanted/unserviceable ammunition items due to the Military Munitions Rule, be sure that your procedures are consistent with the instructions from the appropriate NICP as well as those of the state or U.S. territory in which you are located. Destruction (after authorization) is usually accomplished by burning, if allowed by local environmental quality rules.

CHAPTER 3

MANAGING YOUR LOCAL STABILITY PROGRAM

When used in conjunction with published references and direction from IOC, the guidance which follows will help you create a well managed Propellant Stability Program which will assure the safety of your propellant stocks.

3-1. SPP SAMPLE TEST RESULTS

Test results will usually be submitted by the IOC to individual installations for the specific samples prepared and shipped by that installation. The DSR cards for those lots must be annotated with the test results.

a. SPP results for lots in Stability Categories "C" and "D" are sent from IOC via electronic message worldwide: Cat "C" for informational purposes and Cat "D" as a NAR suspension message.

b. Test results for other propellant lots in storage but not submitted by your installation for test (or in Cat "C" or "D") will be included in the listing of all stockpile test results (titled "Propellant Stability Printout") which is published and distributed annually each October by IOC. This all-inclusive list is of *critical importance* to the safe management of your propellant stocks.

3-2. PROPELLANT STABILITY PRINTOUT

The following actions should be taken by each installation upon receipt of the Propellant Stability Printout.

a. Within 5 (five) working days, the Printout should be examined and **EVERY** lot which is listed as Stability Category "C" or "D" should be highlighted and cross-checked against your installation's stock records to see if any of the lots listed are on hand at your location.

b. If there are no Category "C" or "D" lots found at your installation, then no other immediate action regarding the Printout is required.

c. If a *Stability Category "D"* lot is found in your local lot file:

(1) Check the DSR card to see if Stability Category "D" status has previously been identified.

(2) Confirm that action has been taken to destroy the lot ASAP *or* that destruction has already occurred.

(3) If action has *not* been taken or completed, or if the lot has *not* been previously identified as a Category “D” lot, *immediately* begin taking steps necessary to assure rapid destruction of this propellant.

d. If a *Stability Category “C”* lot is found in your local lot file:

(1) Check the DSR card to see if Stability Category “C” status has previously been identified.

(2) Confirm that proper actions IAW SB 742-1300-94-895 have been taken to obtain disposition from IOC; if Cat “C” propellants or propelling charges are not used or sold within 6 months, IOC will take action to destroy these stocks. *You* must identify these assets properly to assure this IOC disposition action occurs.

(3) If available, review previous test results on Category “C” material to check for possible rapid depletion of stabilizer. If a significant (greater than 25%) loss of stabilizer has occurred since the previous test, then *there may be some cause for greater concern* than that which would be afforded a lot with a more gradual deterioration rate. For example, the lot tested at 0.75% RES in 1993, but in 1998 the RES is 0.52%. While we do not advocate local trend analysis of propellant stability, such indication of rapid stabilizer loss warrants increased local concern.

e. *Stability Category “A” Lots:* The remainder of your propellant and propelling charge lots in storage can be checked against the Propellant Stability Printout at a time which is convenient with *your* schedule, because you have already confirmed the presence or absence of potentially hazardous lots. In the interest of timeliness, the review of propellant lots against the Printout should be completed within 60 days of Printout receipt.

NOTE: As stated in paragraph 3-2d.(3) above, if the new test result is *significantly* lower than the previous result (loss of 25% or more RES), it is possible that this particular lot is a “bad actor” and may require special attention from the SPP manager at IOC. You should identify these lots, with your concern, to the IOC as they are identified. *Always* insist upon a closing action from the IOC for your local documentation.

f. *Lots Not Found on the Printout:* If a bulk propellant or propelling charge lot (except Navy Materiel; see Chapt. 4) on hand at your installation *is not listed on the Printout*, it may not be included in the Propellant Stability Program as required. ***You must:***

(1) First check TB 9-1300-385 “Munitions Restricted or Suspended” to look for possible inclusion of the lot in PART 1 “Munitions Restricted or Suspended.”

(2) If the lot does not appear in the TB or if further guidance is desired, call the Ammunition Surveillance Division at IOC for specific guidance. The IOC will probably do one of three things:

- provide you with current stability status of the lot
- make arrangements to have the lot tested
- direct that the lot be destroyed

g. Assure the DSR card for each propellant or propelling charge lot is properly annotated with the latest stabilizer test information.

(1) Keep the DSR remark as short as possible if lot remains in Stability Category "A". If you still maintain a non-automated "hard card" DSR system, a minimal rubber stamp entry is sufficient, perhaps with the text:

"Propellant Stability Test performed (date), nn.n% RES, Stab Cat A".
(Underlined areas constitute blank lines for handwritten completion.)

(2) It is not necessary to fully annotate the results of the same test more than one time per DSR card. A proper DSR annotation for "repeat" test information could be a minimal entry consisting of remark date and a comment to the effect of "**Stab checked, Previous Entry Applies**" ...this will be sufficient to document your annual stability review.

(3) The entries may be as elaborate as you choose, but the information in 3-2g.(1) & (2) above is the minimum necessary. Entries for Stability Categories "C" and "D" will require considerably more detailed information.

3-3. DOCUMENTATION

a. Your review of installation stocks against the Printout must be documented. While the DSR entries consist of valid documentation, review of so many different records is impractical should you or someone else wish to double-check or confirm adequate review. Your working copy of the Printout should have some type of annotation or tick mark next to each lot entry reviewed which serves as confirmation that your complete review occurred.

(1) A *memorandum* should be prepared which attests that a complete and thorough review of the specific dated Propellant Stability Printout was conducted against all local assets in all owner accounts which are subject to the provisions of the Propellant Stability Program.

(2) This document should be *dated and signed by the QASAS conducting the review* and by the **QASAS in Charge**.

b. This memorandum, together with the DSR cards and your annotated working copy of the Printout, will serve as adequate assurance to anyone interested that you have taken all steps necessary to assure maximum safety of your installation's propellant stocks.

CHAPTER 4

NAVY GUN PROPELLANT SAFETY SURVEILLANCE

4-1. BACKGROUND.

Note: SW020-AE-SAF-010, Technical Manual "Safety Surveillance of Navy Gun Propellant", Policy and Procedures, 31 August 1996, is the best source for detailed information beyond the scope of this chapter.

a. The history of the Navy propellant surveillance program is very similar to that of the Army. Established at Indian Head, Maryland during the immediate post-World War I period, the Navy program was physically and technically a virtual twin of the Army program, which was begun just months later than that of the Navy in the year 1921. The oldest physical remains of both program's early days, the large, circular propellant heat chambers, appear to be built from the same design, during the same time period (1940-1941). Neither set of chambers at Indian Head nor at Picatinny are the "original" 1920's-vintage structures, which were based on steam heated chambers which proved to be insufficiently reliable.

b. Autoignition of propellant in the powder magazines aboard ship has caused the loss of many warships from the navies of various nations, most losses having occurred in the first few decades of the 20th century. The risk of unstable propellant aboard ship was so great that, even after more effective stabilizers were introduced during the second decade of this century, close monitoring of all the fleet stocks was considered essential. In fact, prior to 1963, each activity and ship had its own testing oven and was required to run a 65.5°C surveillance test for 60 days each year on every lot of propellant in stock. Propellants in many configurations which would be considered safe for use by the Army (such as propellant loaded into fixed rounds) were and are routinely condemned and destroyed by the Navy as too hazardous to be aboard ship, where even a minor deflagration can cost the lives of the sailors and marines aboard, such as that which occurred in the powder magazine of the USS KEARSARGE, killing 10 sailors.

c. Information necessary to assure the safety of Navy propellant stocks (and the vessels upon which they are stored) is provided to the fleet as well as storage installations (Navy coasts and SMCA locations) through the monitoring and testing of all existing Navy propellants. The Navy Gun Propellant Safety Surveillance program produces this information through its two programs, the **Master Sample Program** and the **Fleet Return Program**.

4-2. MASTER SAMPLE PROGRAM.

a. For the purposes of this Pamphlet, it is sufficient to say that the Master Sample Program is the same as the Army Master Propellant Program prior to the adoption of the Predictive Aging Test. Test procedures for the 65.5°C test and minimum days to fume time are identical or virtually identical. The following are the most significant differences in the Navy Program vs Army:

(1) The term “**propellant index**” is used by the Navy *instead of* “**propellant lot**”. Do not be confused by the use of “index” when referring to Navy propellants; each index is a unique number which applies to only one lot of propellant. Use it as you would a lot number.

(2) The Navy maintains the 65.5°C Accelerated Aging Test for most Navy propellants in a variety of configurations, and affixes the same *sentence* (disposition) for failed indices or lots which are loaded into fixed rounds as for bulk pack or separate loading propelling charges. Triple-base propellants are tested for stabilizer determination in lieu of the AAT. Other propellants which are *not* routinely included in the AAT are those propellants used for any calibers below 20mm, as well as some 20mm, 25mm, 30mm, and some Navy-owned ammunition that is designed and used by the Army (and included in the Army MPP)

(a) It has been demonstrated theoretically that unstable propellant in cartridge cases with a *diameter as small as 10mm are capable of autoignition!* Aboard ship, any possibility of a magazine fire or explosion is an unacceptable risk.

(b) For example, if a lot of propellant fails the fume test (fumes in less than 30 days) but is loaded into Army 20mm rounds, the Army will take no action against these fixed round assets. If the propellant is loaded into Navy 20mm rounds, the fixed round lots into which that propellant is loaded will either be ordered destroyed by the Navy, or a retest on propellant extracted from fleet stocks may be ordered to assure that needed assets are not destroyed prematurely.

(3) The Navy maintains detailed records for each lot or index of propellant produced by or for them which identifies the final end item into which the propellant has been loaded (with the inevitable instances of information voids). The Navy is usually able to identify where their unstable propellant is located and into which end item lot it is loaded. Of course, accountability and/or inventory errors do occur, which makes the system less than 100% reliable.

b. The Navy conducts the Master Sample Program in relative anonymity, much like the Army MPP. Again like the Army, the results and records of the Master Sample Program are not disseminated to individual storage installations or the fleet, but rather are used by the chemists and technicians at Naval Surface Warfare Center, Indian Head, Maryland (IHDIV).

4-3. FLEET RETURN PROGRAM

a. While similar to the Stockpile Propellant Program in that “fielded” stocks are actually tested in addition to Master Samples, the Fleet Return Program is not nearly so extensive in operation as is the SPP. Like the SPP, individual samples are tested for remaining effective stabilizer using High Performance Liquid Chromatograph testing which is comparable to that at Picatinny Arsenal.

(1) Indian Head has been conducting an increasingly greater number of the stabilizer tests for this program using a mobile laboratory facility in conjunction with the MAERU team.

The mobile lab (a modified MILVAN) produces valid results quickly on-site, reducing the time from initial sampling to test result from several weeks to a few days.

(2) Less reliance is placed on the Fleet Return Program by the Navy than that which the Army places upon the SPP. To the Navy, this program is an adjunct to the Master Sample Program, which has amassed an impressive record in allowing the Navy to avoid any autoignition of propellant in a ship's magazine.

b. The likelihood of being called upon to prepare samples for the Fleet Return Program at the present time is not great. This program may grow, but the limited scope of the program today makes the likelihood of interaction small.

4-4. ADMINISTRATION OF NAVY PROPELLANTS

a. It may seem inconsistent that the requirement to maintain, at the installation level, known stability information does not apply toward Navy-tested propellants. Although the Navy's propellant stability management system is quite different from that of the Army, it is a system that works.

b. Because of their low reliance on testing which provides "percent stabilizer" for individual lots, the Navy does not routinely assign "Stability Categories" to their propellants. Don't be looking for Navy propellants on the IOC "Propellant Stability Printout"; you'll find them there on an exception basis only.

c. Be assured that the Navy, through its Gun Propellant Safety Surveillance organization at NSWC, Indian Head (IHDIIV), continues to apply effective safety surveillance on its propellant assets. When an index is found to be unstable or nearing the end of its storage life, the Navy's action is very much like that of the Army.

(1) IHDIIV will provides recommendations for ammunition reclassification to the Program Managers of the the various Naval ammunition programs (NAVSEA, NAVAIR & USMC). The appropriate Program Manager then makes a reclassification decision and directs the Naval Ordnance Center, Inventory Management and Systems Division (NOC/IMSD) Mechanicsburg, PA to issue a Notice of Ammunition Reclassification (NAR) for the affected index and/or complete round lots into which the propellant is loaded. You must treat this sentencing to destroy these stocks as seriously as you would an Army NAR which orders immediate destruction of Army bulk or bag charge propellant.

(2) The NAR information will be included in the next version of TWO 24-AA-ORD-010, "Ammunition Unserviceable, Suspended and Limited Use", the Navy's suspension and restriction manual. The propellant suspension information will remain a part of the publication for several years, until the Navy is confident that no traces of the propellant remain.

4-5 DOCUMENTATION OF STABILITY LEVELS

Actual annotation of individual stabilizer levels for Navy propellant is fairly simple for the storing installation: *it isn't done*. The Navy system forces you to assume that, unless you receive notice to the contrary, the propellant lot or index is stable. There is no NSWC-Indian Head equivalent to the IOC Propellant Stability Printout. Although this system is simpler than that of the Army, it lacks the installation-level safeguards which may be more likely to assure that unstable propellant is identified and removed from storage.

- a. When shipping Navy propellants, it is very important to check the TWO/suspense manual, since this will be your only source to guard against shipping unstable propellant (no DSR card annotation).
- b. You should conduct an *annual review* of all Navy propellant stocks on hand (includes SMCA stocks which are under the Navy propellant program) against the TWO/suspense manual and unincorporated NARs as a “reverse” means of assuring the stability of Navy propellants.
- c. **DOCUMENT** your review of Navy owned/Navy tested stocks by listing each lot reviewed and attesting that lots so listed were not found in the TWO or NAR. This document should be dated and signed by the QASAS conducting the review and by the QASAS in Charge.

CHAPTER 5

PROPELLANT REASSESSMENT PROGRAM

5-1. PROGRAM DEFINITION AND APPLICATION

a. The Propellant Reassessment Program is defined by SB 742-1300-94-895 as a program which "involves the test and evaluation of stored propellant to determine functional serviceability prior to loading into a major item." Because most installations store little if any of the propellants which are subject to the Program, Surveillance personnel occasionally forget to apply the special provisions of this program to the limited propellant items the Program affects.

b. The Program applies to Army-owned stocks of bulk propellant and to finished but unassembled component propelling charges (such as charges for mortar and semi-fixed howitzer ammunition).

c. Prior to becoming a part of a major end item, the Army wishes to be certain the propellant meets functional performance requirements in order to avoid the possible performance failure of the complete round lot of which it will become a part. The reassessment test determines functional suitability quickly and inexpensively.

d. Propellants which are subject to reassessment testing are also included in the Propellant Stability Program and are cyclically sampled for stabilizer analysis through stockpile testing.

-- NOTE --

The stability test sometimes misleads installation personnel who forget that stability tests and reassessment tests are conducted for two different purposes and are not interchangeable.

5-2. PROPELLANT REASSESSMENT TESTS:

a. Are conducted only by request of IOC based upon requirements for future LAP or maintenance projects.

b. Consist of a variety of laboratory tests and may include a functional firing test at a proving ground.

c. Result in approval or denial of LOADING AUTHORIZATION which is valid for a finite period of time, normally two or five years.

5-3. LOADING AUTHORIZATION

a. As documented by IOC Form 210-R "Propellant Acceptance Sheet," Loading Authorization is the key element and controlling factor in the Reassessment Program. Only with

valid loading authorization may bulk propellant or component charges be assembled to complete round configuration.

b. The loading authorization affects the *Condition Code* of each lot as follows:

(1) *With* a current, valid loading authorization, the condition code of the propellant lot should be based upon results of visual inspection.

(2) When the lot has an **EXPIRED** or **UNKNOWN** loading authorization, the lot must be placed into **CC-D**, unless visual inspection warrants an unserviceable condition code.

5-4. DETERMINING NEED FOR LOADING AUTHORITY (YES or NO)

a. **NO.** Separate loading propelling charges (FSC 1320) are finished, complete end items in themselves and therefore **DO NOT** require further loading authority prior to use.

b. **NO.** Propellant which is loaded into complete rounds (such as propellant loaded into 120mm tank ammunition or *assembled* to mortar rounds) requires no further validation prior to issue or use.

c. **YES.** Loading Authority prior to use *is required* for *bulk propellant* and *component propelling charges* in FSCs **1310, 1315** and **1376**.

5-5. CONDITION CODES

Be alert and suspicious of Condition Codes assigned to propellant lots which are subject to the Reassessment Program.

a. Condition Code "D" for this material means that the Loading Authorization, as indicated on the IOC Form 210-R, has expired.

b. Any other *serviceable* Condition Code indicates that the lot *is currently authorized* for loading and use.

c. Failure to properly match the condition code with current load authority status can mislead ammunition planners when they are projecting stored assets for use.

5-6. STEPS for ISSUE or USE

a. **Receipt of Materiel Release Order from NICP.** If the item requested is propellant or a propelling charge, check first to see if the item is subject to the Propellant Reassessment Program. If the answer is yes, there is a good possibility that you will have already pre-arranged the MRO through a telephonic query from the NICP; you will have been expecting this MRO. Whether pre-arranged or not, *first* confirm upon MRO receipt that the lot requested is subject to the Program and is actually on hand in the requested condition code at your installation.

b. **Review DSR file.** The DSR card will indicate the loading authority expiration date. This in itself is not sufficient to allow issue. You must additionally have on file (with the DSR card if hard copy system is still in use) a copy of the IOC Form 210-R (Propellant Acceptance Sheet) which is the authenticating document for loading authority.

(1) *Assure* lot has current Cyclic inspection to meet shipping or use requirements.

(2) *Review* date of loading authority on IOC Form 210-R. Loading Authority must be valid for a length of time sufficient to meet the lot's intended purpose.

-- For example, if only seven months remain on the loading authorization and you believe the item will not reach its intended destination in time for use, then you must coordinate with the appropriate Item Manager at IOC or with the Ammunition Surveillance Division at IOC (who will in turn coordinate with the item manager).

(3) *Locally validate* loading authority expiration date on the IOC Form 210-R. On occasion, incorrect dates are annotated on the forms, or they are not specific as to level of pack (which affects expiration date). Remember that loading authority **NEVER** exceeds **FIVE YEARS** from date of original assessment or reassessment and, if the propellant is composition type M5, M10, or M26-series, the time limit never exceeds **TWO YEARS**.

(a) Lots stored in metal containers (cans or drums) or in metal lined wood containers (Level A pack) are authorized for loading for **FIVE YEARS** from date of test. (Except for propellants noted in para 5-6b(3) above)

(b) Lots stored in fiber drums (Level C pack), regardless of propellant composition, are authorized for loading for **TWO YEARS** from date of test.

(c) Your validation will consist of running a "sanity check" against the assigned expiration date (i.e., a date greater than five years from assessment, or one which doesn't meet time standards in (a) and (b) above).

(4) **All OCONUS shipment** of bulk propellant or component charges **MUST** be cleared through IOC Ammunition Surveillance Division prior to release for shipment.

(5) Should loading authority for the lot be expired or have insufficient time remaining to meet user requirements, place lot into the appropriate condition code (CC-D if expired loading authority) and contact IOC Ammunition Surveillance Division for instruction.

(6) Processing for shipment, after the above requirements have been met, *can now continue* as per any "normal" item shipment.

5-7. TEST INITIATION

Reassessment test will *always* be initiated by IOC, not the storing installation. It is very important that bulk propellant and component charges for which loading authorizations have expired be identified by the proper condition code (CC-D) and informative Defect Code in your Standard Depot System (SDS) input. Whenever a lot is selected for reassessment test, the Ammunition Surveillance Division at IOC will provide you complete instructions, to include sample selection, packing/marking, and shipping instructions.

5-8 REVIEW OF RECORDS

a. At least *once every two years* the DSR and SDS (or other automated format) records for all bulk propellant and component charges should be reviewed. You may wish to do it annually during reconciliation with the propellant stability listing.

(1) Confirm that the assigned condition codes match the load authority status of each lot.

(2) Confirm that the most recent copy of the IOC Form 210-R, Propellant Acceptance Sheet, is available and on file. If it is not, request a copy from IOC, Ammunition Surveillance Division.

(3) Assure the result of the most recent propellant stability test is annotated. If any of this material is in a Stability Category other than "A", it will probably not be considered for use in loading. IOC should be queried for possible disposal action.

b. The date for loading authorization may be tracked on SDS by using the Shelf Life Code or Date of Next Inspection block to automatically prompt you when it expires. If this method is used, be sure it is documented in your local propellant procedures.

CHAPTER 6

GENERAL PROPELLANT MANAGEMENT

6-1. PROPELLANT TYPES OF GREATEST CONCERN

a. Some propellant types are more likely than others to become unstable during their expected normal storage life. Propellant formulations which historically have proven to be the most dangerous due to instability are types M10 and various versions of IMR powders. This does *not* mean that little concern should be shown for other propellant types. It *does* mean that both M10 and IMR powders have repeatedly proven themselves to be “bad actors” and have self-ignited on multiple occasions at a variety of storage locations. Pay particular attention to these types, particularly when stored in bulk pack configuration; **NEVER** allow them to be retained at your installation without a current, valid stability test. Since test intervals are generally undefined, proper stock retention may require the judgement of the QASAS in Charge.

b. *Single Base Propellants.* Formulations M10 and IMR are the single base propellants which are known to exhibit the greatest depletion of stabilizer (DPA for these and most single-base types). While not commonly stored in bulk configuration away from a LAP plant, they are still occasionally found in storage at non-manufacturing facilities, and they remain the most likely types to ever reach Stability Category “D”. (Remember that Navy propellants also degrade, but the Navy generally does not assign Stability Categories; See NAVY Chapter 4).

c. Bulk storage or bulk-packed component storage of these items are of particular concern. Inspect the condition of the packaging for these items to be certain of package integrity and that they have not been exposed to moisture. Both these conditions may lead to rapid degradation of the propellant. Such conditions should prompt a request for testing the stability of such propellants.

6-2. OTHER PROPELLANTS AND PROPELLING CHARGES

a. As a general rule, single base propellant types M6 and M1 will exhibit similar aging profiles. The Army continues to maintain a large volume of aged M6 propellant which results in many more lots of M6 with lower levels of stability.

b. *Propelling Charges.* Most of the propellant lots which installations are required to monitor are assembled to separate loading propelling charges. Most propelling charges consist of M1 or M6 single base propellant, although triple base (such as M30) is common in some charges. Be sure to determine if the charge is of single or dual granulation. Check the ADC, too!

c. *Mortar Propellants.* When reviewing ammunition lot files, don't fail to look closely at FSCs 1310 and 1315 for bulk packaged mortar propellants.

(1) Mortar propellants (usually double base) are normally found already assembled to complete rounds and *WHEN SO CONFIGURED* require no special concern for stability.

(2) When packaged in bulk, mortar component charges require the same stability monitoring as do separate loading charges or bulk propellants.

d. Bulk packaged artillery component charges, such as the M67 charge for 105mm semi-fixed rounds (FSC 1315), also require stability monitoring.

6-3. RELEASE OF PROPELLANT FOR SHIPMENT

Propellant in bulk or that which is loaded/prepared into any configuration which makes it subject to the requirements of the Propellant Stability Program (propelling charges, component charges, bulk increments, etc.) *must* be verified with its current safe stability level prior to release for shipment beyond your installation boundary.

a. *Any* exceptions to the above policy must be authorized in writing from the Ammunition Surveillance Division, IOC.

b. Exceptions may include very low NC content propellants such as LOVA, or other composite types.

6-4. PROPELLANT GENERATION-DEMILITARIZATION

a. Generation of propellant as a result of demilitarization operations requires careful planning and close monitoring.

b. Propellant which has been uploaded in fixed rounds for many years may not have been retained in the Master Propellant Program, and it is highly unlikely to have had stockpile samples drawn for test.

c. Chances are good that the propellant to be generated from demil will have an absolutely *unknown stabilizer content*.

c. Within the IOC, the Commanding General's Policy Memo #41 (19 June 1998) explains the "Demilitarization Priorities for Excess and Obsolete Conventional Ammunition." Figure 1 graphically explains the decisions which must be made regarding propellant generation in order to comply with that policy. It is highly recommended that the Figure 1 Decision Chart be used at Non-IOC locations as well.

PROPELLANT DOWNLOAD DECISION CHART

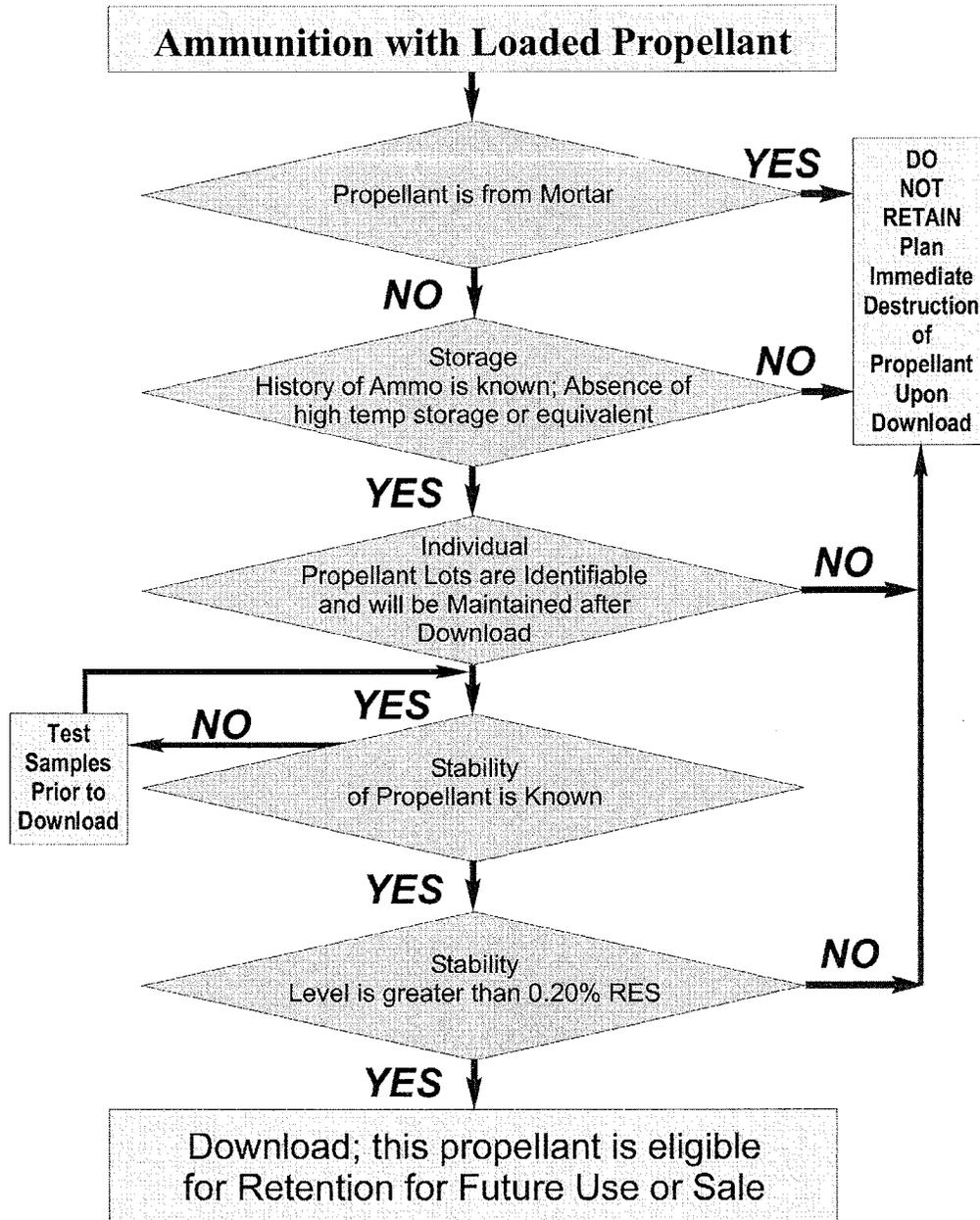


Figure 1

6-5. DEMILITARIZATION PLANNING ACTIONS.

a. Recommended actions prior to the start of any demil operation which results in the generation of propellant include:

(1) Review DSR cards of complete round lots to determine the propellant type, age, and lot number. Check the ADC to verify information and to ascertain if bag charges are/are not dual granulation.

(2) Compare lot numbers with Propellant Stability Printout. If listed, take further action regarding lot retention based on known stability. If not listed in Printout (which is probably the case), determine disposition of generated propellant in advance. The likely planned action for the propellant will be to destroy locally on a regular (daily, weekly, etc.) basis until completion of demil operation.

(a) If propellant stability cannot be determined prior to operation and propellant is to be destroyed locally as it is generated, assure the destruction takes place within 60 days of collection from breakdown of complete rounds.

(b) If propellant stability cannot be determined prior to operation and propellant is to be retained for greater than 60 days for any reason (reuse, nitrocellulose extraction, shipment to another location for destruction, destruction delay, etc.), a request for Stability Test must be made to IOC, Ammunition Surveillance Division prior to start of operation.

-- WARNING --

Remember to take special care if generated propellant is of types M10 or IMR. These propellants have been known to self ignite soon after reconstitution into bulk pack configuration.

b. *Funding* to pay for the costs associated with propellant stability management for demilitarization operations should be derived from the demil job itself. Ammunition Surveillance personnel must assure that these requirements and costs are included in installation planning for all demil operations which result in the generation of propellant.

6-6. SALE OF PROPELLANT TO COMMERCIAL VENDOR

a. Propellant may not be released from government custody unless stability level is known to be safe for continued storage or use (Stability Categories A and C).

(1) If original lot or index numbers are not known, propellant cannot be sold or shipped because stability level cannot be verified. Lot integrity must be maintained for propellant which leaves government custody.

(2) New developments regarding the reuse and reprocessing of propellant may result in a *special situation* which will require specific guidance from IOC or higher headquarters. For example, a *special situation* may exist if propellant of unverifiable stability level is to be processed by a commercial vendor within the boundaries of the propellant's current government storage area.

b. As a rule of thumb, single and double base propellants should have been tested for stability within one year of sale or release to commercial vendor. A period of two or three years is sufficient for triple base and composite propellants. If in doubt, the suitability of most recent test will be determined by the Propellant Stability Program manager at IOC.

APPENDIX A

ABBREVIATIONS/ACRONYMS

AAP	Army Ammunition Plant
AAT	Accelerated Age Test
AMC	U.S. Army Materiel Command
ARDEC	Armament Research and Development Center (Picatinny Arsenal)
ASRP	Ammunition Stockpile Reliability Program
CC	Condition code
CONUS	Continental United States
DPA	Diphenylamine
DSR	Depot Surveillance Record
EC	Ethyl Centralite
FSC	Federal Supply Class
IOC	Industrial Operations Command
IMR	Improved Machine Rifle
LOVA	Low Vulnerability Ammunition
LRTAO	Logistics Review and Technical Assistance Office
MAERU	Mobile Ammunition Evaluation and Renovation Unit
MPP	Master Propellant Program
MRO	Materiel Release Order
NAR	Notice of Ammunition Reclassification
NC	Nitrocellulose
NG	Nitroglycerin
NQ	Nitroguanidine
NICP	National Inventory Control Point
NSWC/IH	Naval Surface Warfare Center, Indian Head
OCONUS	Outside Continental United States
PAS	Propellant Acceptance Sheet
PI	Periodic Inspection
PRP	Propellant Reassessment Program
PSP	Propellant Stability Program
QASAS	Quality Assurance Specialist (Ammunition Surveillance)
RES	Remaining Effective Stabilizer
SIP	Safe Interval Prediction
SMCA	Single Manager for Conventional Ammunition
SPP	Stockpile Propellant Program
TB	Technical Bulletin
TM	Technical Manual
USADAC	U.S. Army Defense Ammunition Center

APPENDIX B

RULES FOR PROPELLANT MANAGEMENT

1. *SPECIAL WARNINGS*

- a. Be constantly aware that PROPELLANT MAY BE THE MOST DANGEROUS COMMODITY on your installation.
- b. Carefully monitor the status of bulk pack quantities of M10 propellant and IMR powder at all times. Assure tests are timely and rate of deterioration is not too rapid. When in doubt, call IOC.
- c. Require that stabilizer data be maintained for ALL propellant (except Navy), even that (ESPECIALLY that) belonging to various 11-series account holders. ALL must be included in the Propellant Stability Program.
- d. Remember that Navy propellant is monitored for stability but uses a different reporting system than the Army. Navy Propellant indices should be checked against the Navy Suspense and Restriction manual and latest NARs.
- e. During Magazine Inspections, be on the lookout for unreported stacks of bulk propellant or propelling charges. Be particularly cautious of RDT&E stocks and other "Special Purpose" accounts.
- f. Prior to release of any propellant or propelling charge lot for shipment, confirm current stability level

2. *LOT IDENTIFICATION*

- a. Identify ALL propellant stocks on hand at the installation, regardless of owner.
- b. Request demil authorization for lots "UNKNOWN" and "NONE". These lots represent a potential safety hazard since stabilizer levels cannot be determined. There are NO stockpile requirements for these lots.
- c. "LOT MIXED" as an identifier for propellant or propelling charges is a potentially unsafe practice and is *prohibited* from use.
- d. Lot numbers are prone to transcription errors; information on Ammunition Data Cards is occasionally incorrect. *Assure* that any lot which lacks stability information is properly researched for correct identification; the container or charge bag is usually marked with the *correct* lot number.

3. PROPELLANT STABILITY PRINTOUT

- a. Upon receipt of the "Propellant Stability Printout" from IOC, check ALL Stability Category "C" and "D" lots against your propellant stock records.
- b. Assure all propellant and propelling charge lots have known stability levels, and that they are annotated on the DSR cards.
- c. Maintain sufficient documentation to verify that all required stability reviews and annotations have been completed.

4. REASSESSMENT/LOADING AUTHORIZATION

- a. Remember to differentiate between stability testing and reassessment testing. Stability Category "A" propellant can still be Condition Code "D" requiring reassessment.
- b. Place into Condition Code "D" those bulk propellants and component charges for which the Loading Authorization has expired (but are otherwise serviceable).
- c. If unserviceable for visual/physical reasons, place propellant and component charges into the appropriate unserviceable condition code REGARDLESS of loading authority date. If loading authority has expired and lot is in unserviceable code, assure defect code is included to indicate expired load authority.
- d. Request a copy of the latest PAS (IOC Form 210-R) from IOC, Ammunition Surveillance Division, if unavailable at your installation.
- e. When shipping bulk propellant or component charges, be sure to include the Propellant Acceptance Sheet along with the DSR card.

5. DEMILITARIZATION

- a. Determine stabilizer level of lots to be generated prior to demil or teardown operation.
- b. Maintain lot identity for propellant generated from fixed rounds.
- c. DESTROY propellant generated in bulk from demil operations as quickly as possible (within 60 days), unless stability is known and at a safe level.

APPENDIX C

PROPELLANTS & CHARGES IN THE SPP

The following list contains identification of most of the bulk propellants, separate loading propelling charges, component charges, and incidental propellant-bearing components which may be in the SMCA inventory that are subject to the rules and direction of the Stockpile Propellant Program.

<u>NSN</u>	<u>DODIC</u>	<u>NOMENCLATURE</u>
1145-00-103-8071	DX23	CHARGE, PROPELLING, 155MM
1145-00-140-6685	DX28	CHARGE, PROPELLING, 155MM
1145-00-140-6779	DX29	CHARGE, PROPELLING, 155MM
1310-00-028-4981	B622	CHARGE, PROP. INCR, M3A1 BAG (M8PROP)F/60MM
1310-00-826-5395	BX14	CHARGE, PROPELLANT INCR(M8 PROP)M182F/60MM
1310-00-837-2906		PROPELLANT INCREMENT
1310-00-854-6648	BX08	CHARGE, PROP INCR M181 F/60MM M302E1
1310-01-050-8896	ZZDT	CHARGE, PROPELLING, M10 PROP F/60MM M204
1315-00-028-4982	C240	CHG, PROP INCR, M1A1 FULL(BAG 6) F/81MM M1 & M29
1315-00-028-4983	C239	CHG, PROP INCR, M2A1 FULL (BAG 4) F/81MM M301A2
1315-00-028-5009	C709	CHARGE, PROPELLING, 4.2 INCH 25.5 RINGS/ CHARGE (M6)
1315-00-038-4983	C239	CHARGE, PROPELLANT INCREMENT, M2A1 & HOLDER, M3
1315-00-126-9035		PROPELLANT POWDER, M6 F/90MM CTG, M82
1315-00-128-4952	C241	PROPELLANT INCREMENT, M5 F/81MM
1315-00-141-0237	C773	CHG, PROP, 120MM, M45, FULL NFL (BAGGED 6) F/GUN M58
1315-00-152-9912	C437	CHARGE, PROPELLING, 105MM M121 (XM121) ZONED
1315-00-220-2362		CHARGE, PROPELLING, 81MM
1315-00-351-7910	ZARG	HALF INCR, M8 PROP F/PROP CHG M36/M36A1 F/4.2 INCH
1315-00-351-7911		FIVE INCR BUNDLE F/PROP CHG M36/36A1A1 F/4.2 INCH
1315-00-351-7912		INCREMENT, SINGLE F/CHG, PROP. M36/36A1 F/4.2 INCH
1315-00-351-7914	CX30	BAG LOADING ASSY 5 INCR. BAG F/CHG PROP M36 F/4.2 INCH
1315-00-370-3548	C021	INCREMENT A, M9 PROP, F/ CHG PROP M90A1 F/81MM
1315-00-378-9841	C022	INCREMENT B, M9 PROP, F/ CHG PROP M90A1 F/81MM
1315-00-425-0725	C020	CHARGE, PROPELLING, M185, M9 PROP F/81MM
1315-00-425-6040	C873	CHARGE PROPELLING, M36A1, M8 PROP, F/4.2 IN
1315-00-431-3444	C872	CHARGE, PROPELLING, M82 NFL F/90MM CTG
1315-00-434-5508	C279	CHARGE, PROPELLING, M90A1 FULL F/81MM
1315-00-821-6665	CX69	HALF INCR F/PROP CHG, M36/M36A1 F/4.2 INCH
1315-00-821-6685	CX30	BAG LOADING ASSY. M9 PROP F/CHG PROP M36A1
1315-00-825-1384	C436	CHARGE, PROPELLING, M67, WHITE BAG F/105MM
1315-00-825-1401	C434	CHARGE, PROPELLING, M1, FULL, WHITE BAG F/105MM
1315-00-826-5393	CX02	PROP FIVE INCR BUNDLE F/PROP CHG M36/ M36A1 F/4.2 INCH
1315-00-826-5401		INCREMENT, M1A1, M8 PROP F/81MM
1315-00-826-5404	C239	CHG PROP, M2A2 FULL M2A1 INCR F/81MM
1315-00-826-5422		INCREMENT, CHARGE, PROPELLING, M36 SERIES
1315-00-828-7444	C873	CHG, PROP, M36A1, M8 PROP F/4.2 IN

<u>NSN</u>	<u>DODIC</u>	<u>NOMENCLATURE</u>
1315-00-828-7465	C435	CHARGE, PROPELLING, M6 WHITE BAG F/105MM
1315-00-837-3246		CHARGE, PROPELLING F/75MM
1315-00-854-6645	C019	CHARGE, PROPELLING, M5,M9 PROP F/81MM
1315-00-854-6646	CX47	CHARGE PROPELLING,M9 PROP F/81MM, M90 INCREMENT
1315-00-883-1472	CX46	CHARGE PROPELLING, M90, INCR A F/81MM
1315-00-965-0841	C239	CHARGE, PROPELLANT,M2A1 INCR, M8 PROP F/81MM
1315-00-A01-0740	C019	PROPELLANT INCREMENT M5 F/81MM
1315-00-D00-5278		PROPELLANT, M8, FRONT ASSEMBLY
1315-00-D00-8438		CHARGE, PROPELLING, 105MM,PXR200
1315-00-D00-8589		BASE CHARGE ASSY, JA-2 PROP., 19 & 7 PERFORATION
1315-00-D00-8693		CHARGE, PROPELLING M230 F/120MM MORTAR
1315-00-D00-8733		CHARGE, PROPELLING F/120MM M57 WHITE BAG
1315-00-D00-8734		CHARGE, PROPELLING F/120MM M57 BLUE BAG
1315-00-D00-9891		CHARGE, PROPELLING, MODIFIED M230
1315-01-030-0442		PROPELLANT GRAIN, M5 FLAKE PROP,F/90MM
1315-01-050-8882	C043	CHARGE, PROPELLING M205, M10 PROP F/81MM
1315-01-050-8906		BAG LDNG ASSY, M9 PROP F/ PROPCHG M36A2 F/4.2 IN
1315-01-055-5519		CHARGE, PROPELLING F/90MM CTG M590
1315-01-055-8590	C716	CHARGE,PROPELLING,M36A2,M8 PROP F/81MM
1315-01-066-2790	C427	CHARGE, PROPELLING, M1 PROP, BAGGED,FULL, F/105MM
1315-01-122-8591		CHARGE PROPELLING,M1 PROP F/105MM
1315-01-223-7299		CHARGE PROPELLING F/120MM M830/831
1315-01-233-2316		CHARGE, PROPELLING, M30 PROP F/105MM
1315-01-237-9775	C436	CHARGE, PROPELLING, M67 F/105MM
1315-01-255-9037		PROPELLANT GRAIN F/105MM HERA XM912
1315-01-290-1597		CHARGE, PROPELLING, M219 F/CTG 81MM
1315-01-290-1598		CHARGE PROPELLING,M218 (M38 prop)F/81MM SMK M819
1315-01-329-2575	C044	CHARGE, PROPELLING, M220 F/81MM
1315-01-336-7185	C436	CHARGE, PROPELLING, M67 F/105MM
1315-01-337-8940	C436	CHARGE, PROPELLING, M67 F/105MM
1315-01-363-6509		CHARGE PROPELLING, W/REDUCER F/105MM CANNON
1315-01-413-9822	C436	CHARGE, PROPELLING, M67 F/105MM
1320-00-006-9654	D479	CHARGE, PROPELLING, M189 W/PRIMER F/152MM
1320-00-009-5316	D018	CHARGE ASSEMBLY,EXPULSION, M10 PROP F/155MM
1320-00-014-2451	D661	CHARGE, PROPELLING,XM188E3 F/ 8 IN 55 CAL
1320-00-028-4369	D480	CHARGE, PROPELLING,M19 W/O PRIMER F/155MM
1320-00-028-4371	D480	CHARGE, PROPELLING,M19 W/PRIMER F/155MM
1320-00-028-4374	D675	CHARGE, PROPELLING, M1 W/O PRIMER F/8 IN
1320-00-028-4375	D676	CHARGE, PROPELLING, M2,W/O PRIMER F/8 IN
1320-00-028-4378	D676	CHARGE, PROPELLING, 8 INCH M2, 2 INCR W/PRIM F/HOW
1320-00-028-4381	D715	CHARGE, PROPELLING, M43 W/PRIMER F/280MM
1320-00-028-4873	D540	CHARGE, PROPELLING, M3 W/PRIMER F/155MM
1320-00-028-4876	D540	CHARGE, PROPELLING, M3 W/O PRIMER F/155MM
1320-00-028-4877	D541	CHARGE, PROPELLING, M4 F/155MM

<u>NSN</u>	<u>DODIC</u>	<u>NOMENCLATURE</u>
1320-00-028-4878	D541	CHARGE, PROPELLING, M4A1 WB W/O PRIMER F/155MM
1320-00-028-4879	D541	CHARGE, PROPELLING, M4A1 W/PRIMER F/155MM
1320-00-070-4485	D662	CHARGE, PROPELLING, M188A1 WHITE BAG F/8 IN
1320-00-106-8549	D362	CHARGE, PROPELLING, XM199 F/175MM
1320-00-113-8006	D676	CHARGE, PROPELLING, M2, WB, W/O PRIMER F/8 IN
1320-00-143-6847	D533	CHARGE, PROPELLING, M119, W/O PRIMER F/155MM
1320-00-182-3030	D361	CHARGE, PROPELLING, M86A2 W/PRIMER F/175MM
1320-00-308-5539	D676	CHARGE, PROPELLING, M2 F/8 IN
1320-00-308-5555	D676	CHARGE, PROPELLING, M2 F/8 IN
1320-00-451-4907	D536	CHARGE, PROPELLING, M124, M6 PROP, F/175MM
1320-00-542-0132	D675	CHARGE, PROPELLING, M1 W/PRIMER F/8 IN
1320-00-628-7741	D674	CHARGE, PROPELLING, M80 F/8 IN
1320-00-767-9441	D534	CHARGE, PROPELLING, XM119 W/PRIMER F/155MM
1320-00-775-1533	D536	CHARGE, PROPELLING, M124 W/PRIMER F/175MM
1320-00-783-7980	D017	CHARGE ASSEMBLY, EXPULSION, M10 PROP F/8 IN
1320-00-892-4201	D361	CHARGE, PROPELLING, M86 W/PRIMER F/175MM
1320-00-926-3986	D361	CHARGE, PROPELLING, M86A2 W/PRIMER F/175MM
1320-00-935-1922	D540	CHARGE, PROPELLING, M3A1 W/O PRIMER F/155MM
1320-00-935-1923	D541	CHARGE, PROPELLING, M4A2 W/O PRIMER F/155MM
1320-00-995-8022	D537	CHARGE, PROPELLING, XM115 F/155MM
1320-00-D00-2569		CHARGE, PROPELLING, XM224 MOD REAR F/155MM
1320-00-D00-2750		CHARGE, PROPELLING, XM224 MOD FWD F/155MM
1320-00-D00-7858		CHARGE ASSEMBLY, EXPULSION, M10 PROP
1320-00-D00-7858		EXPULSION CHARGE ASSEMBLY
1320-00-D00-9441		EXPULSION CHARGE ASSEMBLY F/XM982
1320-00-D00-9876		CHARGE, PROPELLING, L6A1 W/O PRIMER F/155MM
1320-00-D01-0012		CHARGE, PROPELLING, XM232 W/XM231 CASE
1320-00-D01-0051		PROPELLANT GRAIN, AFT F/XM982
1320-00-D01-0063		EXPULSION CHARGE ASSEMBLY
1320-00-X11-0326		CHARGE, PROPELLING, M203E2 F/155MM
1320-00-X11-0355		CHARGE, PROPELLING, XM216A F/155MM
1320-00-X11-0359		CHARGE, PROPELLING, XM216B F/155MM
1320-00-X11-0609		CHARGE, PROPELLING, XM224 BASE INC. F/155MM
1320-00-X11-0610		CHARGE, PROPELLING, XM224 FWD INC F/155MM
1320-00-X11-0718		CHARGE, PROPELLING, FH70, CHG 7 F/155MM
1320-01-014-2451	D661	CHARGE, PROPELLING, M188E3 FULL F/8 IN 55 CAL
1320-01-015-6243	D010	CHARGE ASSEMBLY, EXPULSION F/8 INCH PROJ XM172
1320-01-020-8938	D532	CHARGE, PROPELLING, M203 SERIES RB F/155MM
1320-01-033-9394	D532	CHARGE, PROPELLING, M203 W/O PRIMER F/155MM
1320-01-041-9890	D531	CHARGE, PROPELLING, XM201E5 F/155MM
1320-01-051-4132	D533	CHARGE, PROPELLING, M119A F/155MM
1320-01-052-1317	ZZKC	CHARGE ASSEMBLY, EXPULSION, M10 PROP, F/155MM
1320-01-054-5107		PROPELLANT GRAIN F/155MM RAP M549
1320-01-057-8440		PROPELLANT GRAIN, F/155MM M549

<u>NSN</u>	<u>DODIC</u>	<u>NOMENCLATURE</u>
1320-01-070-4485	D662	CHARGE PROPELLING, M188A1 WB W/O PRIMER F/ 8 IN
1320-01-070-4486	D662	CHARGE, PROPELLING, M188A1 WB W/O PRIMER F/8 IN
1320-01-077-1312		PROP GRAIN, XM650E5 F/HERA 8 IN M650 (1320-D624)
1320-01-093-6856	D533	CHARGE, PROPELLING, M119A2 W/O PRIMER F/155MM
1320-01-112-1624	D032	CHARGE ASSY, EXPULSION, M10 PROP F/155MM
1320-01-152-5613		CHARGE PROPELLING WB F/155MM
1320-01-164-3486	D030	CHARGE ASSY, EXPULSION, M10 PROP F/155MM PROJ.
1320-01-186-5653		PROP GRAIN F/FWD RKT MTR F/155MM M549A1 2CLASS
1320-01-186-6564		PROP GRAIN F/AFT RKT MTR F/155MM M549A1 2CLASS
1320-01-187-7651		PROP GRAIN F/FWD RKT MTR F/155MM M549A1 1CLASS
1320-01-187-7652		PROP GRAIN F/AFT RKT MTR F/155MM A549A1 1 CLASS
1320-01-202-3989	D532	CHARGE, PROPELLING, M203 SERIES, RB F/155MM
1320-01-202-8938	D532	CHARGE, PROPELLING, M203A1 F/155MM
1320-01-231-7231	D662	CHARGE, PROPELLING, M188A1 WB W/O PRIMER F/8 IN
1320-01-285-0134	D471	CHARGE, PROPELLING, XM216 F/155MM
1320-01-285-3066	D470	CHARGE, PROPELLING, XM215 F/155 MM
1320-01-285-6415	D472	CHARGE, PROPELLING, XM 216, INCR B F/155MM
1320-01-307-3952	D540	CHARGE, PROPELLING, M3A1 GB W/O PRIMER F/8 IN
1320-01-307-3953	D541	CHARGE, PROPELLING M4A2 WB W/O PRIMER F/155MM
1320-01-310-4857	D533	CHARGE, PROPELLING, M119A2 F/155MM
1320-01-312-9058		CHARGE PROPELLING, M119A1 F/155MM
1320-01-312-9059		CHARGE PROPELLING, M3A1 GB W/O PRIMER F/155MM
1320-01-317-2382		CHARGE PROPELLING, M4A2 W/O PRIMER F/155MM
1320-01-320-0966		CHARGE ASSEMBLY, EXPULSION, M10 PROP F/155MM
1320-01-334-9448		CHARGE ASSEMBLY, EXPULSION, M10 PROP F/155MM
1356-01-106-5985		PROPELLANT, INITIATING F/TORPEDO, MK48 MOD 0
1376-00-006-9652		PROPELLANT POWDER, M6 F/ 75MM
1376-00-006-9653		PROPELLANT POWDER, M6 F/105MM
1376-00-009-0041		PROPELLANT POWDER, M1, SP F/105MM, M67 PROP CHG
1376-00-009-0042		PROPELLANT POWDER, M1, MP F/105MM, M67 PROP CHG
1376-00-009-0043		PROPELLANT POWDER, M10, SP F/57MM WEB 0,025
1376-00-009-0044		PROPELLANT POWDER, M10, SP F/57MM
1376-00-009-0045		PROPELLANT POWDER, M30E1 F/155M PROP CHG XM123
1376-00-009-0046		PROPELLANT POWDER, M30A1, MP F/ 8 IN PROP CHG
1376-00-053-9367		PROPELLANT POWDER, M30 F/ 90MM CARTRIDGE M431
1376-00-053-9371		PROPELLANT, POWDER, M30 F/105MM M728E1
1376-00-068-5086		PROPELLANT POWDER, M30, MP F/105MM M392A2
1376-00-084-5010		BENITE POWDER, SMOKELESS
1376-00-126-9035		PROPELLANT POWDER, M6 F/CARTRIDGE 90MM
1376-00-279-8760		PROPELLANT POWDER, M6 F/90MM CARTRIDGE
1376-00-432-2101		PROPELLANT POWDER, M30 F/90MM CTG
1376-00-432-2191	XX10	PROPELLANT POWDER, M30 F/CTG 90MM M318/M353
1376-00-451-2881		PROPELLANT POWDER, M1 RECLMED F/155MM PROP CHG
1376-00-451-2882		PROPELLANT M2, MP, RECLAIMED F/165MM M123A1

NSN

1376-00-451-2883
1376-00-451-4906
1376-00-451-4907
1376-00-476-9357
1376-00-653-9822
1376-00-653-9825
1376-00-694-2017
1376-00-772-1370
1376-00-854-6659
1376-00-854-6710
1376-00-871-2829
1376-00-871-2889
1376-00-937-3922
1376-00-937-3940
1376-00-937-3978
1376-00-937-3995
1376-00-979-6091
1376-00-979-6092
1376-00-987-6802
1376-01-030-0442
1376-01-048-9868
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1376-01-049-1467
1376-01-049-1468
1376-01-049-1469
1376-01-050-7209

DODIC NOMENCLATURE

PROP POWDER M6,SP, RECLAIMED F/CTG 90MM
RECLAIMED PROPELLANT F/SMALL ARMS (IMR) (M1)
PROPELLANT POWDER, M6 F/1 75MM PROP CHG M12M4 GB
PROP POWDER,M10 F/57MM, 75MM AND 105MM RECLAIMED
PROPELLANT, BALLISTITE,BULK, N-1 SHEETS
PROPELLANT, BALLISTITE,BULK, N-5 SHEETS
PROPELLANT POWDER F/PISTOL P4768
PROPELLANT POWDER F/EXPL SCENT KIT,CANINE
PROPELLANT POWDER,M17, TYPE 2 F/90MM, M318A1
CX52 PROPELLANT POWDER,M26 F/CTG 106MM HEAT M344A1
PROPELLANT POWDER,M1,MP F/VARIOUS TYPES
PROPELLANT POWDER F/155MM M4A1
PROPELLANT POWDER, BENITE 9 IN. LENGTH
BENITE 10 IN. LENGTH F/PRIMER, M83
PROPELLANT POWDER BENITE STRANDS 11.437 IN LENGTH
BENITE 17 IN. LENGTH F/PRIMER, M80A1
PROP POWDER, PYROCELLULOSE, STANTON, STARTER
PROP POWDER, PYROCELLULOSE, STANTON, STARTER
PROPELLANT GRAIN, 10 IN. LENGTH
PROPELLANT,M5, SP,FLAKE, F/90MM CHG, M82
PROPELLANT POWDER,IMR 5010, F/ CTG CAL .50 BALL M33
C558 PROPELLANT POWDER, WC 846 F/7.62MM TRACER M62
PROPELLANT POWDER, WC846 F/7.62MM BALL M80
PROPELLANT POWDER, WC846 F/7.62MM MATCH M118
PROPELLANT POWDER, IMR 8028 F/5.56MM TR, M196
PROPELLANT POWDER, IMR 7383 F/50 CAL SP TR, M48A2
PROPELLANT POWDER,IMR 8097 F/7.62MM GRN RIFLE M64
PROPELLANT POWDER,IMR 5010 F/CTG, CAL 50 TR M17
PROPELLANT POWDER,IMR 4895 F/CTG, CAL 30 BALL, M2
PROPELLANT POWDER,IMR 4895 F/CTG, CAL 30 TR
PROPELLANT POWDER,IMR 4895 F/7.62MM MATCH, M118
PROPELLANT POWDER,HPC-4 F/7.62MM CTG GR RIFLE M64
PROPELLANT POWDER,HPC-8 F/7.62MM FRANG., M160
PROPELLANT POWDER,HPC-13 F/5.56MM BLANK, M200
PROPELLANT POWDER,SR4900 F/CTG CAL 30, BLNK M1909
PROPELLANT POWDER,SR 8231 F/CTG, 7.62MM BLNK, M82
PROPELLANT POWDER,CMR 100 F/CTG, CAL 30, BALL, M2
PROPELLANT POWDER,WC 820 F/CTG, CAL 30, BALL, M1
PROPELLANT POWDER,HPC-5 F/CTG, CAL 30, BALL, M1
PROPELLANT POWDER,HPC-2 F/7.62MM BLANK, M82
PROPELLANT POWDER,WC 818 F/7.62MM BLANK, M82
PROPELLANT POWDER,WC 852 F/CTG, CAL 30, BALL, M2
PROPELLANT POWDER, WC 870 F/CTG, 20MM
PROPELLANT POWDER,M26E1 F/152MM PROP CHG M189

NSN

1376-01-053-0362
1376-01-053-9358
1376-01-053-9359
1376-01-053-9360
1376-01-053-9362
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1376-01-055-8599
1376-01-055-9903
1376-01-055-9904
1376-01-056-0768
1376-01-056-2671

DODIC NOMENCLATURE

PROPELLANT POWDER,M6 TYPE1 F/105MM CTG M494
PROPELLANT POWDER, M1
PROPELLANT POWDER, M30, TYPE 1 F/105MM CTG
PROPELLANT POWDER, M1, TYPE 1 F/105MM CTG
PROPELLANT POWDER,M6, MP, TYPE 1 F/105MM CTG
PROPELLANT POWDER,M9 FLAKE F/105MM CTG
PROPELLANT POWDER,M9, FORM A F/4.2 IN PROP CHG
PROPELLANT POWDER,M9, FLAKE F/81MM INCR.M185
PROPELLANT POWDER,M9, FORM A F/4.2 IN PROP CHG
PROPELLANT POWDER,MIXTURE M30 F/CTG, 90MM
PROPELLANT POWDER, M5 MIXTURE, FORM A
PROPELLANT POWDER,M26 F/CTG 106MM RIFLE
PROPELLANT POWDER,M6,MP F/175MM M86 SERIES
PROPELLANT POWDER,M30 F/ 105MM
PROPELLANT POWDER, M6,MP F/155MM M119 SERIES
PROPELLANT POWDER,M9, FORM A F/40MM CTG
PROPELLANT POWDER,SHEET 33 IN LENGTH
PROPELLANT POWDER,M1MP F/155MM M4A2 WB
PROPELLANT POWDER,CR8325 F/20MM CTG, M139
PROPELLANT POWDER,WC875 F/20MM CTG M99A1
PROPELLANT POWDER,IMR4475 F/7.62MM, M60, HPT
PROPELLANT POWDER,HPC F/CAL 38 CTG,BALL
PROPELLANT POWDER F/7.62MM GRENADE CTG, M64
PROPELLANT POWDER F/CAL .30 M1909 BLANK
PROPELLANT POWDER,WC860 F/CAL 50 BALL M33/AP M2
PROPELLANT POWDER,WC844, F/5.56MM, M193 BALL
PROPELLANT POWDER,WC,F/7.62MM FRANGIBLE, M160
PROPELLANT POWDER,SR, F/7.62MM FRANGIBLE, M160
PROPELLANT POWDER,IMR, F/5.56MM HPT
PROPELLANT POWDER, M30A1, MP
PROPELLANT POWDER,M30A1,MP,F/105MM PROP CHG
PROPELLANT POWDER,WC844, F/5.56 BALL M196 TR
PROPELLANT POWDER,M6+2, MP F/GUN 76MM
PROPELLANT POWDER, NACO, F.5IN 54 CAL
PROPELLANT POWDER,M1 F/105MM M724A1
PROPELLANT POWDER,M30,MP, F/105MM M735, M392
PROPELLANT GRAIN, SHEET STOCK, 15 IN CARPET ROLLS
PROPELLANT POWDER,M1,SP F/8 INCH CHG, PROP M2
PROPELLANT POWDER,M10 FLAKE F/155MM & 8IN
PROPELLANT POWDER, M30A2, MP F/8 IN PROP CHG, M188
PROPELLANT POWDER, MIXTURE M5
PROPELLANT POWDER,M10 FLAKE F/81MM M205 INCR
PROPELLANT POWDER,M1 F/90MM M71
BENITE 14 IN. LEMGTH F/PRIMER XM120

NSN -

DODIC NOMENCLATURE

1376-01-058-1652	PROPELLANT POWDER,IMR F/CAL 30 TR/7.62MM M118
1376-01-058-1653	PROPELLANT POWDER (WC) F/CAL .30 TR M27 CARBINE
1376-01-058-5086	PROPELLANT POWDER,M30
1376-01-059-4572	PROPELLANT POWDER M9 FLAKE F/81MM M90A1 A/B CHGS
1376-01-063-0140	PROPELLANT POWDER,M1,SP F/155MM M3A1
1376-01-064-7316	PROPELLANT POWDER,M6 PROP FORM C TYPE 1
1376-01-065-9849	PROPELLANT POWDER,M30,MP F/76MM CTG
1376-01-065-9850	PROPELLANT POWDER,M5 PROP F/90MM CTG M37E1/M371
1376-01-066-4179	PROPELLANT POWDER,M2 PROP
1376-01-066-4180	PROPELLANT POWDER,M30,MP F/105MM M735
1376-01-066-5003	PROPELLANT POWDER,IMR F/CAL .50 API-T, M20
1376-01-068-5086	PROPELLANT POWDER,M30,MP F/105MM M735
1376-01-068-5087	PROPELLANT POWDER,M1 COMP F/ 105MM M724E1
1376-01-073-7529	PROPELLANT POWDER,WC872 F/20MM BALL
1376-01-076-2607	PROPELLANT POWDER, M30A1,SP F/105MM M85,M121
1376-01-078-4062	PROPELLANT POWDER,M6, MP F/76MM M496 HEAT
1376-01-078-8199	PROPELLANT POWDER,WC 680 F/7.62MM BALL
1376-01-082-2105	PROPELLANT POWDER,M9 FLAKE F/81MM INCR M90/90A1
1376-01-084-4229	PROPELLANT POWDER,M30A1,MP F/155MM M203
1376-01-085-1882	PROPELLANT POWDER,M10FLAKE F/60MM M204 INCR
1376-01-085-7243	PROPELLANT POWDER,M2 F/40MM
1376-01-086-2973	PROPELLANT POWDER,M31A1,MP F/8 IN PRPCHG M188E1A1
1376-01-099-0236	PROPELLANT POWDER,M9 F/60MM IGNITION CTGS
1376-01-107-5378	PROPELLANT POWDER,M9 FLAKE F/60/81MM IGN CTG
1376-01-110-5580	PROPELLANT POWDER,M30A1 F/8 IN
1376-01-120-0956	PROPELLANT POWDER F/NAVAL GUNS ITYPE
1376-01-120-0957	PROPELLANT POWDER F/PROP CHG F/CANNON
1376-01-120-4100	PROPELLANT POWDER,M31 PROP F/120MM PROP CHG M45
1376-01-120-4560	PROPELLANT POWDER,IMR 4903 F/20MM CTG
1376-01-122-5289	PROPELLANT POWDER F/VARIOUS SOLID PRP RKT GRAINS
1376-01-123-5089	PROPELLANT POWDER,M17 F/CARTRIDGE, 90MM, M353
1376-01-125-5945	PROPELLANT POWDER,M30 PROP F/105MM
1376-01-125-5946	PROPELLANT POWDER,M30 F/105MM HEAT-T M456A2
1376-01-126-3602	PROPELLANT POWDER,BS NACO F/5 IN 38 PROP CHG
1376-01-126-5051	PROPELLANT POWDER F/NAVAL GRAINS
1376-01-126-8342	PROPELLANT POWDER,M10 FLAKE
1376-01-127-0728	PROPELLANT POWDER F/NAVAL GUNS
1376-01-127-5190	PROPELLANT POWDER SPD F/5 IN 38
1376-01-127-5191	PROPELLANT POWDER SPD F/5 IN 54
1376-01-127-5192	PROPELLANT POWDER SPD F/6 IN 47
1376-01-127-5193	PROPELLANT POWDER SPD F/16 IN 45
1376-01-127-5194	PROPELLANT POWDER,SPD,PYROCELLULOSE F/16 IN 50
1376-01-127-9539	PROPELLANT POWDER, SPDB F/3 IN 50
1376-01-127-9540	PROPELLANT POWDER,SPDB,PYROCELLULOSE F15 IN 38

NSN

1376-01-127-9541
1376-01-127-9542
1376-01-129-4679
1376-01-129-4680
1376-01-129-4681
1376-01-129-4682
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1376-01-180-3514
1376-01-184-1696
1376-01-187-7650
1376-01-190-1114
1376-01-190-1115

DODIC NOMENCLATURE

PROPELLANT POWDER,SPDF F/5 IN 54
PROPELLANT POWDER,SPDF F/6 IN 47
PROPELLANT POWDER,M6,SPDN F/3IN 50
PROPELLANT POWDER,M6,SPD F/ 5 IN 38
PROPELLANT POWDER,M6,SPDN F/16 IN 47 CAL
PROPELLANT POWDER,M1, SPDN F/20MM
PROPELLANT POWDER,M1, SPDN F/40MM
PROPELLANT POWDER,SPD,PYROCELLULOSE F/4 IN 50
PROPELLANT POWDER,SPD,PYROCELLULOSE F/8 IN 55
PROPELLANT POWDER,SPDB F/6 IN 47
PROPELLANT POWDER,SPDW F/8 IN 55
PROPELLANT POWDER,SPDW F16 IN 45
PROPELLANT POWDER F/ 5 INCH 38
PROPELLANT POWDER,M6 PROP SPDN F/8IN 55
PROPELLANT POWDER,SPDF F/8 IN 00
PROPELLANT POWDER,WC814, F/5.56MM BLANK M200
PROPELLANT POWDER,SPDW F/5 IN 38
PROPELLANT POWDER,SPDF F/3 IN 50
PROPELLANT POWDER,SPDW F/5 IN 54
PROPELLANT POWDER,BS-NACO F/5 IN 54
PROPELLANT POWDER,M10 FLAKE F/60MM INCR M204
PROPELLANT POWDER,M10,MP F/75MM, M309A1
PROPELLANT POWDER,M30,MP F/105MM M774
PROPELLANT POWDER,BS-NACO F/PROP CHG F/CANNON
PROPELLANT POWDER,M30,MP F/105MM APFSDS-T M833
PROPELLANT,SOLVENTLESS F/155MM RA M549A1 1CLASS
PROPELLANT,SOLVENTLESS F/155MM RA M549A1 2 CLASS
PROPELLANT, SHEET STOCK
PROPELLANT POWDER,M6+2 F/5 IN 54
SPT FORM 120MM M830/M831
PROPELLANT POWDER,JA-2, 15 IN STICK F/120MM XM 827
PROPELLANT POWDER,JA-2 F/120MM M829
PROP POWDER,DIGL-RP,14 IN STICK F/120MM XM 830/831
PROP POWDER,DIGL-RP,FORM B,4 IN STICK F/120MM
PROP POWDER,DIGL-RP,FORM C,F/120MM XM830/831
PROPELLANT POWDER,LKL F/120MM CTG XM865
PROP POWDER,DIGL-RP FORM D F/120MMXM830/831
PROPELLANT POWDER,DIGL-RP F/120MM CTG XM830/831
PROPELLANT POWDER,WC844 F/5.56MM TR M856
PROPELLANT POWDER,WC844T F/5.56MM BALL M855
PROPELLANT POWDER,IMR 4895 F/CTG 7.62MM M852
PROPELLANT POWDER,M14 F/105MM M490A1
PROPELLANT POWDER
PROPELLANT POWDER F/40MM SGT YORK SYSTEM

NSN

1376-01-192-4164
 1376-01-195-9610
 1376-01-203-7484
 1376-01-203-7489
 1376-01-204-9784
 1376-01-204-9785
 1376-01-210-4040
 1376-01-213-5669
 1376-01-218-9319
 1376-01-221-5664
 1376-01-221-5665
 1376-01-221-5666
 1376-01-221-5667
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 1376-01-224-0356
 1376-01-227-9360
 1376-01-247-7208
 1376-01-255-6279
 1376-01-262-5398
 1376-01-274-0751
 1376-01-279-1324
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 1376-01-279-2453
 1376-01-281-1665
 1376-01-283-0197
 1376-01-285-3107
 1376-01-291-7040
 1376-01-299-8859
 1376-01-300-9526
 1376-01-306-1237
 1376-01-306-1238
 1376-01-315-9742
 1376-01-318-6315
 1376-01-325-3586
 1376-01-325-3587
 1376-01-325-3588
 1376-01-325-5071

DODIC NOMENCLATURE

PROPELLANT P OWDER,WC844 F/5.56MM BALL M855
 PROPELLANT,DOUBLE BASE, SPHERIODAL F/5.56MM CTG
 PROPELLANT POWDER SINGLE BASE F/CAL 45 BALL
 PROPELLANT DOUBLE BASE WC844 F/5.56MM M855
 MM07 PROPELLANT POWDER F/CAD/PAD
 MM08 PROPELLANT POWDER F/CAD/PAD
 PROPELLANT,DOUBLE BASE WC858 F/20MM M54A1
 PROP POWDER,M31A1,SP 29 IN SLOTTED STICK F/155MM
 PROPELLANT POWDER,M6 F/105MM CTG M327
 PROPELLANT GRAIN F/CADS
 PROPELLANT GRAIN F/CADS
 PROPELLANT GRAIN F/IMPULSE CTG CCU-52A
 PROPELLANT GRAIN F/IMPULSE CTG CCU-52A
 PROPELLANT POWDER
 PROPELLANT GRAIN F/CTG. ACT. INIT. M53/91/99
 PROPELLANT GRAIN F/CADS
 PROPELLANT GRAIN F/CADS
 PROPELLANT GRAIN F/CADS
 PROPELLANT GRAIN F/IMPULSE CTG M119
 PROPELLANT GRAIN F/IMPULSE CTG CCU-56A
 PROPELLANT GRAIN,M2 PROP F/IMP CTG MK 40 MOD 0
 PROPELLANT GRAIN,M2 PROP F/CTG M31A2
 PROPELLANT POWDER,M6 MIXTURE FORM C TYPE1..
 PROPELLANT POWDER,M38 SPHERIODAL F/81MM PROP CHG
 PROPELLANT POWDER,M8 PROP
 PROPELLANT POWDER F/CAL 38 BALL/IMPULSE CTG M796
 PROPELLANT GRAIN F/INITIATOR JAU-22B
 PROPELLANT GRAIN F/CADS
 PROPELLANT GRAIN F/INITIATOR JAU-22B
 PROPELLANT GRAIN F/CADS
 PROPELLANT GRAIN F/ROCKET MOTORS & FUZES
 PROPELLANT POWDER F/ACRFT CANOPY REMOVER M151
 PROPELLANT POWDER F/CTG IMPULSE 150
 PROPELLANT POWDER WC859 F/20MM
 PROPELLANT POWDER,BENITE STRANDS 30.2 IN LENGTH
 PROPELLANT POWDER,WC440S F/CAL .50 BLANK
 PROPELLANT GRAIN F/CADS MK 47
 PROPELLANT GRAIN F/CADS
 PROPELLANT POWDER,M43 F/105MM CTG M900 SERIES
 PROPELLANT POWDER,BENITE STRANDS 8.25 IN LENGTH
 PROPELLANT GRAIN,HPC-3N
 PROPELLANT GRAIN,HPC-23N
 PROPELLANT GRAIN,HPC-1N
 PROPELLANT GRAIN F/IMPULSE CTG CCU-56A

NSN

1376-01-325-5072
1376-01-325-5073
1376-01-325-5075
1376-01-325-5113
1376-01-325-5114
1376-01-325-5115
1376-01-325-5116
1376-01-325-5117
1376-01-325-5118
1376-01-335-5054
1376-01-342-3843
1376-01-342-3844
1376-01-362-6503
1376-01-368-7116
1376-01-370-6678
1376-01-373-5883
1376-01-396-0257
1376-01-426-1542

DODIC NOMENCLATURE

PROPELLANT GRAIN F/IMPULSE CTGS CCU-1B,11B
PROPELLANT GRAIN,M2 PROPELLANT
PROPELLANT POWDER,HPC-60 F/IMPULSE CTG CCU-106A
PROPELLANT GRAIN F/IMPULSE CTGS M141/146
PROPELLANT GRAIN F/IMPULSE CTG M37
PROPELLANT GRAIN,M8 PROP F/IMPULSE CTGS M43/44A
PROPELLANT GRAIN,M6 PROP F/IMPULSE CTG MK 18
PROPELLANT GRAIN F/DELAY CTG CCU-73A
PROPELLANT GRAIN F/IMPULSE CTG CCU-44A1
PROPELLANT POWDER,WC867 F/20MM CTG
PROPELLANT POWDER,M10 F/IMPULSE CTG M42A1
PROPELLANT POWDER,IMR 5010
PROPELLANT POWDER,PROP WC 750
PROPELLANT POWDER,PROP WC 845 F/5.56MM TR&BALL
PROPELLANT POWDER,WCR845 F/TR M856
PROPELLANT GRAIN F/120MM M865
PROPELLANT GRAIN F/120MM M831A1
PROPELLANT POWDER,M1 PROP F/CTG M865E2

APPENDIX D

COMMON PROPELLANT COMPOSITIONS

PROPELLANT COMPOSITIONS

(THE NUMBERS IN THESE CHARTS ARE APPROXIMATE PERCENTAGES BY WEIGHT ¹)

PROPELLANT MODEL NUMBER	M1	M2	M5	M6	M7	M8	M9	M10	M12	M13	M14
Nitrocellulose	85.00	77.45	81.95	87.00	54.60	52.15	57.75	98.00	97.70	57.30	90.00
Nitroglycerin		19.50	15.00		35.50	43.00	40.00			40.00	
Nitroguanidine											
Dinitrotoluene	10.00			10.00							8.00
Dibutylphthalate	5.00			3.00							2.00
Diethylphthalate						3.00					
Diphenylamine	1.00			1.00				1.00	0.80	0.20	1.00
Ethyl Centralite		0.60	0.60		0.90	0.60	0.75			1.00	
Barium Nitrate		1.40	1.40								
Potassium Nitrate		0.75	0.75			1.25	1.50				
Potassium Perchlorate					7.80						
Lead Carbonate	1.00										
Potassium Sulfate	1.00			1.00				1.00	0.75	1.50	
Tin									0.75		
Carbon Black					1.20					0.05	
Graphite		0.30	0.30					0.10			
Cryolite											

THE INFORMATION IN THIS CHART IS CONTINUED ON THE NEXT PAGE

¹ The information contained in this chart is an approximation only. Specific information regarding percentages and tolerances of components should be obtained from the appropriate specifications and standards. This listing is not intended to be a collection of all propellant compositions used by the military, but rather only examples of some typical compositions.

PROPELLANT COMPOSITIONS

(THE NUMBERS IN THESE CHARTS ARE APPROXIMATE PERCENTAGES BY WEIGHT)

COMPONENT	PROPELLANT MODEL NUMBER											
	M15	M17	M18	M26	M26E1	M30	M30A1	M30A2	M31	M31A1	IMR	
Nitrocellulose	20.00	22.00	80.00	67.25	68.70	28.00	28.00	27.00	20.00	20.00	100.0	
Nitroglycerin	19.00	21.50	10.00	25.00	25.00	22.50	22.50	22.50	19.00	19.00		
Nitroguanidine	54.70	54.70				47.70	47.00	46.25	54.70	54.00		
Dinitrotoluene											8.00	
Dibutylphthalate			9.00						4.50	4.50		
Diethylphthalate												
Diphenylamine			1.00							1.00	0.70	
Ethyl Centralite	6.00	1.50		6.00	6.00	1.50	1.50	1.50				
Barium Nitrate				0.75								
Potassium Nitrate				0.70				2.75				
Potassium Perchlorate												
Lead Carbonate												
Potassium Sulfate							1.00		1.50	1.50	1.00	
Tin												
Carbon Black												
Graphite		0.10		0.30	0.30	0.10						
Cryolite	0.30	0.30				0.30			0.30			
2-Dinitrophenyldiamine									1.50			

THE INFORMATION IN THIS CHART IS CONTINUED FROM THE PREVIOUS PAGE

SUBSTITUTES AND ADDITIVES USED IN PROPELLANT COMPOSITION

PURPOSE	Reduce Hygroscopicity	Stabilizer	Plasticizer	Deterrent	Reduce Flame Temperature	Reduce Flash	Reduce Bore Erosion	Increase Electrical Conductivity	Control Burning Rate	Source of Oxygen	Retards Ignition	Increases Ignitability	Moisture Proof Coating
MATERIAL													
Nitroglycerin	X		X							X		X	
Nitroguanidine					X	X	X						
Dinitrotoluene	X		X	X			X		X				X
Dibutylphthalate	X		X	X	X	X	X		X				
Diethylphthalate						X	X		X				
Diphenylamine**		X											
Ethyl Centralite*	X	X	X	X	X	X	X		X				X
Barium Nitrate						X							
Potassium Nitrate						X							
Potassium Perchlorate						X			X	X			
Potassium Sulfate						X							
Tin (Lead)***													
Carbon Black												X	
Graphite								X			X		
Cryolite						X							
2-Dinitrophenyldiamine		X	X										
Methyl Centralite			X	X		X	X		X				
Triacetin			X			X							

- * Stabilizer for double base propellant
- ** Stabilizer for single base propellant
- *** Decoppering or weapon cleaning agent

Ethyl Cellulose and Cellulose Acetate are inhibitors. They retard or slow down the burning rate.

APPENDIX E
POINTS OF CONTACT

NOTE: Suggestions to expand POC list are welcomed. Installation level points of contact might prove useful in future editions.

1. IOC: Ammunition Surveillance Division

Mail Address: Commander
HQ, IOC
ATTN: AMSIO-QAS
Rock Island, IL 61299-6000

Individual Contact: **Robert Lorenz**
Telephone: DSN 793-7572/7587, Commercial (309) 782-7572
E-mail: rlorenz@ria-emh2.army.mil

2. USADAC: Logistics Review and Technical Assistance Office

Mail Address: Director
USADAC
ATTN: SIOAC-AV
Savanna, IL 61074-9639

Individual Contact: **Elena Graves**
Telephone: DSN 585-8052, Commercial (815) 273-8052
E-mail: graves@dac-emh1.army.mil

3. ARDEC (Picatinny): Army Propellant Surveillance Laboratory

Mail Address: Commander
ARDEC
ATTN: AMSTA-AR-AEE-WEE
Picatinny Arsenal, NJ 07806-5000

Individual Contact: **Diana-Lynn Herbst**
Telephone: DSN 880-2560/4914, Comm (201) 724-2560/4914
E-mail: dlarweth@pica.army.mil

4. NSWC Indian Head: NAVSEA Gun Propellants:

Mail Address: Commander
Indian Head Division
Naval Surface Warfare Center
ATTN: Code 6210F (David Lee)
101 Strauss Ave.
Indian Head, MD 20640-5035

Individual Contact: **David Lee**
Telephone: DSN 354-4521, Commercial (301) 743-4521
E-mail: 6210f@mail.ih.navy.mil

5. United States Marine Corps Gun Propellants

Mail Address: Commander
Naval Ordnance Center/Pacific Division
Fallbrook Detachment
ATTN: Code 5123 (Mr. Wissa)
700 Ammunition Road
Fallbrook, CA 92028-3187

Individual Contact: **Rami Wissa**
Telephone: DSN 873-3738, Commercial (619) 731-3738
E-mail: wissar@fb.sbeach.navy.mil

6. Naval Air at China Lake

Mail Address: Commander
Naval Air Warfare Center, Weapons Division
ATTN: Code 473P50D (Dr. Pakulak)
1 Administration Circle
China Lake, CA 93555-6100

Individual Contact: **Mary Pakulak**
Telephone: DSN 437-7592, Commercial (760) 939-7592
E-mail: mary_pakulak@clplgw.chinalake.navy.mil

Dennis Schulz/RDN/Austin
08/14/2012 02:06 PM

To Tom Justice/RDN/Mfg/Austin@Austin, Margit
Chevalier/RDN/Austin@Austin
cc
bcc
Subject SMS Hazard Studies on M6 Propellant pdf

Here are the pdf files for the Hazard Studies done for Explo Systems to establish packaging.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933



SMS Hazard Analysis Report 12AU11.pdf SMS 01AP11 2nd Test Report.pdf SMS 01AP11 Test Report.pdf



SMS 30AU11 Test Report.pdf SMS Appendix A, B.pdf

*Safety
Management
Services, Inc.*

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Reference Number: SMS-2387-M1

Date: August 12, 2010

David Smith
Explo Systems, Inc.
1702 Fourth St.
Minden, LA 71055

Subject: Hazards Analysis Evaluation of Loading and Transportation Operations Used to Transport M6 Propellant in Super Sacks

Dear Mr. Smith

Safety Management Services, Inc. (SMS) performed an evaluation of the loading and transportation operations at Explo Systems, Inc. used to transport M6 propellant in Super Sacks. A Super Sack is designed to allow efficient opening and discharge of 800 lbs of M6 propellant into a hopper or desired vessel. The Super Sacks are expected to be loaded onto trucks in Minden, LA and transported via public highways to various clients in LA and other states. The Department of Transportation (DOT) has regulations in place for hazardous materials transported on public highways. The DOT Hazardous Material Regulations are codified in the Code of Federal Regulations (CFR) managed by the Federal Motor Carrier Safety Administration (FMCSA).

The regulation that pertains to packaging of explosives for transport is 29CFR172.62. The specific packaging requirements for M6 propellant, which is classified as Hazard Division 1.3 material and ships under United Nations (UN) code 0499, are determined by reviewing the Explosives Table in 29CFR172.62. This table specifies the packaging must comply with Packaging Instructions 114(b) which describes inner and outer packaging requirements. The outer packaging requirements allow any of the following materials: Boxes: natural wood, ordinary (4C1). natural wood, sift proof walls (4C2). plywood (4D). reconstituted wood (4F). fibreboard (4G). Drums: steel, removable head (1A2). aluminum, removable head (1B2). plywood (1D). fibre (1G). plastics, removable head (1H2). Therefore, the use of a Super Sack to constitute the inner and outer packaging is not specifically permitted according to the DOT regulations.

OBJECTIVE

Perform a hazard analysis to determine whether alternative outer packaging (i.e. Super Sack) to transport non-bulk quantities of M6 propellant results in a risk that differs from that when using outer packaging described above in accordance with DOT regulations. Identify and discuss risk levels for use of a Super Sack in comparison to use of approved outer packaging. The following assumptions were used in the analysis:

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1. M6 propellant is transported without its own means of initiation (e.g. no initiator or igniter).
2. M6 propellant is transported only with compatible explosives or authorized compatibility groups.
3. M6 propellant is packaged in accordance with general packaging requirements for explosives including Parts 173.60 and 173.61.
4. M6 propellant is transported in metal tractor trailers that provide resistance to outside ignition sources that are equivalent to or exceed that of prescribed DOT outer packaging requirements.

SUMMARY AND CONCLUSIONS

A failure modes and effects analysis (FMEA) was developed for both the loading and transportation operations for M6 propellant. An FMEA was chosen based on the type and complexity of the operation and this is a type of Process Hazard Analysis (PHA) that is used to meet requirements of OSHA 29 CFR 1910.119 "Process Safety Management," as well as the requirements outlined in MIL STD 882 for risk assessment. Various failure scenarios were evaluated including many that may result in initiation of the propellant. Design safety measures were identified in the "Design Safety" column in the attached table, Appendix A. Where deficiencies were found or implied, recommendations were issues in the "Recommendation" column. Each recommendation is identified by a Safety Action Request (SAR) number that is used for tracking purposes.

Implementing or addressing all of the recommendations in Appendix A will help to minimize risk of loading and transporting M6 propellant. When these recommendations are implemented and other criteria are met as described above, the associated risk of using a Super Sack is equivalent to that of handling and transporting M6 propellant in other, permitted outer packaging such as fiberboard boxes or drums. Specific risk levels for respective failure modes are described fully in Appendix A. Note that there are a substantial number of failure modes with a risk assessment code of 1D. Refer to risk ratings in Appendix B. The FMEA indicates that the mitigating actions to reduce risk are most often related to reducing the probability of occurrence. While a more robust outer packaging may help mitigate some stimuli such as thermal sources, it increases the forces when an external impact event occurs and may contribute to frictional forces depending on specific configuration of the packaging.

DISCUSSION**M6 Propellant Sensitivity**

The impact sensitivity of M6 propellant distributed by Explo Systems, Inc. is 21cm (TIL) using a MBOM Impact Testing Apparatus. The friction sensitivity was reported as a TIL value of 140 lb_r @ 8 ft/s. It should be noted that in all friction and impact tests only small spark or odor was observed for GO trials and in no trial were a GO was recorded was the sample consumed. The presence of propellant in a Super Sack versus another outer container is expected to soften or reduce the impact force due to the flexible nature of the Super Sack and the ability for the propellant grains to move and rotate. If a rigid box or drum surrounds the propellant grains, there is an increased likelihood

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for grain(s) to be caught between hard surfaces or between other grains and a hard surface, thereby increasing local impact forces and the possibility of impact initiation of the M6 propellant.

External Fire

External fire testing was conducted using the currently approved shipping configuration of up to 140 pounds of propellant in fiber drums using 5 drums for a total of 700 pounds of propellant. In addition, the external fire test was repeated using 800 pounds of M6 propellant in a single super sack. The 700 pounds of propellant in the fiberboard drums burned in approximately 30 seconds. The 800 pounds in the Super Sack burned in approximately 12 seconds. Both fires produced fire balls of around 30-35 feet in diameter. The propellant burned vigorously which is a characteristic of explosives classified as Division 1.3 material.

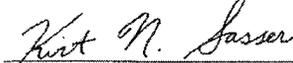
An external fire or thermal ignition stimulus represents the event that would increase the risk of affecting the propellant the most. While the propagation of a fire or thermal event outside the propellant into the propellant is expected, the rate of this propagation is expected to increase. In other words, a fire outside of a Super Sack would initiate the propellant faster than if the Super Sack or internal packaging was inside of a fiberboard drum or wood box as demonstrated. However, as seen from the UN 2" gap and external fire results, only a mass fire is anticipated.

Preparation and inspection of Super Sacks will help prevent undesirable materials including propellant grains and propellant dust from migrating out of place, reference SAR EXSI-08, thus reducing the probability for ignition propagation.

Contact SMS personnel involved directly with this project for additional information.

Sincerely,


Greg Dohm, Senior Process Safety Engr
Safety Management Services, Inc.


Kirt Sasser, Director of Testing
Safety Management Services, Inc.

Safety
Management
Services, Inc.

Reference Number: SMS-2588-L1

Date: April 1, 2011

Explo Systems, Inc.
1702 Fourth St.
Minden, LA 71055

Subject: Shipping Classification Recommendation for Reclaimed M6 Propellant

Reference: "Examination Report for Reclaimed M6 Propellant," SMS-2303-R1, April 14, 2010.

Dear Mr. Smith,

The referenced examination report details the results of the examination and testing performed on the reclaimed M6 propellant. Based on that examination, SMS makes the following recommendations in accordance with 49 CFR Sections 172.101 and 173.56

Product Names/Descriptions: Reclaimed M6 Propellant

Recommended Proper Shipping Description: Powder, smokeless, 1.3C, UN0161, Packing Group II

For non-bulk shipments, packaging requirements are given in 49 CFR Section 173.62c, Table, Packaging Instruction 114(b) applies.

Marking requirements are given in 49 CFR Section 172.320.

Labeling requirements are given in 49 CFR Section 172.411.

To complete the approval process for this material and location:
Provide a cover letter requesting classification in accordance with 49 CFR, Section 107.705.

Submit this recommendation letter and the enclosed report with attachments together with all pertinent drawings and chemical composition data to the address below:

**Associate Administrator for Hazardous Materials Safety
Pipeline and Hazardous Materials Safety Administration
U.S. Department of Transportation
1200 New Jersey Avenue, SE East Building, 2nd Floor
Washington, DC 20590, Attention: PIHH-32**

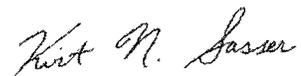
Page 1 of 2

1847 West 9000 South, Suite 205 • West Jordan, Utah 84088 • (801) 567-0456 Fax: (801) 567-0457 • www.sms-ink.com

Important: An Approval must be received from the Department of Transportation before any explosive may be offered for shipment.

If you have any questions concerning this report or require further assistance, please call SMS at 801 567-0456 or Fax SMS at 801 567-0457.

Thank you,



Kirt N. Sasser
Director of Engineering & Testing
Safety Management Services, Inc.
w/ attachments

S*afety*
M*anagement*
S*ervices, Inc.*

Reference Number: SMS-2387-R1

Date: August 30, 2010

Manufacturer: Explo Systems, Inc.
1702 Fourth St.
Minden, LA 71055

Subject: **Testing of Reclaimed M6 Propellant In Support of a Special Permit for Shipping in Super Sacks**

Reference: (1) "Examination Report for Reclaimed M6 Propellant," SMS-2303-R1, April 14, 2010.
(2) EX2010040603, Reclaimed M6 Propellant, Powder, smokeless, 1.3C, UN0161, Packing Group II, 05/31/2015.
(3) "Hazards Analysis Evaluation of Loading and Transportation Operations Used to Transport M6 Propellant in Super Sacks," SMS-2387-M1, August 12, 2010.

TEST AND/OR ANALYSIS REPORT

Explo Systems, Inc. of Minden, Louisiana has an M6 propellant reclamation process located at Camp Minden (formally the Louisiana Army Ammunition Plant) where they remove the M6 propellant from propelling charge cloth bags acquired from the Radford Army Ammunition Plant (US Army Contract: W52P1J10C0025) and place into 30 gallon fiberboard drums. Currently, Explo Systems has received approval under EX2010040603 to ship the Reclaimed M6 Propellant in 1G fiberboard drums with not more than 140 pounds of propellant. Explo Systems requested that Safety Management Services, Inc. (SMS) perform additional testing and perform a hazards analysis in support of a submittal to Pipeline and Hazardous Materials Safety Administration (PHMSA) requesting a Special Permit. The following report details the additional testing and analysis performed in support of a special permit.

Reclaimed M6 Propellant

M6 propellant in a propelling charge is bought by Explo Systems, Inc from the U.S. Army at the Radford Army Ammunitions Plant in Radford Virginia. Each propellant lot is tested for stability content using High Pressure Liquid Chromatography (HPLC), Near IR (NIR), and/or Thin Layer Chromatography (TLC) testing methods to determine the residual effective stabilizer. Lots with acceptable stabilizers (per Safety Bulletin, Inspection of Supplies and Equipment, Ammunition Surveillance Procedures (SB 742-1), are approved for reuse/recycle and are allowed to be shipped off RAAP.

1847 West 9000 South, Suite 205 • West Jordan, Utah 84088 • (801) 567-0456 • (801) 567-0457 fax • www.sms-ink.com

Explo Systems, Inc. Proprietary and Export Controlled

The propellant is a greenish yellow, perforated (seven perfs), cylindrical solid with a composition of 87.00% Nitrocellulose, 10.00% Dinitrotoluene, 3.00% Dibutyl Phthalate, 2.00% Potassium Sulfate, and 1.00% Diphenylamine measuring approximately 8 mm O.D. by 17 mm long (Photo 1).

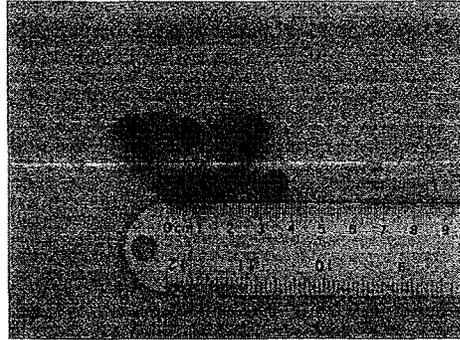


Photo 1: Reclaimed M6 Propellant

Maximum Shipping Quantity

Explo Systems, Inc. is requesting to ship 800 pounds of the reclaimed M6 propellant in the Super Sack[®] Container. This quantity is below the maximum single container amount (882 lbs) for non-bulk shipments.

Explo Systems proposes to ship up to 40 Super Sack[®] Containers per shipment.

Packaging

The reclaimed M6 propellant is proposed to be packaged in a Crohmiq[™] Blue Super Sack[®] Container manufactured by B.A.G. Corp as shown in Photo 2. The Super Sack[®] Container is manufactured using CROHMIQ blue[™] fabrics which are CROHMIQ[®] Static Protective Type D FIBC Fabrics manufactured by Texene, LLC. Manufactured with Crohmiq Blue fabric, this container provides 'Type D' static dissipation.

Capacity

Volume: 24 cubic feet

Maximum Weight Rating: 2,200 pounds

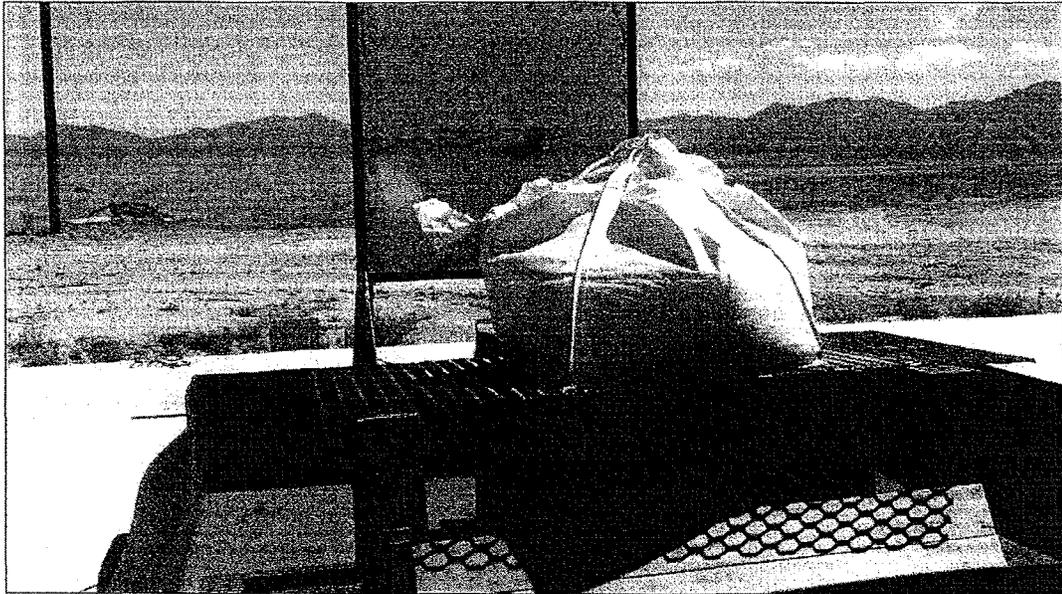


Photo 2: Reclaimed M6 Propellant in Super Sack® Container

Proposed Reclaimed M6 propellant packaging:

- Outer Packaging: Crohmiq™ Blue Super Sack® Container
- Intermediate Packaging: None
- Inner Packaging: None

Shipping Locations

Explo Systems, Inc. currently desires to restrict shipping under the Special Permit from the Radford Army Ammunition Plant in Radford, Virginia to the following three locations:

1. Boren Explosives, Parris, AL
2. Kentucky Powder Company, Mt. Vernon, KY
3. WESCO Resources Inc., UT

Testing

Tests included, UN Series 1a (UN Zero Gap), 2a (UN 2-inch Gap), 3a (Impact Sensitivity), 3b (Friction Sensitivity), and 6c (External Fire) on the reclaimed M6 propellant and packaged fiberboard drums. In addition, SMS previously performed 3c (Thermal Stability), 3d (Small-scale Burn), 5a (No. 8 Cap Test), 6b (Stack Test), and 6c (External Fire) for classification of shipping in 1G fiberboard drums. A summary of all test data is provided in Table 1.

Table 1: Reclaimed M6 Propellant Testing Results

New Tests		
Test	Conditions and Results	Pass/Fail
UN Zero Gap Test	Reaction produced a hole in the witness plate	Fail
UN 2-Inch Gap Test	Reaction bowed plate but pipe was intact for both trials	Pass
Impact Sensitivity Test	Impact TIL of 21 cm	Pass
Friction Sensitivity Test	Friction TIL of 240 lbf @ 8 ft/s	Pass
External Fire	800 pounds of reclaimed M6 propellant burned in approximately 12 seconds. No mass explosion was observed. Produced a fireball approximately 35 feet in diameter.	Pass (1.3) (Compatibility Group C)
Previous Tests (SMS-R1-2303)		
Test	Conditions and Results	Pass/Fail
Thermal Stability Test	No ignition or explosion, evidence of fuming or decomposition was observed. Weight loss of 0.43 grams or 0.86%.	Pass
Small-Scale Burn Test	No explosion. The 100 gram samples burned for approximately 12 seconds.	Pass
Cap Sensitivity Test	No damage to witness plates.	Pass
External Fire	700 pounds of reclaimed M6 propellant burned in approximately 30 seconds. No mass explosion was observed.	Pass (1.3) (Compatibility Group C)

UN Zero Gap Test

A UN Series I(a), UN Zero Gap Test, was conducted as specified in the UN Manual of Tests and Criteria on the reclaimed M6 propellant as seen in Photo 3. Approximately 307 grams of propellant was used to fill the pipe.

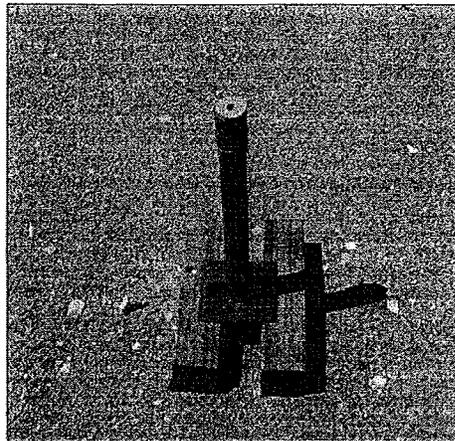


Photo 3: UN Zero Gap Test Setup

The steel tube was fragmented and a hole was punched through the witness plate as seen in Photo 4.

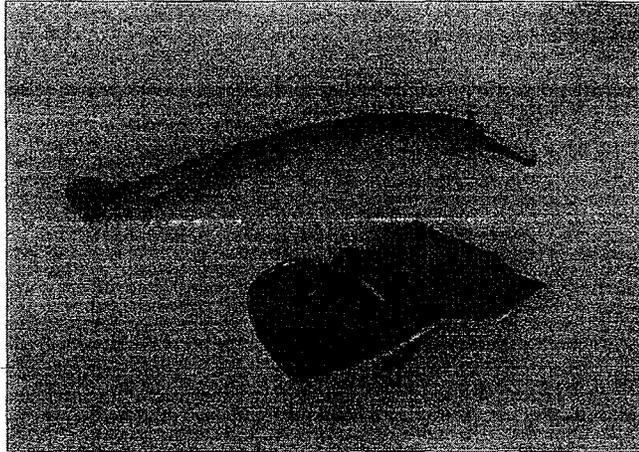


Photo 4: UN Zero Gap Test Results

UN 2-Inch Gap Test

A UN Series 2(a), 2-Inch Gap Test, was conducted as specified in the UN Manual of Tests and Criteria on the reclaimed M6 propellant as seen in Photo 5. Two trials were performed using 303 grams of propellant each to fill the pipe.

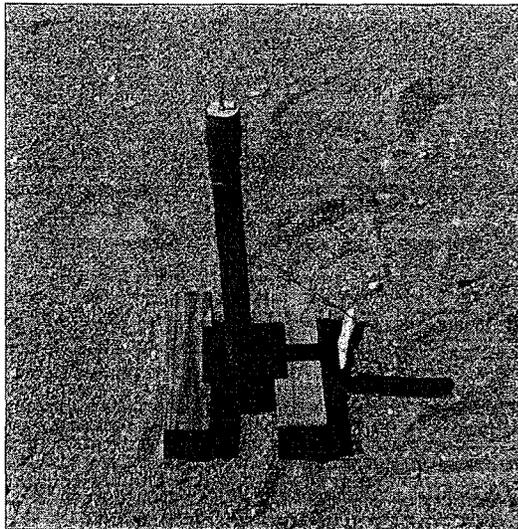


Photo 5: UN 2-Inch Gap Test Setup

No damage to the steel tube occurred in either trial. The witness plates were severely bowed but no penetration was observed as seen Photo 6. Much of the propellant did not ignite and was scattered about the test range.

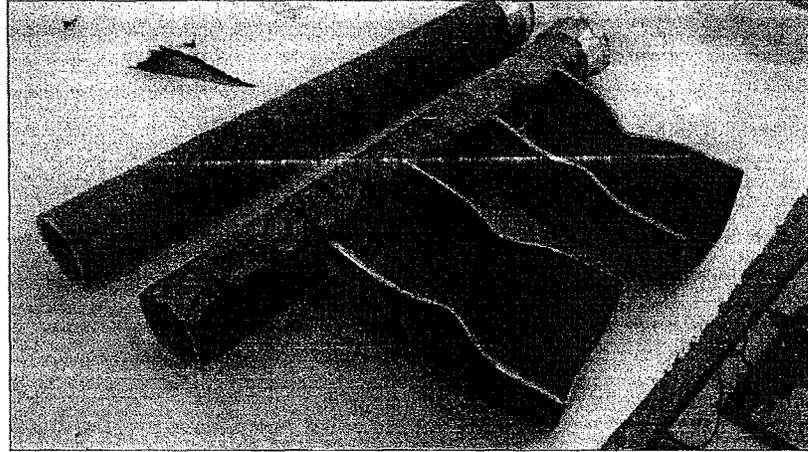


Photo 6: UN 2-Inch Gap Test Results

Impact Sensitivity Test

A UN Series 3 (a), Impact Sensitivity Test, using the Modified Bureau of Mines (or ABL) impact apparatus was conducted on the M6 propellant grains. UN Series 3a impact sensitivity testing is completed to ensure that the material is not too sensitive or too dangerous for transport in the form in which they are tested. The Modified Bureau of Mines (or ABL) Impact Test uses a 2-kg drop weight. The sample is placed on a fixed anvil. A hammer of known contact area is positioned above the sample and the weight is raised to a predetermined height and dropped. Normally, sample initiation is detected by audible or visual means. This is the preferred test apparatus and method for impact testing because the results are obtainable in engineering units, which enable analytical comparison and easy ranking of materials for sensitivity.

Substances with TIL values equal to or more sensitive than dry RDX are forbidden for shipment in the dry state. Dry RDX has TIL value of 3.5 cm.

The M6 propellant had a TIL value of 21 cm. It should be noted that in only small spark or odor was observed for GO trials and in no trial were a GO was recorded was the sample consumed. Non-the less, a spark or combustion products were observed and thus recorded as GO's.

Friction Sensitivity Test

A UN Series 3 (b), Friction Sensitivity Test, using the ABL friction apparatus was conducted on the M6 propellant grains. Friction sensitivity tests determine the response of an energetic material sample when subjected to frictional forces at a given velocity. In the ABL Friction Test, the sample is placed on an anvil, and a known force is applied hydraulically through a stationary wheel. A

pendulum or motor drive is used to propel the sliding anvil at any of several standard velocities perpendicular to the force vector. Sample initiation can be detected by visual means (spark or flame).

Substances with TIL values equal to or more sensitive than PETN are forbidden for shipment in the dry state. PETN has a TIL value of 13 lb_f @ 8 ft/s.

The M6 propellant had a TIL value of 140 lb_f @ 8 ft/s. It should be noted that in only small spark or odor was observed for GO trials and in no trial were a GO was recorded was the sample consumed. Non-the less, a spark or combustion products were observed and thus recorded as GO's.

External Fire Test

A UN Series 6(c), External Fire Test, was performed using a single Super Sack[®] Container filled with 800 pounds of Reclaimed M6 Propellant (Photo 7).

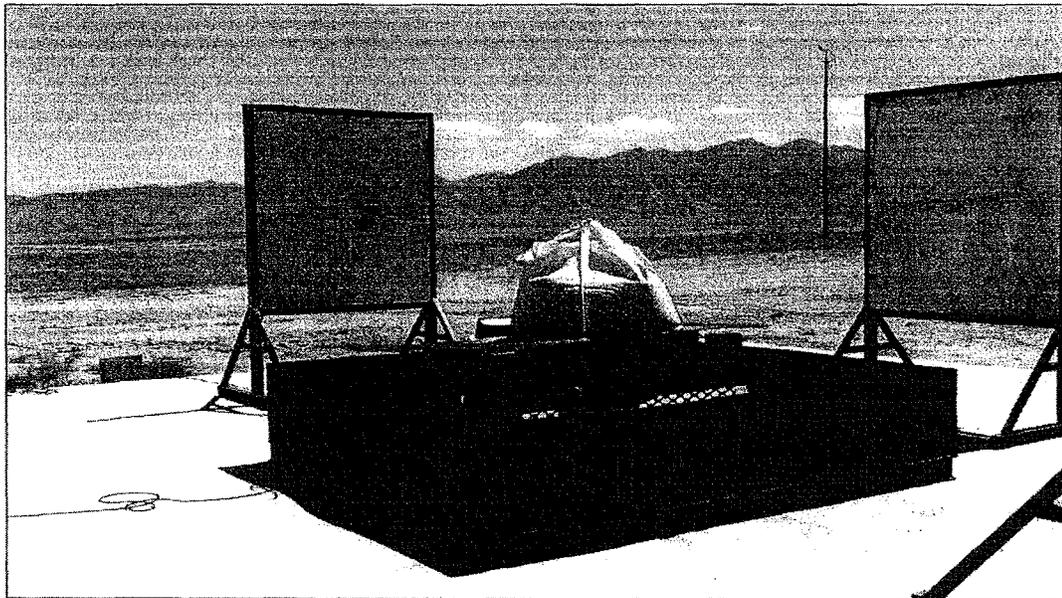


Photo 4: External Fire Test Setup with Reclaimed M6 Propellant

The 800 pounds of reclaimed M6 propellant in the Super Sack[®] Container ignited and burned in approximately 12 seconds. Per Table 16.2, this is indicative a Division 1.3 substance. A large fireball measuring approximately 35 feet in diameter was observed at the peak of the reaction. No mass explosion was observed.

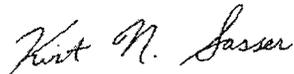
Hazards Analysis:

A hazards assessment reviewing shipping in the Super Sack[®] Container was performed by SMS (see Ref 3). This assessment shows that shipping in the Super Sacks would be acceptable within the confines of a Special Permit as the overall major hazard is a mass fire with no potential for explosion and due to the relatively insensitive nature of the large grain M6 propellant.

Conclusions and Recommendation:

Behavior of reclaimed M6 propellant in the Super Sack[®] Container is consistent with a recommendation into hazards division 1.3C.

Thank you,



Kirt N. Sasser
Director of Engineering & Testing
Safety Management Services, Inc.

S*afety*
M*anagement*
S*ervices, Inc.*

Reference Number: SMS-2387-R1

Date: August 30, 2010

Manufacturer: Explo Systems, Inc.
1702 Fourth St.
Minden, LA 71055

Subject: **Testing of Reclaimed M6 Propellant In Support of a Special Permit for Shipping in Super Sacks**

Reference: (1) "Examination Report for Reclaimed M6 Propellant," SMS-2303-R1, April 14, 2010.
(2) EX2010040603, Reclaimed M6 Propellant, Powder, smokeless, 1.3C, UN0161, Packing Group II, 05/31/2015.
(3) "Hazards Analysis Evaluation of Loading and Transportation Operations Used to Transport M6 Propellant in Super Sacks," SMS-2387-M1, August 12, 2010.

TEST AND/OR ANALYSIS REPORT

Explo Systems, Inc. of Minden, Louisiana has an M6 propellant reclamation process located at Camp Minden (formally the Louisiana Army Ammunition Plant) where they remove the M6 propellant from propelling charge cloth bags acquired from the Radford Army Ammunition Plant (US Army Contract: W52P1J10C0025) and place into 30 gallon fiberboard drums. Currently, Explo Systems has received approval under EX2010040603 to ship the Reclaimed M6 Propellant in 1G fiberboard drums with not more than 140 pounds of propellant. Explo Systems requested that Safety Management Services, Inc. (SMS) perform additional testing and perform a hazards analysis in support of a submittal to Pipeline and Hazardous Materials Safety Administration (PHMSA) requesting a Special Permit. The following report details the additional testing and analysis performed in support of a special permit.

Reclaimed M6 Propellant

M6 propellant in a propelling charge is bought by Explo Systems, Inc from the U.S. Army at the Radford Army Ammunitions Plant in Radford Virginia. Each propellant lot is tested for stability content using High Pressure Liquid Chromatography (HPLC), Near IR (NIR), and/or Thin Layer Chromatography (TLC) testing methods to determine the residual effective stabilizer. Lots with acceptable stabilizers (per Safety Bulletin, Inspection of Supplies and Equipment, Ammunition Surveillance Procedures (SB 742-1), are approved for reuse/recycle and are allowed to be shipped off RAAP.

1847 West 9000 South, Suite 205 • West Jordan, Utah 84088 • (801) 567-0456 • (801) 567-0457 fax • www.sms-ink.com

Explo Systems, Inc. Proprietary and Export Controlled

The propellant is a greenish yellow, perforated (seven perfs), cylindrical solid with a composition of 87.00% Nitrocellulose, 10.00% Dinitrotoluene, 3.00% Dibutyl Phthalate, 2.00% Potassium Sulfate, and 1.00% Diphenylamine measuring approximately 8 mm O.D. by 17 mm long (Photo 1).



Photo 1: Reclaimed M6 Propellant

Maximum Shipping Quantity

Explo Systems, Inc. is requesting to ship 800 pounds of the reclaimed M6 propellant in the Super Sack[®] Container. This quantity is below the maximum single container amount (882 lbs) for non-bulk shipments.

Explo Systems proposes to ship up to 40 Super Sack[®] Containers per shipment.

Packaging

The reclaimed M6 propellant is proposed to be packaged in a Crohmiq[™] Blue Super Sack[®] Container manufactured by B.A.G. Corp as shown in Photo 2. The Super Sack[®] Container is manufactured using CROHMIQ blue[™] fabrics which are CROHMIQ[®] Static Protective Type D FIBC Fabrics manufactured by Texene, LLC. Manufactured with Crohmiq Blue fabric, this container provides 'Type D' static dissipation.

Capacity

Volume: 24 cubic feet

Maximum Weight Rating: 2,200 pounds

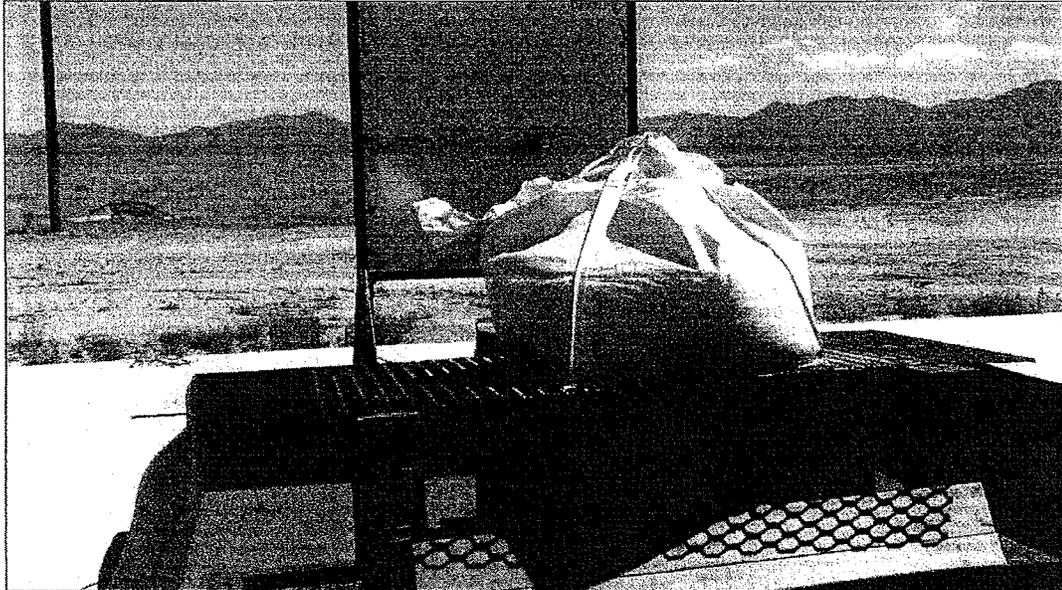


Photo 2: Reclaimed M6 Propellant in Super Sack[®] Container

Proposed Reclaimed M6 propellant packaging:

- Outer Packaging: Crohmiq[™] Blue Super Sack[®] Container
- Intermediate Packaging: None
- Inner Packaging: None

Shipping Locations

Explo Systems, Inc. currently desires to restrict shipping under the Special Permit from the Radford Army Ammunition Plant in Radford, Virginia to the following three locations:

1. Boren Explosives, Parris, AL
2. Kentucky Powder Company, Mt. Vernon, KY
3. WESCO Resources Inc., UT

Testing

Tests included, UN Series 1a (UN Zero Gap), 2a (UN 2-inch Gap), 3a (Impact Sensitivity), 3b (Friction Sensitivity), and 6c (External Fire) on the reclaimed M6 propellant and packaged fiberboard drums. In addition, SMS previously performed 3c (Thermal Stability), 3d (Small-scale Burn), 5a (No. 8 Cap Test), 6b (Stack Test), and 6c (External Fire) for classification of shipping in 1G fiberboard drums. A summary of all test data is provided in Table 1.

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New Tests		
Test	Conditions and Results	Pass/Fail
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External Fire	800 pounds of reclaimed M6 propellant burned in approximately 12 seconds. No mass explosion was observed. Produced a fireball approximately 35 feet in diameter.	Pass (1.3) (Compatibility Group C)
Previous Tests (SMS-R1-2303)		
Test	Conditions and Results	Pass/Fail
Thermal Stability Test	No ignition or explosion, evidence of fuming or decomposition was observed. Weight loss of 0.43 grams or 0.86%.	Pass
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Cap Sensitivity Test	No damage to witness plates.	Pass
External Fire	700 pounds of reclaimed M6 propellant burned in approximately 30 seconds. No mass explosion was observed.	Pass (1.3) (Compatibility Group C)

UN Zero Gap Test

A UN Series 1(a), UN Zero Gap Test, was conducted as specified in the UN Manual of Tests and Criteria on the reclaimed M6 propellant as seen in Photo 3. Approximately 307 grams of propellant was used to fill the pipe.

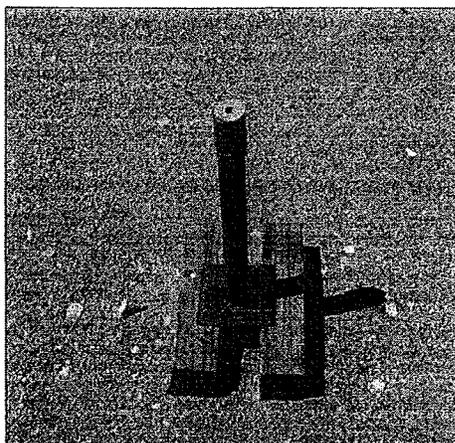


Photo 3: UN Zero Gap Test Setup

The steel tube was fragmented and a hole was punched through the witness plate as seen in Photo 4.

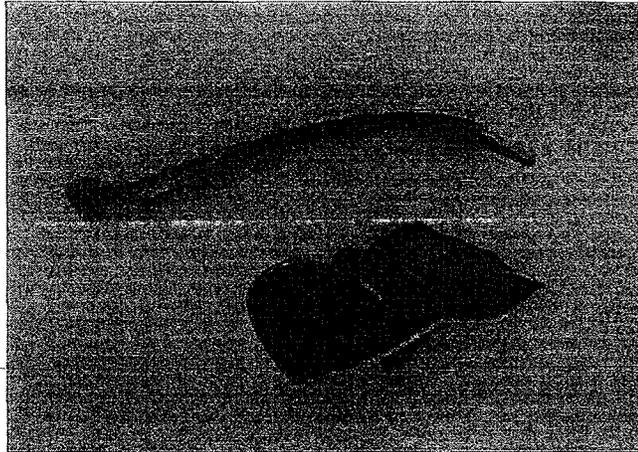


Photo 4: UN Zero Gap Test Results

UN 2-Inch Gap Test

A UN Series 2(a), 2-Inch Gap Test, was conducted as specified in the UN Manual of Tests and Criteria on the reclaimed M6 propellant as seen in Photo 5. Two trials were performed using 303 grams of propellant each to fill the pipe.

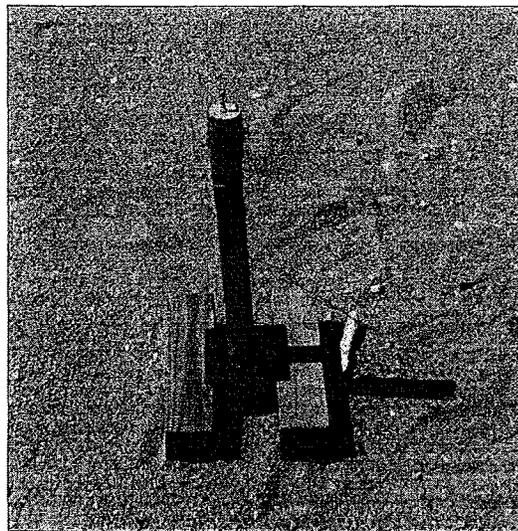


Photo 5: UN 2-Inch Gap Test Setup

No damage to the steel tube occurred in either trial. The witness plates were severely bowed but no penetration was observed as seen Photo 6. Much of the propellant did not ignite and was scattered about the test range.

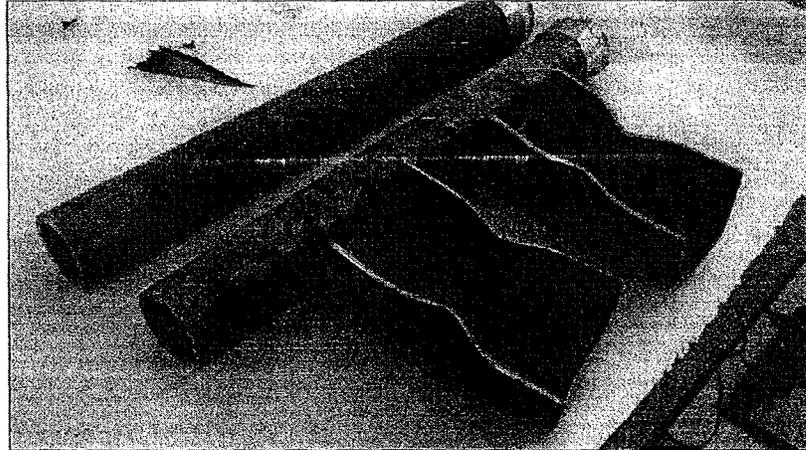


Photo 6: UN 2-Inch Gap Test Results

Impact Sensitivity Test

A UN Series 3 (a), Impact Sensitivity Test, using the Modified Bureau of Mines (or ABL) impact apparatus was conducted on the M6 propellant grains. UN Series 3a impact sensitivity testing is completed to ensure that the material is not too sensitive or too dangerous for transport in the form in which they are tested. The Modified Bureau of Mines (or ABL) Impact Test uses a 2-kg drop weight. The sample is placed on a fixed anvil. A hammer of known contact area is positioned above the sample and the weight is raised to a predetermined height and dropped. Normally, sample initiation is detected by audible or visual means. This is the preferred test apparatus and method for impact testing because the results are obtainable in engineering units, which enable analytical comparison and easy ranking of materials for sensitivity.

Substances with TIL values equal to or more sensitive than dry RDX are forbidden for shipment in the dry state. Dry RDX has TIL value of 3.5 cm.

The M6 propellant had a TIL value of 21 cm. It should be noted that in only small spark or odor was observed for GO trials and in no trial were a GO was recorded was the sample consumed. Non-the less, a spark or combustion products were observed and thus recorded as GO's.

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pendulum or motor drive is used to propel the sliding anvil at any of several standard velocities perpendicular to the force vector. Sample initiation can be detected by visual means (spark or flame).

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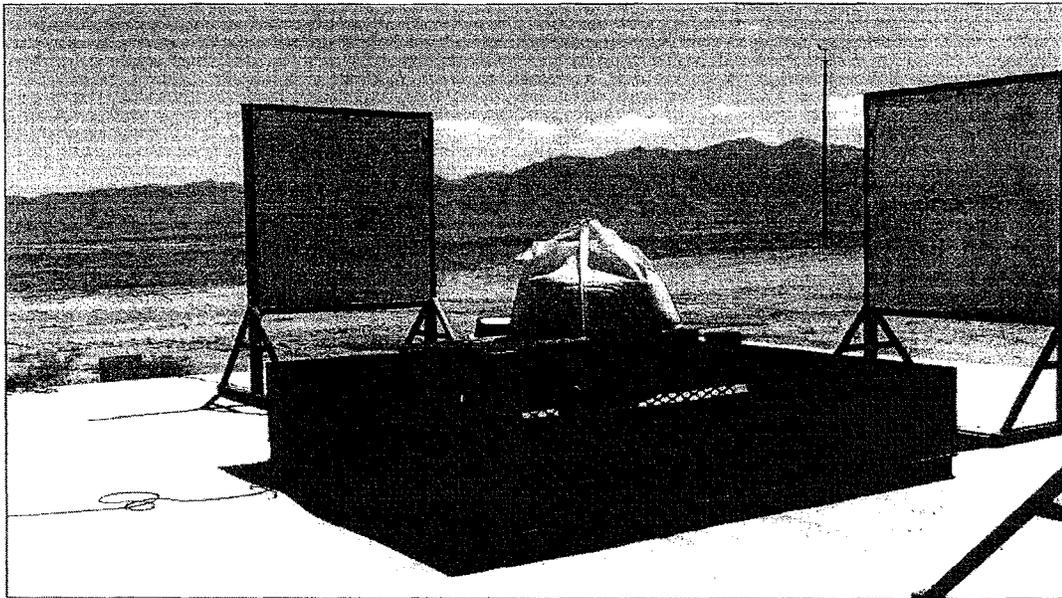


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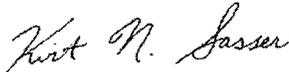
Hazards Analysis:

A hazards assessment reviewing shipping in the Super Sack[®] Container was performed by SMS (see Ref 3). This assessment shows that shipping in the Super Sacks would be acceptable within the confines of a Special Permit as the overall major hazard is a mass fire with no potential for explosion and due to the relatively insensitive nature of the large grain M6 propellant.

Conclusions and Recommendation:

Behavior of reclaimed M6 propellant in the Super Sack[®] Container is consistent with a recommendation into hazards division 1.3C.

Thank you,



Kirt N. Sasser
Director of Engineering & Testing
Safety Management Services, Inc.

**Safety
Management
Services, Inc.**

Reference Number: SMS-2387-R1

Date: August 30, 2010

Manufacturer: Explo Systems, Inc.
1702 Fourth St.
Minden, LA 71055

Subject: Testing of Reclaimed M6 Propellant In Support of a Special Permit for Shipping in Super Sacks

Reference: (1) "Examination Report for Reclaimed M6 Propellant," SMS-2303-R1, April 14, 2010.
(2) EX2010040603, Reclaimed M6 Propellant, Powder, smokeless, 1.3C, UN0161, Packing Group II, 05/31/2015.
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Explo Systems, Inc. Proprietary and Export Controlled

The propellant is a greenish yellow, perforated (seven perfs), cylindrical solid with a composition of 87.00% Nitrocellulose, 10.00% Dinitrotoluene, 3.00% Dibutyl Phthalate, 2.00% Potassium Sulfate, and 1.00% Diphenylamine measuring approximately 8 mm O.D. by 17 mm long (Photo 1).



Photo 1: Reclaimed M6 Propellant

Maximum Shipping Quantity

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Explo Systems proposes to ship up to 40 Super Sack[®] Containers per shipment.

Packaging

The reclaimed M6 propellant is proposed to be packaged in a Crohmiq[™] Blue Super Sack[®] Container manufactured by B.A.G. Corp as shown in Photo 2. The Super Sack[®] Container is manufactured using CROHMIQ blue[™] fabrics which are CROHMIQ[®] Static Protective Type D FIBC Fabrics manufactured by Texene, LLC. Manufactured with Crohmiq Blue fabric, this container provides 'Type D' static dissipation.

Capacity

Volume: 24 cubic feet

Maximum Weight Rating: 2,200 pounds

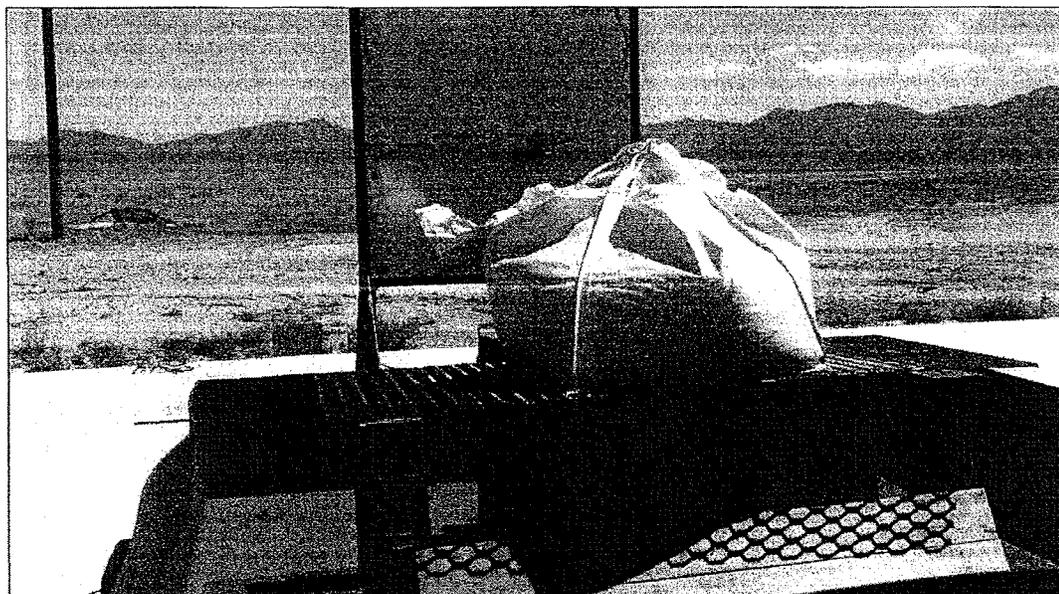


Photo 2: Reclaimed M6 Propellant in Super Sack® Container

Proposed Reclaimed M6 propellant packaging:

- Outer Packaging: Crohmiq™ Blue Super Sack® Container
- Intermediate Packaging: None
- Inner Packaging: None

Shipping Locations

Explo Systems, Inc. currently desires to restrict shipping under the Special Permit from the Radford Army Ammunition Plant in Radford, Virginia to the following three locations:

1. Boren Explosives, Parris, AL
2. Kentucky Powder Company, Mt. Vernon, KY
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Test	Conditions and Results	Pass/Fail
UN Zero Gap Test	Reaction produced a hole in the witness plate	Fail
UN 2-Inch Gap Test	Reaction bowed plate but pipe was intact for both trials	Pass
Impact Sensitivity Test	Impact TIL of 21 cm	Pass
Friction Sensitivity Test	Friction TIL of 240 lbf @ 8 ft/s	Pass
External Fire	800 pounds of reclaimed M6 propellant burned in approximately 12 seconds. No mass explosion was observed. Produced a fireball approximately 35 feet in diameter.	Pass (1.3) (Compatibility Group C)
Previous Tests (SMS-R1-2303)		
Test	Conditions and Results	Pass/Fail
Thermal Stability Test	No ignition or explosion, evidence of fuming or decomposition was observed. Weight loss of 0.43 grams or 0.86%.	Pass
Small-Scale Burn Test	No explosion. The 100 gram samples burned for approximately 12 seconds.	Pass
Cap Sensitivity Test	No damage to witness plates.	Pass
External Fire	700 pounds of reclaimed M6 propellant burned in approximately 30 seconds. No mass explosion was observed.	Pass (1.3) (Compatibility Group C)

UN Zero Gap Test

A UN Series I(a), UN Zero Gap Test, was conducted as specified in the UN Manual of Tests and Criteria on the reclaimed M6 propellant as seen in Photo 3. Approximately 307 grams of propellant was used to fill the pipe.

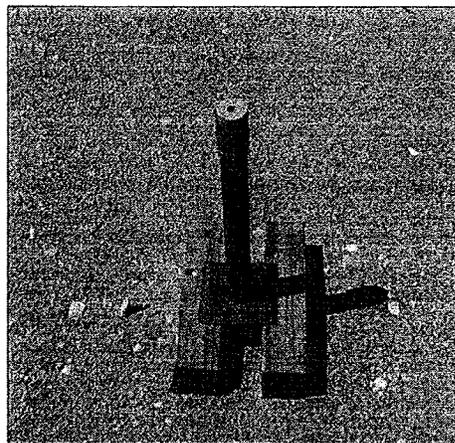


Photo 3: UN Zero Gap Test Setup

The steel tube was fragmented and a hole was punched through the witness plate as seen in Photo 4.

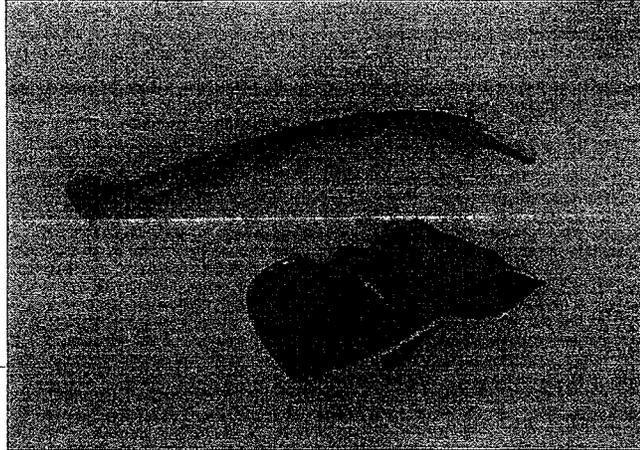


Photo 4: UN Zero Gap Test Results

UN 2-Inch Gap Test

A UN Series 2(a), 2-Inch Gap Test, was conducted as specified in the UN Manual of Tests and Criteria on the reclaimed M6 propellant as seen in Photo 5. Two trials were performed using 303 grams of propellant each to fill the pipe.

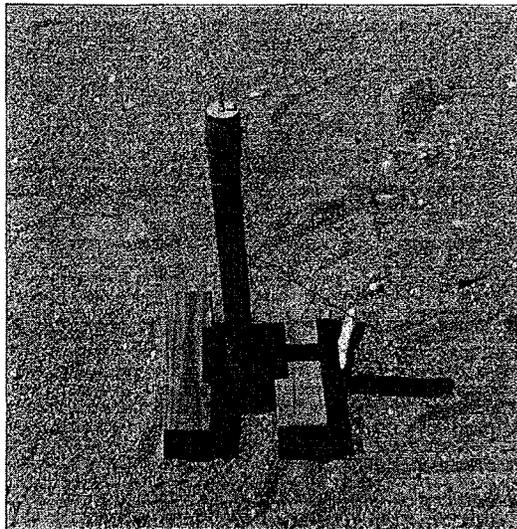


Photo 5: UN 2-Inch Gap Test Setup

No damage to the steel tube occurred in either trial. The witness plates were severely bowed but no penetration was observed as seen Photo 6. Much of the propellant did not ignite and was scattered about the test range.

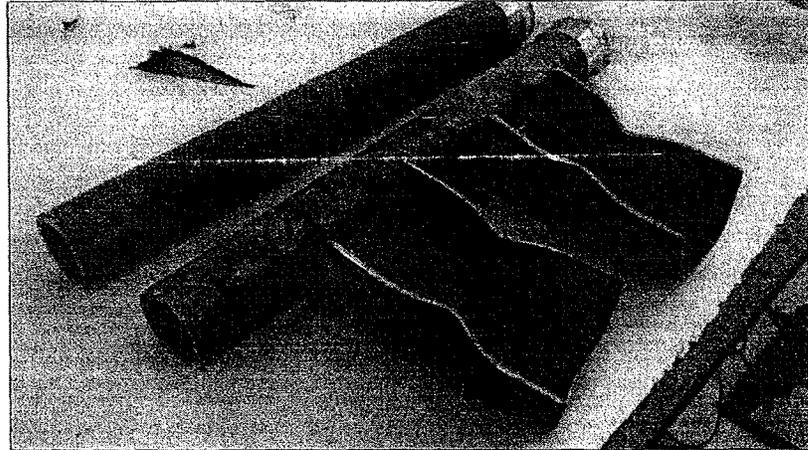


Photo 6: UN 2-Inch Gap Test Results

Impact Sensitivity Test

A UN Series 3 (a), Impact Sensitivity Test, using the Modified Bureau of Mines (or ABL) impact apparatus was conducted on the M6 propellant grains. UN Series 3a impact sensitivity testing is completed to ensure that the material is not too sensitive or too dangerous for transport in the form in which they are tested. The Modified Bureau of Mines (or ABL) Impact Test uses a 2-kg drop weight. The sample is placed on a fixed anvil. A hammer of known contact area is positioned above the sample and the weight is raised to a predetermined height and dropped. Normally, sample initiation is detected by audible or visual means. This is the preferred test apparatus and method for impact testing because the results are obtainable in engineering units, which enable analytical comparison and easy ranking of materials for sensitivity.

Substances with TIL values equal to or more sensitive than dry RDX are forbidden for shipment in the dry state. Dry RDX has TIL value of 3.5 cm.

The M6 propellant had a TIL value of 21 cm. It should be noted that in only small spark or odor was observed for GO trials and in no trial were a GO was recorded was the sample consumed. Non-the less, a spark or combustion products were observed and thus recorded as GO's.

Friction Sensitivity Test

A UN Series 3 (b), Friction Sensitivity Test, using the ABL friction apparatus was conducted on the M6 propellant grains. Friction sensitivity tests determine the response of an energetic material sample when subjected to frictional forces at a given velocity. In the ABL Friction Test, the sample is placed on an anvil, and a known force is applied hydraulically through a stationary wheel. A

pendulum or motor drive is used to propel the sliding anvil at any of several standard velocities perpendicular to the force vector. Sample initiation can be detected by visual means (spark or flame).

Substances with TIL values equal to or more sensitive than PETN are forbidden for shipment in the dry state. PETN has a TIL value of 13 lb_f @ 8 ft/s.

The M6 propellant had a TIL value of 140 lb_f @ 8 ft/s. It should be noted that in only small spark or odor was observed for GO trials and in no trial were a GO was recorded was the sample consumed. Non-the less, a spark or combustion products were observed and thus recorded as GO's.

External Fire Test

A UN Series 6(c), External Fire Test, was performed using a single Super Sack[®] Container filled with 800 pounds of Reclaimed M6 Propellant (Photo 7).

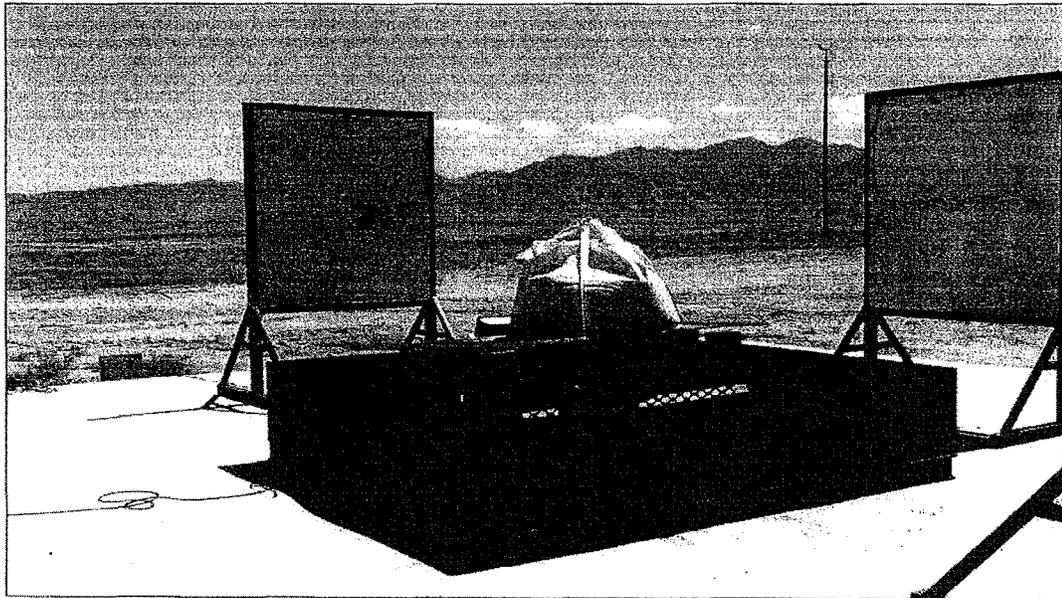


Photo 4: External Fire Test Setup with Reclaimed M6 Propellant

The 800 pounds of reclaimed M6 propellant in the Super Sack[®] Container ignited and burned in approximately 12 seconds. Per Table 16.2, this is indicative a Division 1.3 substance. A large fireball measuring approximately 35 feet in diameter was observed at the peak of the reaction. No mass explosion was observed.

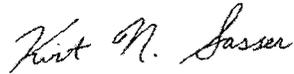
Hazards Analysis:

A hazards assessment reviewing shipping in the Super Sack[®] Container was performed by SMS (see Ref 3). This assessment shows that shipping in the Super Sacks would be acceptable within the confines of a Special Permit as the overall major hazard is a mass fire with no potential for explosion and due to the relatively insensitive nature of the large grain M6 propellant.

Conclusions and Recommendation:

Behavior of reclaimed M6 propellant in the Super Sack[®] Container is consistent with a recommendation into hazards division 1.3C.

Thank you,



Kirt N. Sasser
Director of Engineering & Testing
Safety Management Services, Inc.

**FAILURE MODES AND EFFECTS ANALYSIS
LOADING AND TRANSPORTATION OF M6 PROPELLANT**

APPENDIX A

Failure Modes and Effects Analysis (FMEA) Table

ITEM No.	OPERATION / ITEM	FAILURE MODE	FAILURE CAUSE	POTENTIAL EFFECTS	DESIGN SAFETY	HAZ. CAT.	RECOMMENDATIONS
Propellant Loading/ unloading from truck							
1A	Propellant Loading/ unloading from truck	ESD initiation during loading operation	Forklift becomes charged; discharge occurs to M6 propellant	Localized ignition propagates to M6 propellant, operator injury or fatality	Forklift and Super Sack® are both isolated from ground and expected to be at same potential Grounding methods used for all loading and unloading operations involving explosives; use make- before-brake principle to limit ESD potential Super Sack® designed with CROHMIQ blue™ static dissipative fabrics	1C	None
1B	Propellant Loading/ unloading from truck	ESD initiation during loading operation	Bags becomes charged; discharge occurs to M6 propellant	Localized ignition propagates to M6 propellant, operator injury or fatality	Grains are glazed with graphite which should minimize ESD potential Super Sack® designed with CROHMIQ blue™ static dissipative fabrics	1D	Determine electrical charging potential for forklift and loaded Super Sack® using a static meter; determine and document safety factor or address ESD potential if safety factor is not adequate. (SAR EXSI-01)

**FAILURE MODES AND EFFECTS ANALYSIS
LOADING AND TRANSPORTATION OF M6 PROPELLANT**

ITEM No.	OPERATION / ITEM	FAILURE MODE	FAILURE CAUSE	POTENTIAL EFFECTS	DESIGN SAFETY	HAZ. CAT.	RECOMMENDATIONS
1C	Propellant Loading/unloading from truck	ESD initiation during loading operation	Forklift becomes charged; discharge occurs when forklift approaches truck or separates bag from truck	Localized ignition propagates to M6 propellant, operator injury or fatality	Grounding methods used for all loading and unloading operations involving explosives; use make-before-brake principle to limit ESD potential Super Sack® designed with CROHMIQ blue™ static dissipative fabrics	1D	None
1D	Propellant Loading/unloading from truck	Friction or impact initiation of M6 propellant	Forklift strikes Super Sack® resulting in friction or impact ignition of M6 propellant		Forklift operator training in accordance with Powered Industrial Truck (PIT) regulations (Ref: OSHA 29CFR1910.178) Impact sensitivity of M6 propellant is 21 cm (Ref: SMS-2387-R1). This level of impact is expected only during another significant event such as a vehicular accident	1D	None
1E	Propellant Loading/unloading from truck	Impact initiation of M6 propellant due to collision between the transporter and a stationary object	- Driver not qualified or trained regarding site specific hazards - Driver inattention - Vehicle not chocked - Congested loading area	Property damage Potential for worker injury Fire in transporter	Contractor safety program Compliance with DOT regulations for licensing, training, inspections, placarding, etc.	2B	- Define the route of travel for vehicles while on the Explo Systems' facility - Review shipping and loading procedures and training to ensure personnel understand requirements and design safety requirements are implemented. Provide recommendations as necessary to ensure design safety is effective and risk level is acceptable (SAR EXSI-02)

**FAILURE MODES AND EFFECTS ANALYSIS
LOADING AND TRANSPORTATION OF M6 PROPELLANT**

ITEM No.	OPERATION / ITEM	FAILURE MODE	FAILURE CAUSE	POTENTIAL EFFECTS	DESIGN SAFETY	HAZ. CAT.	RECOMMENDATIONS
1F	Propellant Loading/ unloading from truck	Impact/Friction initiation of M6 propellant	Tools used in handling M6 propellant causes impact /friction stimulus and ignition	Localized ignition propagates to bulk M6 propellant Injury of personnel	Training for specific procedures and tasks Tools identified within each procedure Procedure review and approval	1C	Ensure training instructs personnel that only approved tools and methods can be used during loading operations (SAR EXSI-03)
1G	Propellant Loading/ unloading from truck	Impact initiation of M6 propellant	Forklift (or other vehicle) collides with Super Sack® - Worker inattention - Unqualified drive - Truck not chocked - Unqualified material handler Forklift failure causes Super Sack® to drop - Hydraulic failure - Mechanical failure - Electrical failure Pallet is damaged Pallet fails Wrong pallet jack is used	Local spill leading to ignition of M6 propellant Fire/ explosion Personnel injury or fatality	Forklift training and certification program Forklift operator training in accordance with PIT regulations (Ref: OSHA 29CFR1910.178) Training for specific procedures and tasks	1D	- Positively secure the Super Sack® I to each other and/ or to the pallet - Provide designated pallets for the Super Sack® operation - Pallets should be included in the Mechanical Integrity program. MI program should include periodic inspection for wear and damage criteria for replacement - Obtain pallets from a reliable vendor; Store and stage pallets in a dedicated clean location (SAR-EXSI-04).

**FAILURE MODES AND EFFECTS ANALYSIS
LOADING AND TRANSPORTATION OF M6 PROPELLANT**

ITEM No.	OPERATION / ITEM	FAILURE MODE	FAILURE CAUSE	POTENTIAL EFFECTS	DESIGN SAFETY	HAZ. CAT.	RECOMMENDATIONS
1H	Propellant Loading/ unloading from truck	Impact initiation of M6 propellant	Loading dock failure (missing wooden boards, dock collapses, etc.)	Serious personnel injury or fatality damage to building, fire/explosion	M6 propellant passed the UN Impact sensitivity test. The receiving dock is on PM schedule. Loading dock constructed primarily of concrete in accordance with building codes	1D	None
1I	Propellant Loading/ unloading from truck	Impact initiation of M6 propellant	Super Sack® collides with stationary object (moving the Super Sack® from the forklift onto the truck or on to dock)	Serious personnel injury or fatality Damage to property Fire/explosion	Delivery personnel and operators are instructed on safe handling procedures of energetic materials. M6 propellant passed the UN Impact sensitivity test.	1D	Provide administrative controls to limit the amount of shipping containers being receiving and the presence of other items on the dock; prohibit Super Sack® from accumulating on dock by requiring timely transfer to truck. (SAR EXSI-05)
1J	Propellant Loading/ unloading from truck	Impact initiation of M6 propellant	Shipping container of other material collides with Super Sack®	Serious personnel injury or fatality Damage to property Fire/explosion	Delivery personnel and operators are instructed on safe handling procedures of energetic materials.	1D	None
1K	Propellant Loading/ unloading from truck	Impact initiation of M6 propellant	Foreign object impacts Super Sack® (bullet impact, ice from roof, hail storm, object from roof, etc.)	Serious personnel injury or fatality Damage to property Fire/explosion	Transporter should be covered to minimized chance of impact. Tractor trailer to be constructed of metal walls	1D	TBD

**FAILURE MODES AND EFFECTS ANALYSIS
LOADING AND TRANSPORTATION OF M6 PROPELLANT**

ITEM No.	OPERATION / ITEM	FAILURE MODE	FAILURE CAUSE	POTENTIAL EFFECTS	DESIGN SAFETY	HAZ. CAT.	RECOMMENDATIONS
1L	Propellant Loading/ unloading from truck	Thermal initiation of M6 propellant	External fire: - vehicle fire - transporter fire - fire external to vehicle due to failure	Ignition of M6 propellant leading to fire or explosion Property damage Personnel injury or fatality	Preventive maintenance on forklift or PIT Compliance with DOT regulations for licensing, training, inspections, placarding, etc.	3C	Consider restricting vehicles / PIT from operating or parking within 50 feet of M6 propellant loading area (SAR EXSI-06)
1L	Propellant Loading/ unloading from truck	Rapid thermal initiation of M6 propellant	External fire: - vehicle fire - transporter fire - fire external to vehicle due to traffic accident Super Sack® allows for heat to access the propellant more rapidly than fiberboard drums	Rapid ignition of M6 propellant leading to fire or explosion Property damage Personnel injury or fatality	Preventive maintenance on forklift or PIT Compliance with DOT regulations for licensing, training, inspections, placarding, etc. Transporter trailer should provide adequate protection to Super Sack® to allow occupants to escape	1D	None
1M	Propellant Loading/ unloading from truck	Thermal initiation of M6 propellant	Exposed hot surfaces or generation of sparks ignite M6 propellant	Localized ignition propagates to M6 propellant, operator injury or fatality	Forklift operator training in accordance with Powered Industrial Truck (PIT) regulations (Ref: OSHA 29CFR1910.178) Regular housekeeping performed minimized dust accumulation	1D	Ensure PIT handling M6 propellant is EX rated and operators, training and inspections comply with OSHA 29CFR1910.178. (SAR EXSI-07)

**FAILURE MODES AND EFFECTS ANALYSIS
LOADING AND TRANSPORTATION OF M6 PROPELLANT**

ITEM No.	OPERATION / ITEM	FAILURE MODE	FAILURE CAUSE	POTENTIAL EFFECTS	DESIGN SAFETY	HAZ. CAT.	RECOMMENDATIONS
1N	Propellant Loading/ unloading from truck	ESD or thermal initiation of M6 propellant residue in Super Sack®	Thin layer of M6 propellant dust or residue in Super Sack® is prone to ignition by external stimuli, particularly thermal or ESD	Fire in the storage room/ building Potential for worker injury	Super Sack® should not be contaminated significantly because M6 propellant is cured, in pellet form	3C	Incorporate the following into the appropriate SOP: - Super Sack® should be inspected for tears, penetrations, worn areas including seams or other damage prior to use. - Super Sack® should be inspected for excessive residue or remaining grains (SAR EXSI-08)
1O	Propellant Loading/ unloading from truck	Thermal initiation of M6 propellant	External fire (brush fire)	Serious personnel injury or fatality, Damage to property Fire/explosion	Emergency plans for the entire plant are present. Trained fire fighters (in handling explosives) would be responding to the fire.	1D	None
1P	Propellant Loading/ unloading from truck	Material out of place	M6 propellant grain(s) in folds of bag or otherwise external to bag during or after loading on truck	Localized ignition propagates to M6 propellant, operator injury or fatality Or Small isolated fire	Unknown	1C	Implement administrative controls to clean the exterior of the bags after loading prior to transportation. (SAR EXSI-11)
1Q	Propellant Loading/ unloading from truck	External stimuli	Lightning strikes facility	Ignition of M6 propellant leading to fire or explosion Property damage Personnel injury or fatality	Unknown	1C	Implement administrative controls to prevent loading of M6 propellant when storms approach within 8-10 miles; Consider installing lightning protection for building. (SAR EXSI-09)

**FAILURE MODES AND EFFECTS ANALYSIS
LOADING AND TRANSPORTATION OF M6 PROPELLANT**

ITEM No.	OPERATION / ITEM	FAILURE MODE	FAILURE CAUSE	POTENTIAL EFFECTS	DESIGN SAFETY	HAZ. CAT.	RECOMMENDATIONS
1R	Propellant Loading/ unloading from truck	Friction, Impact, ESD Thermal initiation of spilled M6 propellant And Material out of place	Deviation from established procedure Worker inattention causing overfilling of Super Sack®	Local spill leading to ignition of M6 propellant Injury	Training for specific procedures and tasks. Procedures require the spills be cleaned up promptly	3D	Develop proper method and procedures for cleanup of spilled M6 propellant grains; provide training (SAR EXSI-10)
1S	Propellant Loading/ unloading from truck	Damaged shipping bag/ container	M6 propellant shifted in transit Deviation from established procedure Worker inattention Sharp edges/ metal edges on transport vehicles or storage location	Bag contents leak causing local spill, contact with ignition source (e.g. catalytic converter, hot exhaust pipe, road flare, etc.) Property damage, Potential for injury or fatality	Training for specific procedures and tasks. Evaluation and selection of vendors Inspection of Super Sack® prior to use Super Sacks® are stored in designated location prior to use	1D	Incorporate the following into the appropriate SOP: - Super Sack® should be inspected for tears, penetrations, worn areas including seams or other damage prior to use. - Super Sack® should be inspected for excessive residue or remaining grains (SAR EXSI-08)
1T	Propellant Loading/ unloading from truck	Employee exposure	Employee attempts to lift, move or adjust Super Sack® position	Serious injury	Training for specific procedures and tasks. Loaded Super Sack® is 800 lbs and personnel not expected to attempt moving (General safety training and/ or back safety training sufficient)	2D	None

**FAILURE MODES AND EFFECTS ANALYSIS
LOADING AND TRANSPORTATION OF M6 PROPELLANT**

ITEM No.	OPERATION / ITEM	FAILURE MODE	FAILURE CAUSE	POTENTIAL EFFECTS	DESIGN SAFETY	HAZ. CAT.	RECOMMENDATIONS
M6 Propellant Transportation on Public Roads							
2A	M6 Propellant Transportation on public roads	Impact initiation of M6 propellant due to collision during transport over public roads	- Driver not qualified - Vehicle accident	Property damage Potential for driver injury Injury to public Fire on truck	Compliance with DOT regulations for licensing, training, inspections, placarding, etc. Material is properly classified for shipment and permitted on public roads	2D	None
2B	M6 Propellant Transportation on public roads	ESD initiation of M6 propellant during transport over public roads	Grains rubbing against each other and the Super Sack® (and separating -- triboelectric charging) generates electrical charge buildup and subsequent ESD	Property damage Potential for driver injury Injury to public Fire on truck	Compliance with DOT regulations for licensing, training, inspections, placarding, etc. Material is properly classified for shipment and permitted on public roads Super Sack® designed with CROHMIQ blue™ static dissipative fabrics	2C	None

**FAILURE MODES AND EFFECTS ANALYSIS
LOADING AND TRANSPORTATION OF M6 PROPELLANT**

ITEM No.	OPERATION / ITEM	FAILURE MODE	FAILURE CAUSE	POTENTIAL EFFECTS	DESIGN SAFETY	HAZ. CAT.	RECOMMENDATIONS
2C	M6 Propellant Transportation on public roads	Friction initiation of M6 propellant during transport over public roads	Grains rubbing against each other result in initiation Grains rub against metal or other surface resulting in friction initiation	Property damage Potential for driver injury Injury to public Fire on truck	Compliance with DOT regulations for licensing, training, inspections, placarding, etc. Material is properly classified for shipment and permitted on public roads M6 propellant is relatively insensitive to friction initiation; 240 lbf @ 8 ft/s (Ref: SMS-2387-R1) Cloth Super Sack® separates M6 propellant grains from all metal surfaces	2D	None
2D	M6 Propellant Transportation on public roads	Friction/ impact initiation of M6 propellant	Tractor, trailer collision during transportation <ul style="list-style-type: none"> • Driver error • Mechanical, structural, or similar failure of tractor, trailer (e.g. trailer king pin not secured by tractor 5th wheel) • Weather conditions 	Property damage Potential for driver injury or fatality Injury to public Fire on truck	Regulated speed limits Daily vehicle inspections Periodic inspections are performed of the king pin Transportation should not proceed when severe weather warnings are in effect or if road conditions are deemed unsuitable by supervision	1D	None

**FAILURE MODES AND EFFECTS ANALYSIS
LOADING AND TRANSPORTATION OF M6 PROPELLANT**

ITEM No.	OPERATION / ITEM	FAILURE MODE	FAILURE CAUSE	POTENTIAL EFFECTS	DESIGN SAFETY	HAZ. CAT.	RECOMMENDATIONS
2E	M6 Propellant Transportation on public roads	Thermal initiation of M6 propellant	<ul style="list-style-type: none"> - Vehicle accident - Vehicle fire - Lightning strike 	<p>Property damage</p> <p>Potential for driver injury</p> <p>Injury to public</p> <p>Fire on truck</p>	<p>Compliance with DOT regulations for licensing, training, inspections, placarding, etc.</p> <p>Material is properly classified for shipment and permitted on public roads</p> <p>The maximum quantity of M6 propellant (40 supper sacks or 32,000 lbs) produces less energy (BTU) than a typical tanker truck carrying gasoline or fuel oil, No.2. Gasoline approx. 125,000 BTU/gal or 18,900 BTU/lb and No.2 fuel oil approx. 139,000 BTU/gal and 48 KJ/g versus propellants that range from 1500-1800 BTU/lb and 2-7 KJ/g, substantially less than petroleum based fuels.</p>	1D	None
2F	M6 Propellant Transportation on public roads	Decomposition; M6 propellant becomes unstable after producing nitrogen oxides	Nitrocellulose (NC) naturally loses nitrogen oxides	<p>Property damage</p> <p>Potential for driver injury</p> <p>Injury to public</p> <p>Fire on truck</p>	<p>DNT stabilizes NC by absorbing nitrogen oxides; DNT is substantial percentage of formulation to stabilize the M6 propellant</p> <p>All reclaimed propellant is checked to ensure still stable.</p>	2E	None

**FAILURE MODES AND EFFECTS ANALYSIS
LOADING AND TRANSPORTATION OF M6 PROPELLANT
APPENDIX B**

Hazard Risk Assessment Matrix

Frequency of Occurrence	Hazard Category			
	(1) Catastrophic	(2) Critical	(3) Marginal	(4) Negligible
(A) Frequent	1A	2A	3A	4A
(B) Probable	1B	2B	3B	4B
(C) Occasional	1C	2C	3C	4C
(D) Remote	1D	2D	3D	4D
(E) Improbable	1E	2E	3E	4E

I.

High
 Serious
 Medium
 Low

II.

HAZARD SEVERITY CATEGORY DEFINITIONS

Description	Category	Definition
Catastrophic	1	Death or system loss.
Critical	2	Severe injury, occupational illness, or major system damage
Marginal	3	Injury requiring medical attention, illness, or system damage
Negligible	4	Possible minor injury, or minor system damage

HAZARD FREQUENCY DEFINITIONS

Description	Frequency	Definition
Frequent	A	Expected to occur frequently
Probable	B	Will occur several times in the life of an item.
Occasional	C	Likely to occur some time in the life of an item.
Remote	D	Unlikely but possible to occur in the life of an item.
Improbable	E	So unlikely, it can be assumed occurrence may not be experienced.

The Hazard and Frequency categories defined above are used by SMS as a tool to rank potential hazards identified in the FMEA line items, and are assigned to all recommendations issued. Implementation of recommendations is the responsibility of the client. Also, the client is responsible for defining the level of risk to facilities and personnel, which the client is willing to accept. SMS will act in an advisory capacity only in matters concerning acceptance of risk and recommendation implementation

Dennis Schulz/RDN/Austin

09/07/2012 10:30 AM

To terrywright@explosystems.com

cc Margit Chevalier/RDN/Austin@Austin, Tom
Justice/RDN/Mfg/Austin@Austin

bcc

Subject Update and Questions

We are moving forward with our plans for making a packaged product.
We had a very good Thursday meeting yesterday and we have a couple simple questions.

1. What does the different color indicate? More or Less Stabilizer?
2. What is the net weight for the super sacks?
3. Is there a discharge spout on the bottom of the super sacks?

Thanks!
Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Dennis Schulz/RDN/Austin
09/07/2012 02:35 PM

To Terry Wright <terrywright@explosystems.com>
cc margit.chavalier@austinpowder.com,
tom.justice@austinpowder.com
bcc
Subject RE: Update and Questions

Thanks Terry,

New question - there is a comment somewhere in the documents about moisture - reducing the stabilizer.
Have you heard of this?
I will get the quote if you need it.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

RE: Update and Questions

RE: Update and Questions

Terry Wright to: 'Dennis Schulz'

09/07/2012 02:30 PM

Cc: tom.justice, margit.chavalier

Denny

I am glad to hear everything is moving forward. Here are your answers and have a great weekend.

The stabilizers are in the propellant not on it. The color difference is related to the amount of graphite used to get the flow characteristics necessary for loading the various extruders. Sometimes the coating process is better than others or more or less is needed on a particular machine.

The net weight on the super sacks is 880#.

There is a bottom discharge on the super sack with a flow control throat.

I hope this answers your questions

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.

Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

-----Original Message-----

From: Dennis Schulz [mailto:Dennis.Schulz@austinpowder.com]
Sent: Friday, September 07, 2012 9:31 AM
To: terrywright@explosystems.com
Cc: Margit Chevalier; Tom Justice
Subject: Update and Questions

We are moving forward with our plans for making a packaged product.
We had a very good Thursday meeting yesterday and we have a couple simple questions.

1. What does the different color indicate? More or Less Stabilizer?
2. What is the net weight for the super sacks?
3. Is there a discharge spout on the bottom of the super sacks?

Thanks!
Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2012.0.2197 / Virus Database: 2437/5254 - Release Date: 09/07/12



Margit Chevalier/RDN/Austin

09/10/2012 02:11 PM

To Tom Justice/RDN/Mfg/Austin@Austin

cc

bcc

Subject Re: quick cool 503 in R&D lab

History:

 This message has been replied to and forwarded.

We just hand crank from a 3/4" to 1/2", 10ft long pipe / 0.5" ID, 50 sec for the product to run through (haven't done the lbs/min on that, maybe you could)

I know we need to come up with a higher flow rate and maybe larger diameter decrease to simulate anything close to production. I do need help on that.

Margit Chevalier | Austin Powder Company **R&D** | 430 Powder Plant Rd | McArthur, OH 45651 | (Office)
740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com

Tom Justice

Margit, How fast are you pumping the product th...

09/10/2012 01:24:05 PM

From: Tom Justice/RDN/Mfg/Austin
To: Margit Chevalier/RDN/Austin@Austin
Cc: Dennis Schulz/RDN/Austin@Austin
Date: 09/10/2012 01:24 PM
Subject: Re: quick cool 503 in R&D lab

Margit,

How fast are you pumping the product through that tube?

Tom Justice
Project Manager
Austin Powder Co.
Work : 740-596-5286 ext. 7427
Cell : 740-503-4567
Fax : 740-596-5396
Email : tom.justice@austinpowder.com

Margit Chevalier

Thought you might look at the data and lab setu...

09/10/2012 01:10:49 PM



Margit Chevalier/RDN/Austin

09/13/2012 11:08 AM

To Bob Hivick/RDN/Mfg/Austin@Austin, Tom Justice/RDN/Mfg/Austin@Austin, Mike Abele/RDN/Mfg/Austin@Austin, Dennis

cc

bcc

Subject Summary of all blends and shooting on M6 so far

FYI

we've been testing since May....all data is in the electronic notebook....



M6 shooting data 09132012.xls

M

Margit Chevalier | Austin Powder Company **R&D** | 430 Powder Plant Rd | McArthur, OH 45651 | (Office) 740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com

12SE12A1 50 Hydrox 503

12SE12A1 60 Hydrox 503

Age (days)	Comments
------------	----------

2 x 16 AT
 2 x 16 AT
 2 x 16 AT
 DOT test, three repeats

2 x 16 AT
 2 x 16 AT
 2 x 16 AT
 DOT test, three repeats

2 x 16 AT
 2 x 16 AT
 2 x 16 AT
 DOT test, three repeats

2 x 16 V
 2 x 16 V
 2 x 16 V

2 x 16 V
 2 x 16 V
 2 x 16 V

2 x 16 V
 2 x 16 V
 2 x 16 V

4	2 x 16 V, witness cord
4	2 x 16 V, witness cord
3cy	2 x 16 V, witness cord
3cy	2 x 16 V, witness cord
19	2 x 16 V, witness cord
19	2 x 16 V, witness cord
	DOT test, one time
6cy	2 x 16 V, witness cord
6cy	2 x 16 V, witness cord
3	2 x 16 V, witness cord
3	2 x 16 V, witness cord
3cy	2 x 16 V, witness cord
3cy	2 x 16 V, witness cord
4	2 x 16 V, witness cord
4	2 x 16 V, witness cord

Dennis Schulz/RDN/Austin

10/09/2012 12:58 PM

To Margit Chevalier/RDN/Austin@Austin, Tom
Justice/RDN/Mfg/Austin@Austin

cc

bcc

Subject Fw: Burn Test

Please keep to yourselves.
I talked to Keith before I sent this and he wants the data as well.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

----- Forwarded by Dennis Schulz/RDN/Austin on 10/09/2012 12:57 PM -----

From: Dennis Schulz/RDN/Austin
To: Keith Mills/RDN/Austin@Austin
Date: 10/09/2012 12:57 PM
Subject: Burn Test

Keith,

We would like to do a burn test of a larger amount of the M6 propellant / emulsion product.
We think it is appropriate to begin small and then get to a larger sample - perhaps as much as 100 lbs.
We also want to try to burn this product with another aluminized product, such as Emulex 927.

I don't see a problem with this, especially if we start small. The data is needed to help APC make an informed decision regarding this product.

We have enough material to begin testing, the smaller quantities, right now.
Please let me know what needs to be done to accomplish this task.

Thanks!
Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Dennis Schulz/RDN/Austin

10/09/2012 04:02 PM

To Tom Justice/RDN/Mfg/Austin@Austin, Tom
Reed/RDN/Mfg/Austin@Austin, Broderick
Speraw/RDN/Austin@Austin, Margit
cc Keith Mills/RDN/Austin@Austin

bcc

Subject M6 Packaging Test

This morning we tested several different potential methods of packaging the material.

We made 8 bags - 4" x 20 lbs. (160 lbs.), labelled as AXE bulk - 09OC12A1

The R&D project number for this is C229/41.

The product will be stored in ambient until it can be used in a burn test.

Summary:

- It appears that the simultaneous filling of the M6 and emulsion will work. This means it wouldn't be necessary to blend, store, auger or pump the blended product.
- Pumping the emulsion through the inner mandrel appeared to give better mixing and be a cleaner system
- The 0.75" inner mandrel appeared to be better than the 1.5"
- It seems like the product opens the bag well enough that it won't be necessary to push the bag to the top of the mandrel and load from the bottom of the bag.
- Very low pumping pressures and mostly good flow of propellant through the annulus.
- Overall very encouraging.

Next Step

- Repeat the Trials with the emulsion in the 0.75" inner mandrel and the propellant in the annulus using a "warm" Hydromite 600/800 matrix to see what the thicker emulsion does to the mixing and pumping pressures.

Here are my notes from the Trials:

All tests were run using:

1. Nominal 40% M6 and 60% Hydrox 503 at ambient.
2. Filled the 20 lbs. in 13 seconds (92 lb/min. or 4 bags/min.)
3. The propellant (8 lbs) was pre-weighed and misted with water.
4. The propellant was manually poured in the top of the system at a rate to approximate the 13 second filling time.

Trial #1 - Bag #1

- A single 3/4" id mandrel was placed in a bag, to the bottom of the bag.
- The 8 lbs of M6 was poured around the 3/4" mandrel.
- The emulsion was then pumped at the 12 lbs in 13 seconds rate to approximate filling in 13 seconds.
- The bag was lowered as the emulsion filled the bag.

Results:

- The emulsion mixed into the propellant well.
- The extent of mixing was entirely depended on the rate the bag was lowered.
If the bag was lowered too fast, there was unblended propellant
If the bag was lowered too slow, there was a section of mostly emulsion
- Overall a relatively clean system, only a little emulsion stuck to the outside of the mandrel
- For this method to work properly the lowering of the bag would have to be exactly synchronized with the emulsion pumping

Trial #2A - Bag #2

- A two mandrel set-up with a 3" outer mandrel with a 1.5" id inner mandrel was placed in a bag, to the bottom of the bag.
- The 8 lbs. of M6 was poured in the annulus simultaneous with pumping the emulsion through the inner mandrel.
- The bag was lowered as the M6 and emulsion filled the bag.

Results:

- The emulsion mixed into the propellant well.
- Problems getting the propellant to flow evenly through the entire annulus - it was a problem with the set-up, the inner mandrel had moved over to one side.
- Overall a relatively clean system, very little emulsion dripped after loading
- For this method to work properly the lowering of the bag would have to be exactly synchronized with the emulsion pumping

Trial #2B - Bag #3

- Same two mandrel set-up with a 3" outer mandrel, but an 0.75" id inner mandrel was placed in a bag, to the bottom of the bag.
- The 8 lbs. of M6 was poured in the annulus simultaneous with pumping the emulsion through the inner mandrel.
- The bag was lowered as the M6 and emulsion filled the bag.

Results:

- The emulsion mixed into the propellant well. Perhaps slightly better than Trial #2A with the larger inner mandrel
- Problems
- Overall a very clean system, very little emulsion (even less than #2A) dripped after loading
- For this method to work properly the lowering of the bag would have to be exactly synchronized with the emulsion pumping

Trial #3 - Bag #4

- Same mandrel set-up as in Trial #2B A two mandrel set-up with a 3" outer mandrel with a 1.5" id inner mandrel was placed in a bag.
- The bag was only put a couple inches up the mandrel, with the bottom on the floor.

Results:

- The emulsion mixed into the propellant well.
- Overall a very clean system, very little emulsion dripped after loading. There were no problems with the product not opening the bag or bridging off.
- This method of leaving the bag on the floor and filling from the top will work without the operator needed to gauge the speed of filling.

Trial #4 - Bag #5

- A two mandrel set-up with a 3" outer mandrel with a 2" id inner mandrel was placed in a bag, to the bottom of the bag.
- The 8 lbs. of M6 was poured in the inner mandrel with the emulsion being pumped through the annulus.
- The bag was lowered as the M6 and emulsion filled the bag.

Results:

- The propellant in the center of the bag did not mix as well into the emulsion. In the other cases it appeared the emulsion "seeped" to the outer edge of the bag. In this case we didn't see the M6 migrating to the outer edge of the bag
- Overall not as clean a system as the trials with the emulsion in the middle and the M6 in the annulus.

Trial #5A - Bag #6

- A repeat of the two mandrel set-up with a 3" outer mandrel with a 0.75" id inner mandrel with the bag on the floor. In this case the inner mandrel was centered in the outer mandrel.
- The 8 lbs. of M6 was poured in the annulus simultaneous with pumping the emulsion through the inner mandrel.

Results:

- My initial thought was that the mixing wasn't as good. But looking late indicated good mixing

Trial #5B - Bag #7 - repeat of Trial #5A to see if the results would be the same with better propellant pouring. The results were the same.

Trial #6 - Bag #8

- Brody's set-up with a single 3" mandrel.
- The emulsion was pumped into the middle inlet of a tee at the top of the mandrel and the M6 was poured from the top section of the tee.
- Essentially the emulsion and M6 met and mixed at the top of the 3" mandrel.
- The bag was filled with the bag on the ground.

Results:

- The emulsion mixed into the propellant well.
- A little less consistent filling - more globs of product.
- OK system for the bag, but it looked like the emulsion and propellant that stuck to the side of the mandrel would leak onto the floor over time.

An excellent effort by all involved!

Denny

Dennis Schulz

Austin Powder

Office: 740.596.5286

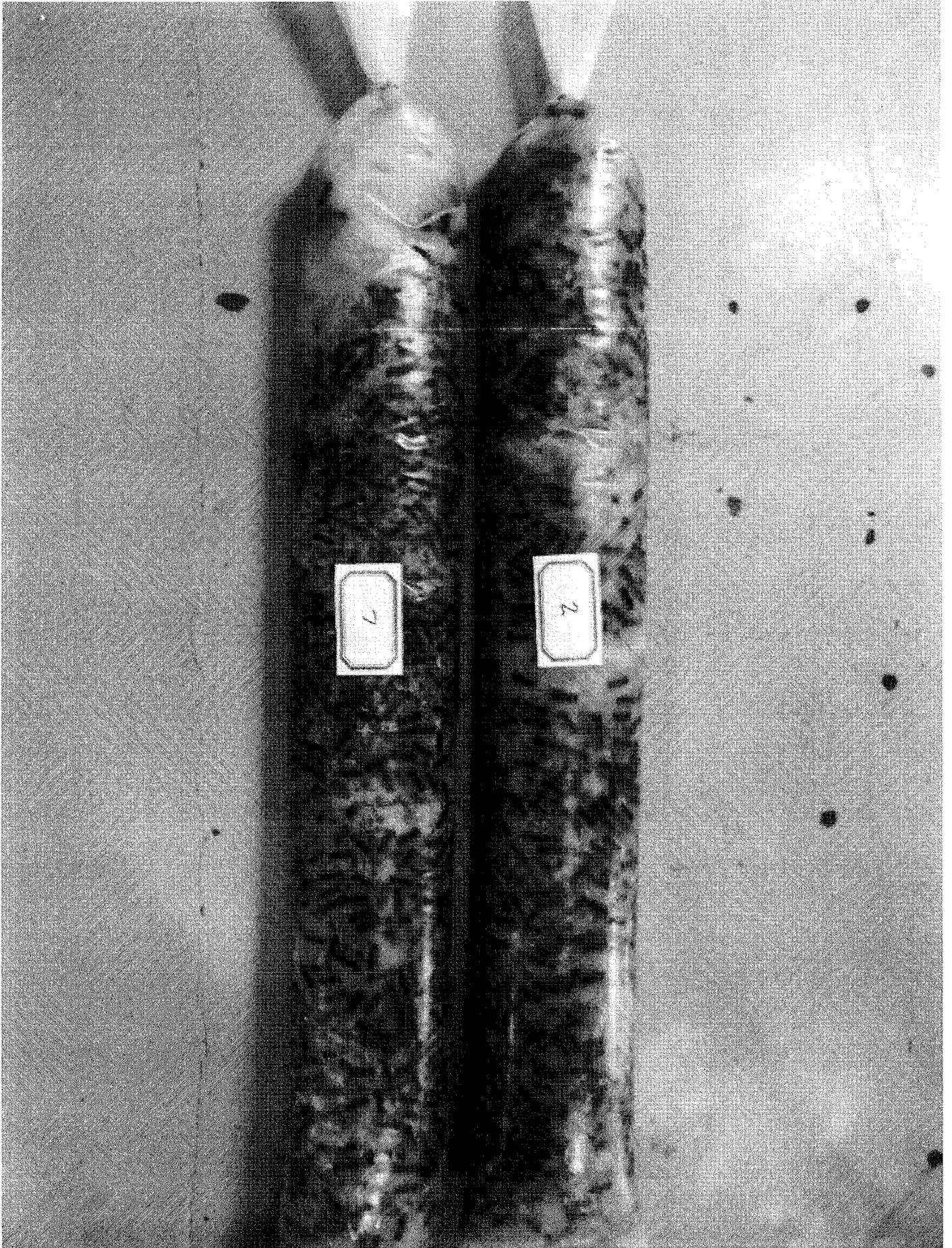
Mobile: 740.649.3933



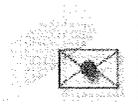
M6 004.jpg



M6 001.jpg







**Broderick
Speraw/RDN/Austin**
05/01/2013 11:40 AM

To Tom Justice/RDN/Mfg/Austin@Austin
cc
bcc
Subject Fw: M6 Production Building

Broderick Speraw
Project Engineer
Austin Powder Company
Phone: 740-596-5286 ext. 7415
Fax: 740-596-5396
Email: broderick.speraw@austinpowder.com
----- Forwarded by Broderick Speraw/RDN/Austin on 05/01/2013 11:40 AM -----

From: Brenda Harden <harden@rvcarchitects.com>
To: <broderick.speraw@austinpowder.com>
Date: 05/01/2013 09:53 AM
Subject: M6 Production Building

Brody, please see attached letter. Contact John Valentour if you have any questions.
His email is valentour@rvcarchitects.com



Austin Powder M6 .pdf



ARCHITECTS, INC.

131 WEST STATE STREET • ATHENS, OH 45701
740.592.5615 (TEL) • 740.593.8811 (FAX)
RVC@RVCARCHITECTS.COM (EMAIL)

April 29, 2013

Brody Speraw, Project Engineer
Austin Powder Company
430 Powder Plant Road
McArthur, Ohio 45651

Re: M-6 Production Building

Brody:

The following is a summary of the proposed M-6 building project. The plans you generated indicated the structure would be approximately 780 square feet with a mezzanine of an additional 300 square feet. Docks and loading areas will be located on three sides of the facility. The material mezzanine will be equipped with a crane to lift material to the upper level. From there the material will be fed down to the production floor below. Due to the nature of this material the mezzanine walls and floor will be poured concrete. The remainder of the structure will be a modified pre-engineered metal building. A small hydraulic/electric room will be attached to the structure. I discussed the concrete mezzanine design with my Structural Engineer and he suggested the most reasonable way to achieve the second level concrete walls and floor would be to build these walls from the ground up. This would occur only at the mezzanine footprint. The production area would be fully open with a column supporting the mezzanine floor/wall on this elevation.

The metal building walls/roof system will be constructed with sandwich panels with the inner surface resistant to the chemicals used in the production process. I have been advised that the structural steel frame will need to be painted with a Hi-build epoxy finish similar to a TNEMEC industrial coating.

General lighting would be designed per hazardous location guidelines.

Process equipment, heating, ventilation, and utilities would be the Owner's responsibility and should not be subjected to review by the State of Ohio Building Department.

Following is a summary of potential construction costs for this facility:

General conditions	\$20,000.00
Site grading and development	\$4,000.00
Concrete footings	\$ 9,500.00
Foundation walls @ building and loading dock	\$24,200.00
Slab on grade (building)	\$8,600.00
Slab at docks and parking areas	\$10,000.00
Second floor slab	\$7,600.00
Poured concrete walls	\$32,000.00
Metal building frame and labor	\$7,800.00
Metal building walls	\$17,500.00
Metal building roof system	\$9,500.00
Doors	\$4,500.00
Crane 3-ton	\$29,000.00
Metal Stairs	\$6,300.00
Paint system for exposed metal	\$5,000.00
Electrical service	\$8,300.00
Electrical wiring and fixtures	\$12,000.00
Construction Total:	\$215,800.00

Architectural and Engineering services would be expected to cost approximately 10% of the construction cost. Permit fees to the State of Ohio would be the Owner's responsibility and will cost approximately \$2,500.00.

The project will need to be reviewed by the Board of Building Appeals at the State of Ohio. Architectural costs associated with the appeal process would be billed separately. These costs would be approximately \$2,000.00.

Please contact me with any questions.

Respectfully,

John E. Valentour, Architect

Keith Mills/RDN/Austin
05/28/2013 10:52 AM

To Thomas Ethridge/Mfg/Austin@Austin, Larry
McCorkle/RDN/Mfg/Austin@Austin, Tom
Justice/RDN/Mfg/Austin@Austin, Shawn

cc

bcc

Subject Fw: SAFEX Incident Notice IN17-13

History:  This message has been forwarded.

FYI

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

----- Forwarded by Keith Mills/RDN/Austin on 05/28/2013 10:51 AM -----

From: John Brulia/Cle/Austin
To: "Dave True" <dave.true@austinpowder.com>, "Keith Mills" <Keith.Mills@austinpowder.com>
Date: 05/27/2013 03:05 PM
Subject: Fw: SAFEX Incident Notice IN17-13

Fyi

From: SAFEX International [secretariat@safex-international.org]
Sent: 05/27/2013 12:00 PM ZE2
To: John Brulia
Subject: SAFEX Incident Notice IN17-13

Director, Safety & Compliance
AUSTIN POWDER COMPANY

Dear John,

The attached Incident Notice (IN17-13) can be summarised as: There were no injuries but the building sustained some damage when single base propellant initiated during the drying process. The incident occurred in an Australian Munitions facility at Mulwala, New South Wales, Australia on Tuesday, 07 May 2013. Australian Munitions is a business of Thales Australia

Best regards,

Boet Coetzee

Secretary General, SAFEX International (www.safex-international.org)

Tel: +1 919 342 5848; **Tel / Fax:** +27 21 854 4962 **e-mail:** secretariat@safex-international.org



IN17-13 (Australia_SingleBasePropellantFireDuringDrying).pdf

SAFEX
INTERNATIONAL
 (Since 1954)
INCIDENT NOTICE

(Kindly direct all correspondence to the Secretary General)

INCIDENT TITLE: 7 May 2013: Australia - Initiation of single base propellant

DATE POSTED 27 May 2013	REFERENCE IN17-13	SOURCE Member
INCIDENT OUTLINE		
When did it happen?	Tuesday, 7 May 2013 at 10:15	
Who experienced it?	Australian Munitions, a business of Thales Australia Ltd	
Where did it happen?	Mulwala, New South Wales, Australia	
What material was involved?	500 kg of single base propellant	
What happened?	An initiation of single base propellant occurred during a normal production activity involving the drying of water wet propellant. The production activity is carried out remotely from a control room approximately 90m from the building where the incident occurred. The building is fitted with an ultra-high speed fire detection and suppression system that activated as a result of the propellant initiation. The fire system activated the building alarm generating a response by the onsite Emergency Response Team (ERT) who attended the scene and extinguished the fire that was not fully controlled by the automatic fire system.	
Why did it happen – theory?	Under investigation	
What was the impact?	No one was injured as a result of the incident. The building sustained structural damage as a result of fire and the over pressure from the ignition.	

ADDITIONAL INFORMATION

Enclosure None.
Subsequent report An Investigation Report will be issued in due course

COMMENT

Value of incident The true value of this incident will become evident when the Investigation Report is issued. The remote operation certainly prevented possible injuries.

Comment None.

DISTRIBUTED BY: Boet Coetzee
Secretary General, SAFEX International
 (www.safex-international.org)
Tel: +1 919 342 5848; **Tel / Fax:** +27 21 854 4962
e-mail: secretariat@safex-international.org

ENCLOSURE

None

Dennis Schulz/RDN/Austin

09/26/2013 01:34 PM

To Margit Chevalier/RDN/Austin@Austin

cc Tom Justice/RDN/Mfg/Austin@Austin

bcc

Subject Re: M6 bulk density 

Thanks!

0.85 g/cc +/- 0.02 g/cc

7.1 lb/gal +/- 0.2 lb/gal

Denny

Dennis Schulz

Austin Powder Company ♦ P.O. Box 317, 430 Powder Plant Rd. ♦ McArthur, OH 45651
Office: 740.596.5286 ♦ Mobile: 740.649.3933 ♦ Dennis.Schulz@austinpowder.com

Margit Chevalier

Dennis various size containers used to measure...

09/26/2013 01:08:41 PM

From: Margit Chevalier/RDN/Austin
To: Dennis Schulz/RDN/Austin@Austin
Date: 09/26/2013 01:08 PM
Subject: M6 bulk density

Dennis

various size containers used to measure gave us 0.85g/cc +/-0.02 g/cc for dry M6 propellant (same as 90% with 10% emulsion)

M

Margit Chevalier | Austin Powder Company R&D | 430 Powder Plant Rd | McArthur, OH 45651 | (Office)
740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com



Fw: M6 package
Margit Chevalier to Dennis Schulz

10/02/2013 08:49 AM

All I could find was the one I send to Keith about the bulk density. I am looking through my sent folder as well and forward you anything I might have emailed to somebody without cc you and never got a response.

M

Margit Chevalier | Austin Powder Company **R&D** | 430 Powder Plant Rd | McArthur, OH 45651 | (Office)
740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com

----- Forwarded by Margit Chevalier/RDN/Austin on 10/02/2013 08:38 AM -----

From: Keith Mills/RDN/Austin
To: Margit Chevalier/RDN/Austin@Austin
Date: 09/05/2013 02:00 PM
Subject: Re: M6 package

Good thoughts!

Thanks

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

Margit Chevalier Just another idea: M6 particle density is 1.49 g/cc... 09/05/2013 01:29:40 PM

From: Margit Chevalier/RDN/Austin
To: Keith Mills/RDN/Austin@Austin
Date: 09/05/2013 01:29 PM
Subject: M6 package

Just another idea:

M6 particle density is 1.49 g/cc, bulk density is only 0.83 g/cc. A sealed bag would float, a permeable bag like a mesh bag would not. Maybe even the WPP without the liner would work if the water seeps in fast enough.

M

Margit Chevalier | Austin Powder Company **R&D** | 430 Powder Plant Rd | McArthur, OH 45651 | (Office)
740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com



sent M6 emails

Margit Chevalier to Dennis Schulz

10/02/2013 08:56 AM

These were the ones you weren't cc on...

Margit Chevalier | Austin Powder Company **R&D** | 430 Powder Plant Rd | McArthur, OH 45651 | (Office)
740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com

----- Forwarded by Margit Chevalier/RDN/Austin on 10/02/2013 08:54 AM -----

From: Margit Chevalier/RDN/Austin
To: Mike Abele/RDN/Mfg/Austin@Austin
Date: 08/20/2012 08:31 AM
Subject: continue M6 as blend testing

Mike,

just a heads up that we will test 2 sticks of a 40% blend of M6 in unsensitized 600 matrix in a 2" stick tomorrow for booster sensitivity.

This made me aware of what happens if it doesn't shoot? What happens to the waste? Usually it gets all picked up and shoot beneath another sample, just wanting to make sure it is possible to find all the remaining blend.

Your thoughts?

M

Margit Chevalier | Austin Powder Company **R&D** | 430 Powder Plant Rd | McArthur, OH 45651 | (Office)
740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com

----- Forwarded by Margit Chevalier/RDN/Austin on 10/02/2013 08:54 AM -----

From: Margit Chevalier/RDN/Austin
To: Larry McCorkle/RDN/Mfg/Austin@Austin
Date: 09/07/2012 01:53 PM
Subject: M6 in Mag 29

Larry,

just making sure that we can store M6 propellant in the cardboard drum in MAG29 next to the cap sensitive 1.1 product.

If not let me know and we will have to move it back across the road before the upcoming visit.

According to Dennis there should not be an issue, I just want to hear it from you.

M

Margit Chevalier | Austin Powder Company **R&D** | 430 Powder Plant Rd | McArthur, OH 45651 | (Office)
740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com

----- Forwarded by Margit Chevalier/RDN/Austin on 10/02/2013 08:54 AM -----

From: Margit Chevalier/RDN/Austin
To: Mike Abele/RDN/Mfg/Austin@Austin
Date: 09/13/2012 10:02 AM
Subject: Re: plain 503 DOT test

Mike

you never send me an email confirming the samples with the following DSC to have passed the DOT cap sensitivity test:

22MY12A2
22MY12A3

Blend of 503 and M6.

Could you find that info and send it to me as part of the records. I do have the email from you for the 01MY12 A1, A2, A3 testing.

M

Margit Chevalier | Austin Powder Company **R&D** | 430 Powder Plant Rd | McArthur, OH 45651 | (Office)
740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com

Mike Abele From: Mike Abele/RDN/Mfg/Austin To: Margit Chevalier/RDN/Austin@Austin Date: 05/24/2012 09:35:44 AM

From: Mike Abele/RDN/Mfg/Austin
To: Margit Chevalier/RDN/Austin@Austin
Cc: Dennis Schulz/RDN/Austin@Austin
Date: 05/24/2012 09:35 AM
Subject: Re: plain 503 DOT test

Thanks. Your density is 1.34 g/cc @ 70F

Thanks Mile

Margit Chevalier Mike, I went over the top, do not test 503 for cap... Date: 05/22/2012 11:53:34 AM

----- Forwarded by Margit Chevalier/RDN/Austin on 10/02/2013 08:54 AM -----

From: Margit Chevalier/RDN/Austin
To: Mike Abele/RDN/Mfg/Austin@Austin
Date: 09/13/2012 10:07 AM
Subject: DOT test (503 and M6)

In regard to my last email:

We might have decided not to test it since we tested sensitized 503 with the same % M6 and found it not cap sensitive, therefore testing plain 503 with M6 was not needed. So if you can't find it it might be because there was no need to do it.

Just look in the records to make sure.

Thanks

Margit Chevalier | Austin Powder Company **R&D** | 430 Powder Plant Rd | McArthur, OH 45651 | (Office)
740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com

----- Forwarded by Margit Chevalier/RDN/Austin on 10/02/2013 08:54 AM -----

From: Margit Chevalier/RDN/Austin
To: Tom Justice/RDN/Mfg/Austin@Austin
Date: 09/24/2012 03:07 PM
Subject: pics M6 in 503

Here you go



M6 in 503 b.jpg M6 in 503 a.jpg

Margit Chevalier | Austin Powder Company **R&D** | 430 Powder Plant Rd | McArthur, OH 45651 | (Office)
740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com

----- Forwarded by Margit Chevalier/RDN/Austin on 10/02/2013 08:54 AM -----

From: Margit Chevalier/RDN/Austin
To: Mike Abele/RDN/Mfg/Austin@Austin, Mark Fox/RDN/Mfg/Austin@Austin
Date: 10/16/2012 01:14 PM
Subject: large scale burn test - M6

Here is the content of the bins (from the distance camera's point of view)

left bin: 80 lbs 40% M6 in 600 and 50 lbs 927 (made with Al and Expancelis in R&D) - filmed on close up
middle bin: 160 lbs of 40% M6 in 503
right bin: 80 lbs of 40% M6 in 600

You can add that to your report.

M

Margit Chevalier | Austin Powder Company **R&D** | 430 Powder Plant Rd | McArthur, OH 45651 | (Office)
740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com

----- Forwarded by Margit Chevalier/RDN/Austin on 10/02/2013 08:54 AM -----

From: Margit Chevalier/RDN/Austin
To: Tom Justice/RDN/Mfg/Austin@Austin
Date: 02/25/2013 10:59 AM
Subject: M6 blend product

What type of product are you planning for in the set-up : RDT8 or RDT27 fuel based, Sensitized or unsensitized?

Just refresh my memory

M

Margit Chevalier | Austin Powder Company **R&D** | 430 Powder Plant Rd | McArthur, OH 45651 | (Office)
740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com

----- Forwarded by Margit Chevalier/RDN/Austin on 10/02/2013 08:54 AM -----

From: Margit Chevalier/RDN/Austin
To: Tom Justice/RDN/Mfg/Austin@Austin
Date: 02/25/2013 01:21 PM
Subject: Re: M6 blend product

Just like I remembered, Dennis is just not sure about sensitized versus unsensitized. We should make a final on that one for sure cause of the set up...

Margit Chevalier | Austin Powder Company **R&D** | 430 Powder Plant Rd | McArthur, OH 45651 | (Office)
740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com

Tom Justice Actually we will run what ever R&D suggest for u... 02/25/2013 01:16:13 PM

From: Tom Justice/RDN/Mfg/Austin
To: Margit Chevalier/RDN/Austin@Austin
Date: 02/25/2013 01:16 PM
Subject: Re: M6 blend product

Actually we will run what ever R&D suggest for us to run. The last I heard was that you wanted to use RDT27 but every one else wanted to use RDT8. If RDT12 needs to be kept hot I would prefer RDT8 myself. Either one will be unsensitized.

Tom Justice
Project Manager
Austin Powder Co.
Work : 740-596-5286 ext. 7427
Cell : 740-503-4567
Fax : 740-596-5396
Email : tom.justice@austinpowder.com

Margit Chevalier What type of product are you planning for in the... 02/25/2013 10:59:32 AM



Margit Chevalier/RDN/Austin

02/25/2013 10:59 AM

To: Tom Justice/RDN/Mfg/Austin@Austin

cc

Subject: M6 blend product

What type of product are you planning for in the set-up : RDT8 or RDT27 fuel based, Sensitized or unsensitized?

Just refresh my memory

M

Margit Chevalier | Austin Powder Company **R&D** | 430 Powder Plant Rd | McArthur, OH 45651 | (Office)
740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com

We have no interest in this calibration other than to help a prospective customer solve his analytical challenges.

We're very anxious to move forward with this project and would like to know if you have been successful in learning anything more about this.

Best regards,

Fred W. Simpson

Account Manager

T: 724-745-9631

M: 724-810-1180

simpson.f@buch.com

Buchi Corporation

19 Lukens Drive, Suite 400

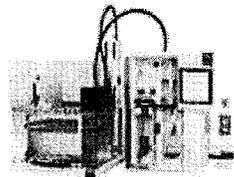
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----- Forwarded by Bob Hivick/RDN/Mfg/Austin on 10/01/2013 02:59 PM -----



Simpson Fred
<simpson.f@buch.com>
05/21/2013 11:50 AM

To "Bob.Hivick@austinpowder.com"
<Bob.Hivick@austinpowder.com>
cc

Subject: FW: M6 Propellant Inquiry (UNCLASSIFIED)

Hello Bob.

I just received the email below from the Head of the DoD's Demil group.

I've done as much as I can with this, and it looks like if you follow her directions, you should be able to secure a copy of the calibration.

I think that it's going to be very important to use her terminology as "GFM" for the calibration.

Please let me know if this is still an active project and you're able to move further with this.

Thanks,

Fred.

Fred W. Simpson
Account Manager
T: 724-745-9631
M: 724-810-1180
simpson.f@buchi.com

Buchi Corporation
19 Lukens Drive, Suite 400
New Castle, DE 19720
T: 302-652-7000
F: 302-652-8777
www.mybuchi.com

<http://kjeldahl.buchi.com/>

-----Original Message-----

From: Holcum, Jacqueline H CIV (US) [mailto:jacqueline.h.holkum.civ@mail.mil]
Sent: Tuesday, May 21, 2013 11:45 AM
To: Simpson Fred
Cc: Roe, Michael R CIV (US)
Subject: FW: M6 Propellant Inquiry (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Hello Fred.

I asked Michael to elevate this to me as I believe we need to take a different path to reach an agreeable conclusion to your request.

We cannot 'release' the calibration curves to Austin Powder since we are not the proponent of the contract they are working under. Instead, Austin Powder should work through their contract POC at Picatinny to have Picatinny Contracting request the calibration curve. It can then be provided as government furnished equipment (GFM) under the contract.

Regards,

Jackie Holcum
Chief, Technology Division (AMSJM-LIB-T) Engineering and Demil Technology
Office Logistics Integration Directorate Joint Munitions Command
918-420-8103 comm
956-8103 DSN

-----Original Message-----

From: Roe, Michael R CIV (US)
Sent: Tuesday, May 21, 2013 10:33 AM
To: Holcum, Jacqueline H CIV (US)
Subject: FW: M6 Propellant Inquiry (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

-----Original Message-----

From: Simpson Fred [mailto:simpson.f@buchi.com]
Sent: Tuesday, May 21, 2013 10:00 AM
To: Roe, Michael R CIV (US)
Cc: Bob.Hivick@austinpowder.com; Miller Brad
Subject: M6 Propellant Inquiry

Good morning, Michael.

The last time that we communicated was in early March.

Just to refresh the topic of our communication, I'm working with Austin Powder Company, in Southeastern Ohio, on an M6 reclamation project that they are involved in with the US Army's Picatinny Arsenal.

Buchi, in conjunction with one of the Army's contractors, SAIC, developed the calibrations for determining the grade of M6 propellant for this facility.

While the Army provided the samples and SAIC personnel performed the scans on their Buchi NIRFlex N-500 spectrometers, Buchi personnel provided the technical expertise to incorporate these spectra into calibrations, leading to the publication of the data that I had forwarded to you in a previous email.

Austin Powder, as a contractor to the DoD, is in the process of accepting M6 into their facility and is very interested in procuring one of our FT/NIR spectrometers to duplicate this analytical process.

We are requesting that Dr. Paritosh Dave, of SAIC, be permitted to email the calibration to either Sean Xiong or Mark Terrell, Buchi's FT/NIR technical experts in our New Castle, Delaware corporate headquarters for use on the Austin Powder system for this application.

If it would make it a more acceptable transition, the calibration could be emailed to Mr. Robert Hivick, of Austin Powder directly.

We have no interest in this calibration other than to help a prospective customer solve his analytical challenges.

We're very anxious to move forward with this project and would like to know if you have been successful in learning anything more about this.

Best regards,

Fred W. Simpson

Account Manager

T: 724-745-9631

M: 724-810-1180

simpson.f@buchi.com <<mailto:simpson.f@buchi.com>>

Buchi Corporation

19 Lukens Drive, Suite 400

New Castle, DE 19720

T: 302-652-7000

F: 302-652-8777

www.mybuchi.com <<http://www.mybuchi.com/>>

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<http://kjeldahl.buchi.com/> <<http://kjeldahl.buchi.com/>>

Classification: UNCLASSIFIED

Caveats: NONE

Classification: UNCLASSIFIED

Caveats: NONE

----- Forwarded by Bob Hivick/RDN/Mfg/Austin on 10/01/2013 02:59 PM -----



Mike Abele/RDN/Mfg/Austin

09/27/2013 12:15 PM

To Tom Justice/RDN/Mfg/Austin@Austin, Bob
Hivick/RDN/Mfg/Austin@Austin

cc

Subject Fw: PETN Static Report

fyi

----- Forwarded by Mike Abele/RDN/Mfg/Austin on 09/27/2013 12:15 PM -----



William Post

<WPost@smsenergetics.com>

09/27/2013 12:02 PM

To "Mike.Abele@austinpowder.com"
<Mike.Abele@austinpowder.com>

cc Gary Dodds <GDodds@smsenergetics.com>

Subject RE: PETN Static Report

Mike,

I have to be honest with you, those measurements that reached upwards of 20kV really scare me. We usually draw the line at 9000V for powders and propellants, and that is the upper limit, it may even be a lower level that is safe for PETN. We will discuss in detail when I am onsite. I will see if I can dig up some supporting studies that were done on powders to help us define the hazards and risks a bit better.

William E. Post

Chemical Engineer | Explosives Safety

Propellant Mix Draft Classification Reports
Dennis Schulz to Scooter King

10/04/2013 10:55 AM

If you have time to review.

Denny

Dennis Schulz

Austin Powder Company ♦ P.O. Box 317, 430 Powder Plant Rd. ♦ McArthur, OH 45651
Office: 740.596.5286 ♦ Mobile: 740.649.3933 ♦ Dennis.Schulz@austinpowder.com

----- Forwarded by Dennis Schulz/RDN/Austin on 10/04/2013 10:55 AM -----

From: Ami McCarthy <amccarthy@chilworthglobal.com>
To: Dennis Schulz <Dennis.Schulz@austinpowder.com>
Cc: Thaddeus Speed <tspeed@chilworthglobal.com>, "C. James Dahn" <ccdahn@earthlink.net>, Bernadette Reyes <breyes@chilworthglobal.com>
Date: 10/04/2013 10:20 AM
Subject: Draft Report No. 2013106: DOT Testing for Blasting Agent "AXE 611", SCE no. 770

Dear Mr. Schultz,

Attached is our Draft Report No. 2013106: Explosives Classification Report – DOT Testing for Blasting Agent "AXE 611".

Please review this report in its entirety to ensure it is acceptable for your submittal to the DOT. If you have any questions regarding the attached Explosives Classification Report, please contact Mr. Thaddeus C. Speed immediately at (847) 241-2031 or thaddeus.speed@dekra.com.

After you have approved this Draft, I will send the Final report which will include photos.

For further illustration of our safety hazard analyses and testing capabilities, please visit our website at <http://www.sceinc.com>.

Best Regards,

Ami McCarthy

Administrative Assistant
Large Scale Energetic Material Explosion & Process Safety

Safety Consulting Engineers, Inc.
2131 Hammond Drive
Schaumburg, Illinois 60173
Phone: 1+ 847-925-8100
Fax: 1+ 847-925-8120
ami.mccarthy@dekra.com
amccarthy@chilworthglobal.com
sceinc@sceinc.com

Safety Consulting Engineers

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Draft Report 2013106, Austin DOT Testing for AXE 611, SCE No. 770.pdf

----- Forwarded by Dennis Schulz/RDN/Austin on 10/04/2013 10:55 AM -----

From: Ami McCarthy <amccarthy@chilworthglobal.com>
To: Dennis Schulz <Dennis.Schulz@austinpowder.com>
Cc: Bernadette Reyes <breyes@chilworthglobal.com>, Thaddeus Speed <tspeed@chilworthglobal.com>
Date: 10/04/2013 10:21 AM
Subject: Draft Report No. 2013107: DOT Testing for Blasting Agent "AXE 612", SCE no. 770

Dear Mr. Schultz,

Attached is our Draft Report No. 2013107: Explosives Classification Report – DOT Testing for Blasting Agent "AXE 612".

Please review this report in its entirety to ensure it is acceptable for your submittal to the DOT. If you have any questions regarding the attached Explosives Classification Report, please contact Mr. Thaddeus C. Speed immediately at (847) 241-2031 or thaddeus.speed@dekra.com.

After you have approved this Draft, I will send the Final report which will include photos.

For further illustration of our safety hazard analyses and testing capabilities, please visit our website at <http://www.sceinc.com>.

Best Regards,

Ami McCarthy

Administrative Assistant
Large Scale Energetic Material Explosion & Process Safety

Safety Consulting Engineers, Inc.
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Fax: 1+ 847-925-8120
ami.mccarthy@dekra.com
amccarthy@chilworthglobal.com
sceinc@sceinc.com

Safety Consulting Engineers
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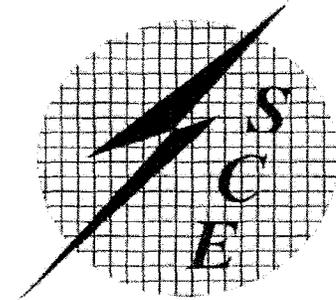
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Draft Report 2013107, Austin DOT Testing for AXE 612, SCE No 770.pdf



SAFETY CONSULTING ENGINEERS, INC.

A DEKRA Company
2131 Hammond Drive
Schaumburg, Illinois 60173
847-925-8100
9180 W. White Eagle Rd
Forreston, IL 61030
815-938-2578

September 30., 2013

CA 2010040008

CLASSIFICATION RECOMMENDATION LETTER

Project No. 770

Austin Powder Company
25800 Science Park Drive
Cleveland, Ohio 44122

Attention: Mr. Dennis Schulz
740-596-5286

Subject: Recommended Shipping Classification for AXE 612 Blasting Agent

References: SCE Test Report No. 2013107-LR, DOT Testing for Blasting Agent "AXE 612"

Dear Mr. Schulz:

Austin Powder requested Safety Consulting Engineers, Inc., a DEKRA Company, to evaluate a product identified as:

AXE 612, blend of 25% M6 Propellant in Hydromite 1100

The recommended shipping name, classification, UN number and packing group for the AXE 611 are:

- | | |
|------------------------------|-----------------------------|
| a. Proper shipping name: | Explosive, blasting, type E |
| b. Hazard Class: | 1.5D |
| c. Packing Group: | II |
| d. UN Identification Number: | UN0332 |
| e. Special Provisions: | 105, 106 |
| f. Packaging Instruction: | 116 or 117. |

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This recommendation IS NOT package dependent.

To complete the approval process and receive an EX number for this material and location:

1. Provide a cover letter requesting classification in accordance with 49 CFR, Section 107.705.

Submit your cover letter, along with this Classification Recommendation Letter and the above referenced report to:

Online: <http://www.phmsa.dot.gov/hazmat/e-services>
(online system use is the application method preferred by the US DOT)

OR

By Fax: (202) 366-3308

If you have any questions concerning this report or require further assistance, please call.

Thank you,

Examination by:

DRAFT

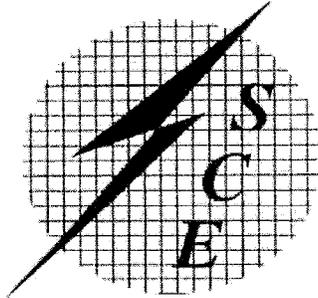
Thaddeus C. Speed, Physicist
Technical Director, SCE
DOT Examiner

DRAFT

C. James Dahn
Professional Engineer, P.E.
DOT Examiner

Safety Consulting Engineers, Inc.
A DEKRA Company
www.sceinc.com

INDIVIDUAL COMPANY DATA PROPRIETARY



SAFETY CONSULTING ENGINEERS, INC.

A DEKRA Company

2131 Hammond Drive
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847-925-8100
9180 W. White Eagle Rd
Forreston, IL 61030
815-938-2578

September 30, 2013

CA 2010040008

EXPLOSIVE CLASSIFICATION TEST REPORT

Report/Project Title: DOT Testing for Blasting Agent "AXE 612"
Project No. : 770
Report No.: 2013107-LR DRAFT
Examiners: Thaddeus C. Speed and C. James Dahn

Austin Powder Company
25800 Science Park Drive
Cleveland, Ohio 44122

Attention: Mr. Dennis Schulz
740-596-5286

This report covers testing on a substance identified as: **AXE 612**

Submitted for testing and analysis by:

Austin Powder Company

1.0 Recommended UN Classification

Recommended UN Classification for the above substance according to 49 CFR
Parts 100-185 - Transportation:

- a. Proper shipping name: Explosive, blasting, type E
- b. Hazard Class: 1.5D
- c. Packing Group: II
- d. UN Identification Number: UN0332
- e. Special Provisions: 105, 106
- f. Packaging Instruction: 116 or 117

INDIVIDUAL COMPANY DATA, PROPRIETARY

2.0 Method of Examination: TESTING

3.0 Test Location:

Testing was performed at the SCE Laboratory in Schaumburg, Illinois and at the SCE Test Site Facility in Forreston, Illinois.

4.0 Substance Specifications:

The explosive formulation details are shown in Table 1.

Table 1. Explosive Formulation

Ingredients	% by Weight
Hydromite 1100	75%
M6 Propellant	25%
Total	100.0%

5.0 Testing Summary:

Table 2. Summary of Testing Results

Test	Observation	Criteria to PASS (-)	Pass (-), Fail (+)
UN Test Series 3(a)(i), BOE Impact Test (Used BOM apparatus)	No reaction at 100 cm in each of 6 trials.	Solids: No smoke, flame or audible report in at least 6 of 10 trials at 10 cm (or higher). Liquids: No smoke, flame or audible report in at 10 of 10 trials at 25 cm (or higher).	Pass (-)
UN Test Series 3(b)(i), BAM Friction Apparatus	No reaction at 360 N in each of 6 trials.	>80 N	Pass (-)
UN Test Series 3(c). Thermal Stability at 75°C	No reaction, no increase in temperature.	Stable at 75°C	Pass (-)
UN Test Series 3(d), Small-scale Burning Test	Quiescent burning.	No Explosion	Pass (-)
UN Test Series 5(a), Cap Sensitivity Test	Witness plate slightly dented. Unreacted material on the plate.	No holes in the witness plate	Pass (-)

INDIVIDUAL COMPANY DATA, PROPRIETARY

Test	Observation	Criteria to PASS (-)	Pass (-), Fail (+)
UN Test Series 5(b)(ii), USA DDT Test	Witness plate dented/bowed in each trial. In the 1 st & 2 nd trials, the witness plate separated from the pipe	No hole punched in the witness plate	Pass (-)
UN Test Series 5(c), External Fire Test for Division 1.5	Burning, no blast or fire brands or fireballs. No noticeable increase in flames during burning.	No explosions or projections	Pass (-)
UN Test Series 8(d)(i) Vented Pipe Test for bulk transport	Waived based on the result of UN Test Series 5(c).	No explosion. No rupture of test vessel.	Waived
Series 3, Conclusion			Pass (-)
Series 5, Conclusion			Pass (-)

Summary

The AXE 612 product passed the Series 3 and Series 5 tests as shown in Table 2, "Test Summary"

6.0 Test Descriptions (UN Manual of Tests and Criteria, 5th revised edition)

6.1 Test Series 3(a) BOE Impact Test

A solid substance is subjected to BOE impact testing using a 10-mg sample size at 10-cm. drop height or higher. A liquid substance is subjected to BOE impact testing using a 10-mg sample size at 25-cm. drop height or higher. (The drop weight is 3.63-kg.) Ten trials are conducted.

The criterion for passing the drop impact test is as follows:

Solids: Pass if no reactions in 6 or more trials out of 10 at 10-cm drop height.
Liquids: Pass if no reactions in 9 or more trials out of 10 at 25-cm drop height.

Modifications to test procedure

The AXE 612, blasting agent is a thick paste and normally would be tested as a solid. However a representative sample (about 40-mg) would not fit into the BOE sample holder.

INDIVIDUAL COMPANY DATA, PROPRIETARY

To get a representative sample the Bureau of Mines (BOM) impact test apparatus was used.

For the BOM impact apparatus, the sample is placed in the center of the anvil. The striker is lowered to contact the sample. The Drop weight (5-kg) is then dropped from various heights. Results are generally consistent with the BOE impact test apparatus, but non-homogeneous samples may be tested without compromising the sample content.

Results

The sample was subjected to impact on an open anvil, using a 5-kg weight and 100-cm of drop height. No reactions in six trials were observed.

The material "passed" the impact testing

6.2 Test Series 3(b) (i) BAM Friction Sensitivity Test

The substance was subjected to friction testing using 10-40-mg sample size with varied loads on the material. The AXE 612 was subjected to a load of 360 N.

The criterion for passing the BAM friction test is:

Passing: No reaction in 6 trials at any level greater than 80 N.

Results

No reaction in 6 trials at 360 N.

The material "passed" the friction testing

6.3 Test Series 3(c) - Thermal Stability Test

The test was conducted to determine whether the substance is stable at an elevated temperature of 75°C for 48 hours.

Results

The AXE 612 is stable at 75°C for 48 hours. It exhibited minimal discoloration, and less than 1% weight loss. Its temperature did not exceed the chamber temperature by 1°C or greater during the testing.

The material "passed" since no significant discoloration, weight loss or reaction occurred.

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6.4 Series 3(d)(i), Small-scale Burning Test.

Sufficient kerosene soaked sawdust (approximately 100-gm. sawdust to 200cc kerosene) is required to make a bed 30-cm x 30-cm, by 1.3-cm deep placed on a non-flammable surface. A black powder igniter was used to light a kerosene soaked sawdust trail to each of two sections (2 trials required). The igniter was initiated and video coverage monitored the fire reaction.

Results

The sawdust and sample burned quiescently.

The material "passed" the SSB test.

6.5 Test Series 5(a), Cap Sensitivity Test

The product is cast or poured into the tube. The tube is then placed in a vertical position onto a witness plate (160-mm x 160-mm, 1.0-mm thick) positioned on a steel ring of 50-mm high, 100-mm inner diameter and 3.5-mm wall thickness. A No. 8 Blasting cap (M6 electric detonator) is inserted centrally into the top of the material.

The blasting cap is remotely ignited. Tests were conducted three times.

The criterion for passing the cap sensitivity test is as follows:

The test result is considered "positive" (if in any trial the witness plate is torn or penetrated) and the material should not be classified in Division 1.5. Otherwise, the result is considered "negative."

Results

The three test runs on AXE 612 showed no detonation and no damage to the witness plate.

The overall test result is "negative" and the material "passed" the Cap Sensitivity test.

6.6 UN Test Series 5(b)(ii), USA DDT Test

The sample was loaded into the 3" schedule 80 carbon (A53 Grade B steel pipe with an inside diameter 74-mm, wall thickness 7.6-mm, capped on one end with a machined steel cap. On the other end, a 13-cm square, 8-mm thick mild steel witness plate was welded to the pipe. An igniter consisting of 5.0-grams of black powder and an electric match for ignition was placed at a height of 23-cm from the bottom of the pipe. The machined cap was screwed onto the pipe top.

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Each of three pipe assemblies was tested in the vertical position.

Results

No evidence of detonation. In all three trials, the witness plate was dented/bowed and the two trials showed the witness plate(s) separated from the pipe.

The material "passed" this test.

6.7 UN Test Series 5 (c) External Fire Test for Division 1.5

Fourteen (14) "sausage shaped" AXE 611, 5-inch diameter x 36" long weighing 30 lbs. each (total of 420 lbs.) were placed onto a stand inside the fuel pan. Fuel (80-gal diesel & 2-gal gasoline) is added to the fuel pan and ignited.

The sample is observed for evidence of explosion, including loud noise or projection of fragments from the fire area.

Results

The sample burned with no evidence of explosion or blast or fire brands were observed.

The material "passed" this test.

7.0 **Conclusion:**

The "AXE 612", blasting agent is not forbidden for transport and qualifies as a 1.5D explosive.

8.0 **Recommendation:**

Explosive, blasting, type E, 1.5D, UN0332, PG II

Based on the results of the vented pipe test, this material is also recommended for approval for bulk transport.

9.0 The recommended packaging, marking, and labeling for surface transportation (rail or highway) may be found in CFR 49 sections as follows:

Packaging – Section 173.62

Marking – Section 172.300

Labeling – Section 172.411

INDIVIDUAL COMPANY DATA, PROPRIETARY

10.0 Obtaining an EX Number:

This Test Report and the accompanying Recommendation Letter should be presented to the DOT to receive a Department of Transportation classification. A classification (EX number) is required before any explosive is offered for shipment (per 49 CFR, Section 173.56).

You may go ONLINE to <http://www.phmsa.dot.gov/hazmat/e-services>

To access the "Hazmat Special Permits and Approvals Online Application"

OR,

You must forward this Test Report and the accompanying Recommendation Letter to the following address:

Associate Administrator for Hazardous Materials Safety
PHMSA
U.S. DOT
Attention: PHH-32
1200 New Jersey Avenue
SE East Building, 2nd Floor
Washington, DC 20590

(Telephone No. 202 – 366-4512)

INDIVIDUAL COMPANY DATA, PROPRIETARY

If you have any questions about this requirement or how to proceed please do not hesitate to call us.

I hereby certify that this classification recommendation report, and all evaluation, examination, and testing carried out by Safety Consulting Engineers in preparation of this report are in full compliance with the applicable requirements of the HMR and this approval.

Certification and Examination by:

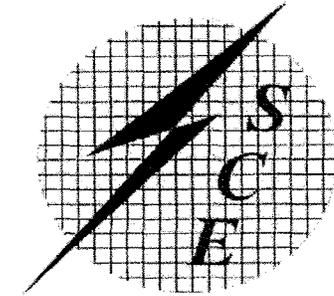
DRAFT

Thaddeus C. Speed, Physicist
Technical Director, SCE
DOT Examiner

DRAFT

C. James Dahn
Professional Engineer, P.E.
DOT Examiner

Safety Consulting Engineers, Inc.
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www.sceinc.com



SAFETY CONSULTING ENGINEERS, INC.

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9180 W. White Eagle Rd
Forreston, IL 61030
815-938-2578

September 12, 2013

CA 2010040008

CLASSIFICATION RECOMMENDATION LETTER

Project No. 770

Austin Powder Company
25800 Science Park Drive
Cleveland, Ohio 44122

Attention: Mr. Dennis Schulz
740-596-5286

Subject: Recommended Shipping Classification for AXE 611 Blasting Agent

References: SCE Test Report No. 2013106-LR, DOT Testing for Blasting Agent "AXE 611"

Dear Mr. Schulz:

Austin Powder requested Safety Consulting Engineers, Inc., a DEKRA Company, to evaluate a product identified as:

AXE 611, blend of 40% M6 Propellant in Hydrox 503

The recommended shipping name, classification, UN number and packing group for the AXE 611 are:

- | | |
|------------------------------|-----------------------------|
| a. Proper shipping name: | Explosive, blasting, type E |
| b. Hazard Class: | 1.5D |
| c. Packing Group: | II |
| d. UN Identification Number: | UN0332 |
| e. Special Provisions: | 105, 106 |
| f. Packaging Instruction: | 116 or 117. |

INDIVIDUAL COMPANY DATA PROPRIETARY

This recommendation IS NOT package dependent.

To complete the approval process and receive an EX number for this material and location:

1. Provide a cover letter requesting classification in accordance with 49 CFR, Section 107.705.

Submit your cover letter, along with this Classification Recommendation Letter and the above referenced report to:

Online: <http://www.phmsa.dot.gov/hazmat/e-services>
(online system use is the application method preferred by the US DOT)

OR

By Fax: (202) 366-3308

If you have any questions concerning this report or require further assistance, please call.

Thank you.

Examination by:

DRAFT

Thaddeus C. Speed, Physicist
Technical Director, SCE
DOT Examiner

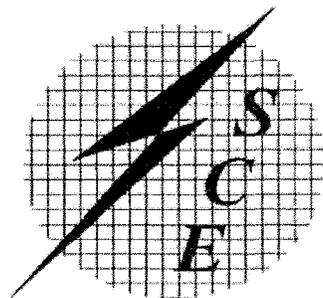
DRAFT

C. James Dahn
Professional Engineer, P.E.
DOT Examiner

Safety Consulting Engineers, Inc.
A DEKRA Company
www.sceinc.com

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SAFETY CONSULTING ENGINEERS, INC.

A DEKRA Company
2131 Hammond Drive
Schaumburg, Illinois 60173
847-925-8100
9180 W. White Eagle Rd
Forreston, IL 61030
815-938-2578

September 12, 2013

CA 2010040008

EXPLOSIVE CLASSIFICATION TEST REPORT

Report / Project Title: DOT Testing for Blasting Agent "AXE 611"

Project No. : 770

Report No.: 2013106-LR DRAFT

Examiners: Thaddeus C. Speed and C. James Dahn

Austin Powder Company
25800 Science Park Drive
Cleveland, Ohio 44122

Attention: Mr. Dennis Schulz
740-596-5286

This report covers testing on a substance identified as: **AXE 611**

Submitted for testing and analysis by:

Austin Powder Company

1.0 Recommended UN Classification

Recommended UN Classification for the above substance according to 49 CFR
Parts 100-185 - Transportation:

- | | |
|------------------------------|-----------------------------|
| a. Proper shipping name: | Explosive, blasting, type E |
| b. Hazard Class: | 1.5D |
| c. Packing Group: | II |
| d. UN Identification Number: | UN0332 |
| e. Special Provisions: | 105, 106 |
| f. Packaging Instruction: | 116 or 117 |

INDIVIDUAL COMPANY DATA, PROPRIETARY

Page 1

Report No. 2013106-LR. DOT Testing for Blasting Agent "AXE 611"

Safety Consulting Engineers, Inc.

INDIVIDUAL COMPANY DATA, PROPRIETARY

2.0 Method of Examination: TESTING

3.0 Test Location:

Testing was performed at the SCE Laboratory in Schaumburg, Illinois and at the SCE Test Site Facility in Forresteron, Illinois.

4.0 Substance Specifications:

The explosive formulation details are shown in Table 1.

Table 1. Explosive Formulation

Ingredients	% by Weight
Hydrox 503	60%
M6 Propellant	40%
Total	100.0%

5.0 Testing Summary:

Table 2. Summary of Testing Results

Test	Observation	Criteria to PASS (-)	Pass (-), Fail (+)
UN Test Series 3(a)(i), BOE Impact Test (Used BOM apparatus)	No reaction at 100 cm in each of 6 trials.	Solids: No smoke, flame or audible report in at least 6 of 10 trials at 10 cm (or higher). Liquids: No smoke, flame or audible report in at 10 of 10 trials at 25 cm (or higher).	Pass (-)
UN Test Series 3(b)(i), BAM Friction Apparatus	No reaction at 360 N in each of 6 trials.	>80 N	Pass (-)
UN Test Series 3(c), Thermal Stability at 75°C	No reaction, no increase in temperature.	Stable at 75°C	Pass (-)
UN Test Series 3(d), Small-scale Burning Test	Quiescent burning.	No Explosion	Pass (-)
UN Test Series 5(a), Cap Sensitivity Test	Witness plate slightly bowed. Unreacted material on the plate.	No holes in the witness plate	Pass (-)
UN Test Series 5(b)(ii), USA DDT Test	Witness plate dented in each trial.	No hole punched in the witness plate	Pass (-)

INDIVIDUAL COMPANY DATA, PROPRIETARY

Test	Observation	Criteria to PASS (-)	Pass (-), Fail (+)
UN Test Series 5(c). External Fire Test for Division 1.5	Burning, no blast or fire brands or fireballs. No noticeable increase in flames during burning.	No explosions or projections	Pass (-)
UN Test Series 8(d)(i) Vented Pipe Test for bulk transport	Waived based on the result of UN Test Series 5(c).	No explosion. No rupture of test vessel.	Waived
Series 3, Conclusion			Pass (-)
Series 5, Conclusion			Pass (-)

Summary

The AXE 611 product passed the Series 3 and Series 5 tests as shown in Table 2, "Test Summary"

6.0 Test Descriptions (UN Manual of Tests and Criteria, 5th revised edition)

6.1 Test Series 3(a) BOE Impact Test

A solid substance is subjected to BOE impact testing using a 10-mg sample size at 10-cm. drop height or higher. A liquid substance is subjected to BOE impact testing using a 10-mg sample size at 25-cm. drop height or higher. (The drop weight is 3.63-kg.) Ten trials are conducted.

The criterion for passing the drop impact test is as follows:

Solids: Pass if no reactions in 6 or more trials out of 10 at 10-cm drop height.
Liquids: Pass if no reactions in 9 or more trials out of 10 at 25-cm drop height.

Modifications to test procedure

The AXE 611, blasting agent is a thick paste and normally would be tested as a solid. However a representative sample (about 40-mg) would not fit into the BOE sample holder.

To get a representative sample the Bureau of Mines (BOM) impact test apparatus was used.

For the BOM impact apparatus, the sample is placed in the center of the anvil. The striker is lowered to contact the sample. The Drop weight (5-kg) is then

INDIVIDUAL COMPANY DATA, PROPRIETARY

dropped from various heights. Results are generally consistent with the BOE impact test apparatus, but non-homogeneous samples may be tested without compromising the sample content.

Results

The sample was subjected to impact on an open anvil, using a 5-kg weight and 100-cm of drop height. No reactions in six trials were observed.

The material "passed" the impact testing

6.2 Test Series 3(b) (i) BAM Friction Sensitivity Test

The substance was subjected to friction testing using 10-40-mg sample size with varied loads on the material. The AXE 611 was subjected to a load of 360 N.

The criterion for passing the BAM friction test is:

Passing: No reaction in 6 trials at any level greater than 80 N.

Results

No reaction in 6 trials at 360 N.

The material "passed" the friction testing

6.3 Test Series 3(c) - Thermal Stability Test

The test was conducted to determine whether the substance is stable at an elevated temperature of 75°C for 48 hours.

Results

The AXE 611 is stable at 75°C for 48 hours. It exhibited minimal discoloration, and less than 1% weight loss. Its temperature did not exceed the chamber temperature by 1°C or greater during the testing.

The material "passed" since no significant discoloration, weight loss or reaction occurred.

6.4 Series 3(d)(i). Small-scale Burning Test.

Sufficient kerosene soaked sawdust (approximately 100-gm. sawdust to 200cc kerosene) is required to make a bed 30-cm x 30-cm, by 1.3-cm deep placed on a

INDIVIDUAL COMPANY DATA, PROPRIETARY

non-flammable surface. A black powder igniter was used to light a kerosene soaked sawdust trail to each of two sections (2 trials required). The igniter was initiated and video coverage monitored the fire reaction.

Results

The sawdust and sample burned quiescently.

The material "passed" the SSB test.

6.5 Test Series 5(a), Cap Sensitivity Test

The product is cast or poured into the tube. The tube is then placed in a vertical position onto a witness plate (160-mm x 160-mm, 1.0-mm thick) positioned on a steel ring of 50-mm high, 100-mm inner diameter and 3.5-mm wall thickness. A No. 8 Blasting cap (M6 electric detonator) is inserted centrally into the top of the material.

The blasting cap is remotely ignited. Tests were conducted three times.

The criterion for passing the cap sensitivity test is as follows:

The test result is considered "positive" (if in any trial the witness plate is torn or penetrated) and the material should not be classified in Division 1.5. Otherwise, the result is considered "negative."

Results

The three test runs on AXE 611 showed no detonation and no damage to the witness plate.

The overall test result is "negative" and the material "passed" the Cap Sensitivity test.

6.6 UN Test Series 5(b)(ii), USA DDT Test

The sample was loaded into the 3" schedule 80 carbon (A53 Grade B steel pipe with an inside diameter 74-mm, wall thickness 7.6-mm, capped on one end with a machined steel cap. On the other end, a 13-cm square, 8-mm thick mild steel witness plate was welded to the pipe. An igniter consisting of 5.0-grams of black powder and an electric match for ignition was placed at a height of 23-cm from the bottom of the pipe. The machined cap was screwed onto the pipe top.

Each of three pipe assemblies was tested in the vertical position.

INDIVIDUAL COMPANY DATA, PROPRIETARY

Results

No evidence of detonation. In all three trials, the witness plate was dented and separated from the pipe.

The material "passed" this test.

6.7 UN Test Series 5 (c) External Fire Test for Division 1.5

Fourteen (14) "sausage shaped" AXE 611, 5-inch diameter x 36" long weighing 30 lbs. each were placed onto a stand inside the fuel pan. Fuel (80-gal diesel & 2-gal gasoline) is added to the fuel pan and ignited.

The sample is observed for evidence of explosion, including loud noise or projection of fragments from the fire area.

Results

The sample burned with no evidence of explosion or blast or fire brands were observed.

The material "passed" this test.

7.0 Conclusion:

The "AXE 611", blasting agent is not forbidden for transport and qualifies as a 1.5D explosive.

8.0 Recommendation:

Explosive, blasting, type E, 1.5D, UN0332, PG II

Based on the results of the vented pipe test, this material is also recommended for approval for bulk transport.

9.0 The recommended packaging, marking, and labeling for surface transportation (rail or highway) may be found in CFR 49 sections as follows:

Packaging – Section 173.62

Marking – Section 172.300

Labeling – Section 172.411

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10.0 Obtaining an EX Number:

This Test Report and the accompanying Recommendation Letter should be presented to the DOT to receive a Department of Transportation classification. A classification (EX number) is required before any explosive is offered for shipment (per 49 CFR, Section 173.56).

You may go ONLINE to <http://www.phmsa.dot.gov/hazmat/e-services>

To access the "Hazmat Special Permits and Approvals Online Application"

OR,

You must forward this Test Report and the accompanying Recommendation Letter to the following address:

Associate Administrator for Hazardous Materials Safety
PHMSA
U.S. DOT
Attention: PHH-32
1200 New Jersey Avenue
SE East Building, 2nd Floor
Washington, DC 20590

(Telephone No. 202 – 366-4512)

INDIVIDUAL COMPANY DATA, PROPRIETARY

If you have any questions about this requirement or how to proceed please do not hesitate to call us.

I hereby certify that this classification recommendation report, and all evaluation, examination, and testing carried out by Safety Consulting Engineers in preparation of this report are in full compliance with the applicable requirements of the HMR and this approval.

Certification and Examination by:

DRAFT

Thaddeus C. Speed, Physicist
Technical Director, SCE
DOT Examiner

DRAFT

C. James Dahn
Professional Engineer, P.E.
DOT Examiner

Safety Consulting Engineers, Inc.
a DEKRA Company
www.sceinc.com

Propellant

Dennis Schulz to: Dave True

10/11/2011 03:38 PM

McArthur Sales does about 240,000 AN/FO each week. Mostly coal mines.
We would need to find another outlet as well.

A couple questions for the source of the material:

1. Confirm size (cigarette butt? - .25" diameter by .5" long).
2. Confirm single, double or triple base powder.
3. Is the material shipped water wet - what % water?
4. Shipped in bulk or the 50 lb WPP style bags you mentioned?

Thanks!
Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Re: M16 Propellant 
Dennis Schulz to Dave True

10/06/2011 11:16 AM

Tom Zukovich is here today and maybe tomorrow am doing some hazard reviews for us.

I am planning on being at RD all next week to try to clean up a lot of items that are 90% done. So anytime next week would be great.

A little research - M16 is a "triple-base" propellant. Typical formulation would be:

55% Nitrocellulose
27% Nitroglycerin
10% Dinitrotoluene
Balance binders and plasticizers

So it will be interesting to use in manufacturing, but would make a really hot product. Orica decided to use only single-base propellants in the Giantite. Single base propellants don't contain NG or DNT.

Take Care!
Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Dave True/Cle/Austin



Dave True/Cle/Austin
10/05/2011 03:23 PM

To: dennis.schulz@austinpowder.com
cc
Subject

Need to talk about use of M-16 propellant.

David P. True

Austin Powder Company ♦ 25000 Shaker Park Drive ♦ Cleveland, OH 44127
Office: 216.839.5440 ♦ Toll Free: 800.321.0752 ♦ Cell: 216.400.5096 ♦ dave.true@austinpowder.com

Propellant

Dennis Schulz @ Dave True

10/25/2011 12:33 PM

YOU DIDN'T TELL ME IT IS TERRY WRIGHT!

Not that it changes anything.

The propellant is M-6, a single base propellant - much better to work with.
They ship with 1.5% water in: drums, super sacks or 8x50 WPP type bags.

He is sending some more info.

We can do this.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

M6
Terry Wright
to:
Dennis.schulz
10/25/2011 12:39 PM
Show Details

History: This message has been replied to.
Denny

Here is a down and dirty comparison of M6 Blends with An/Fo at different rates that Gary Eck did for me. We do not recommend you go over a 50% blend either with straight An/Fo and or An/Fo Emulsion blends. If you have any questions please don't hesitate to call.

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La, 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

Product	Density (g/cc)	Maximum VOD (ft/s)	Shock energy		Bubble Energy		Total Energy	
			Cal/gm	Cal/cc	cal/gm	cal/cc	cal/gm	cal/cc
ANFO #1	0.86	12,670	350	301	496	427	846	728
20% M6	0.98	14,480	356	349	437	423	793	788
40% M6	1.03	15,340	369	380	428	436	792	816

Comp. Authority
Terry Wright
to:
Dennis.schulz
10/26/2011 02:10 PM
[Show Details](#)

History: This message has been replied to and forwarded.
Denny:

I am sending you the Comp. Authority showing that we have DOT approval to ship in Polywoven Bags. I only bring this up because this is a first in the Propellant business. People who have been around as long as you and I have may question this knowing it has always shipped in drums. Just an FYI email.

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell



U.S. Department
of Transportation

East Building, PHF-32
1200 New Jersey Avenue, Southeast
Washington, D.C. 20590

Pipeline and Hazardous Materials Safety Administration The U.S. Department of Transportation
Competent Authority for the United States

CLASSIFICATION OF EXPLOSIVES
FIRST REVISION

Based upon a request by Explo Systems Inc., 1600 Java Road, Minden, LA 71055, United States the following items are classed in accordance with Section 173.56, Title 49, Code of Federal Regulations (49 CFR). A copy of your application, all supporting documentation and a copy of this approval must be retained and made available to DOT upon request.

U.N. PROPER SHIPPING NAME AND NUMBER:

Powder, smokeless, UN0161

U.N. CLASSIFICATION CODE: 1.3C

REFERENCE NUMBER

EX2010040603

PRODUCT DESIGNATION/PART NUMBER

Reclaimed M6 Propellant

NOTES: This classification is only valid when the smokeless powder has been tested and found to have sufficient residual stabilizers present per US Army Safety Bulletin: "Inspection of Supplies and Equipment, Ammunition Surveillance Procedures" (SB 742-1). The following packaging methods are assigned:

Packaging Method A: Inner Packaging - Not necessary. Outer Packaging - UN 1G fiberdrum, each containing not more than one hundred and forty (140) pounds of smokeless propellant.

Packaging Method B: Inner Packaging: Flexible static-resistant reinforced plastic cloth and strapping lifting bag, each containing not more than eight hundred and eighty (880) pounds of smokeless propellant. Outer Packaging - UN 4G heavy-wall fiberboard box with a volumetric capacity of 119 gallons or less. (see 49 CFR Section 171.8 Definition for "Non-bulk packaging")

DATED: 05/05/2011

For Dr. Magdy El-Sibaie
Associate Administrator for Hazardous Materials Safety

Tracking No: 2011040848

Page 1 of 1

Re: Comp. Authority
Dennis Schulz to Terry Wright
Re: Scooter King

10/26/2011 03:09 PM

Terry,

I am somewhat confused regarding the packaging. When we talked, I thought we were talking about a typical WPP shot bag. Packaging Method B does allow for a "plastic cloth" or WPP material, but only as the inner liner in a 4-G box.

I really think Packaging Method B is intended to allow a non-spec Flexible IBC inner package. Clearly the package can be up to 880 lbs, so you could make a 50 lb bag as long as the bag was in a box.

So taking the product to the shot will involve some kind of box or drum, not a traditional WPP shot hole bag.

Let me know if I missed something.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Packaging Method B; Inner Packaging: Flexible static-resistant reinforced plastic cloth and strapping lifting bag, each containing not more than eight hundred and eighty (880) pounds of smokeless propellant. Outer Packaging - UN 4G heavy-wall fiberboard box with a volumetric capacity of 119 gallons or less. (see 49 CFR Section 171.8 Definition for "Non-bulk packaging")

Non-bulk packaging means a packaging which has:
(1) A maximum capacity of 450 L (119 gallons) or less as a receptacle for a liquid;
(2) A maximum net mass of 400 kg (882 pounds) or less and a maximum capacity of 450 L (119 gallons) or less as a receptacle for a solid, or
(3) A water capacity of 454 kg (1000 pounds) or less as a receptacle for a gas as defined in § 173.115 of this subchapter.

Terry Wright <terrywright@explosystems.com>



Terry Wright
<terrywright@explosystems.com>
10/26/2011 02:10 PM

To <Dennis.schulz@austinpowder.com>
cc
Subject Comp. Authority

Denny:

I am sending you the Comp. Authority showing that we have DOT approval to ship in Polywoven Bags. I only bring this up because this is a first in the Propellant business. People who have been around as long as you and I have may question this knowing it has always shipped in drums. Just an FYI email.

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell



Competant Authority.pdf



RE: Comp. Authority
Terry Wright to: 'Dennis Schulz'

10/26/2011 04:17 PM

10/26/2011

This message has been replied to.

Denny

You are correct. The loads are shipped from here in a 4G overpack box. The traditional WPP bag is inside the box. Currently we are putting 8 x 40 WPP bags in the bulk box at a count of 22, giving you the 880 pounds. This is the same process we utilized at the RD mix plant when we started boxing the WPP units. Once you get to the shot you can do as you please with the configuration.

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

-----Original Message-----

From: Dennis Schulz [mailto:Dennis.Schulz@austinpowder.com]
Sent: Wednesday, October 26, 2011 2:10 PM
To: Terry Wright
Subject: Re: Comp. Authority

Terry,

I am somewhat confused regarding the packaging. When we talked, I thought we were talking about a typical WPP shot bag. Packaging Method B does allow for a "plastic cloth" or WPP material, but only as the inner liner in a 4-G box.

I really think Packaging Method B is intended to allow a non-spec Flexible IBC inner package. Clearly the package can be up to 880 lbs, so you could make a 50 lb bag as long as the bag was in a box.

So taking the product to the shot will involve some kind of box or drum, not a traditional WPP shot hole bag.

Let me know if I missed something.

Denny

Dennis Schulz
Austin Powder

Office: 740.596.5286
Mobile: 740.649.3933

Packaging Method B: Inner Packaging: Flexible static-resistant reinforced plastic cloth and strapping lifting bag, each containing not more than eight hundred and eighty (880) pounds of smokeless propellant. Outer Packaging - UN 4G heavy-wall fiberboard box with a volumetric capacity of 119 gallons or less. (see 49 CFR Section 171.8 Definition for "Non-bulk packaging")

Non-bulk packaging means a packaging which has:

- (1) A maximum capacity of 450 L (119 gallons) or less as a receptacle for a liquid;
- (2) A maximum net mass of 400 kg (882 pounds) or less and a maximum capacity of 450 L (119 gallons) or less as a receptacle for a solid; or
- (3) A water capacity of 454 kg (1000 pounds) or less as a receptacle for a gas as defined in § 173.115 of this subchapter.

Terry Wright
<terrywright@expl
osystems.com> To
<Dennis.schulz@austinpowder.com>
10/26/2011 02:10 cc
PM
Subject
Comp. Authority

Denny:

I am sending you the Comp. Authority showing that we have DOT approval to ship in Polywoven Bags. I only bring this up because this is a first in the Propellant business. People who have been around as long as you and I have

may question this knowing it has always shipped in drums. Just an FYI email.

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell
(See attached file: Competant Authority.pdf)

Propellant

Dennis Schulz to: Dave True

10/26/2011 05:18 PM

I understand the load a day. How long? 1 month? 1 year? 5 years?

Take Care!
Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Re: Propellant 
Dennis Schulz  Dave True

10/26/2011 06:12 PM

Terry just called in relation to something else.
45,000,000 lbs and 5 years.

I have a couple ideas I will email in the morning.

Take Care!
Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Dave True

10/26/2011 05:59 PM EDT

From: Dave True
To: Dennis Schulz
Date: 10/26/2011 05:59 PM EDT
Subject: Re: Propellant

Something like 3. They will take any help they can get.

Dennis Schulz

10/26/2011 05:18 PM EDT

From: Dennis Schulz
To: Dave True
Date: 10/26/2011 05:18 PM EDT
Subject: Propellant

I understand the load a day. How long? 1 month? 1 year? 5 years?

Take Care!
Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Propellant

Dennis Schultz to Dave True

10/27/2011 10:49 AM

I can think of a couple ways to use the material.
Still thinking.

Here are some general things to consider.

The material is shipped "water wet", but only 1% to 1.5% water.

At 20% to 30%, I don't think there will be a performance problem.

Transportation - Approved Packages:

110 lb fiberboard drums

WPP type bags as an inner package with a heavy duty cardboard box outer package.

The WPP type bags can be anywhere from 20lb to 800 lb capacity, with one or more bags in the box.

At the present time, the material would need to be transported on a NON-SP vehicle (no HEET, Quads or Pump units).

The AN/FO trucks with the big Willard type (IME-SLP22) box on the back would work. Instead of just putting HEET cartridges in the container, the material could be put in a cardboard box that fits into the IME container.

There are 2 incidents that should be considered.

1. The propellant was mixed with AN Prill and stored. I don't know what happened (Terry mentioned this incident and didn't give a lot of detail), but the cause was the AN Prill absorbing the water, making the propellant "dry".
2. There was the incident in KY with the elements (?) that were being destroyed. The worker on the bench didn't want to take the time to dribble the elements in and loaded a bunch at one time. There were unconsumed elements found in the muck.

Methods:

Method A is the obvious "simple" method - just bring the material to the shot, put x bags at each hole and pour in as the hole is being loaded.

1. Transportation to the shot in a straight truck (ice cream truck) - or the special cardboard box in the IME container above.
2. I would assume 50# bags at about 20% usage. A blasthole with 500 lbs total would have 2 @ 50# bags. A 20,000 lb shot would have 80 @ 50# bags.
3. There would need to be an extra person on the shot to take care of this. Depending on who was stemming, how the truck is configured and other loading issues, it might be possible to get along with the existing 2 or 3 man crew. But, we should plan on an additional helper.
4. I have been on very few shots that were loaded at a measured pace. Most are loaded as quickly as possible. The person loading the propellant would need to stay focused and not be tempted to just airmail the full bags.
5. How to add the material at the proper rate. Practice and care are needed.

Method B would be using a special compartment on the truck and essentially doing what is done in Method A, only opening a chute to add the material. Also the loading truck would need to be a side discharge to make it work..

Dennis Schulz To: Dave Hue

10/27/2011 09:34 AM

I talked to John Capers on Friday and we discussed some "packaged" uses for the propellant.

1. John suggested filling the bottom 1/3 of an 1# or 1.5# booster with the propellant and then filling the unit with a thin mix. Interesting. Perhaps too labor intensive for the amount of propellant used.

2. Back to the WPP packaged water gel. Fill the bag with propellant, then add a water gel product to completely fill the bag. This would probably use about 33% propellant - so 1 load a day of propellant would be 3 loads of finished product.

Both would work, but the WPP package would involve a lot less labor. Obviously anything in a package involves a lot more labor.

The more I thought about, the more I liked some type of bulk blend in a dry or dewatered hole loaded from the top. I also like the thought of using Gillette, because of the volumes and the controls. The issue for me is the truck and if the product can be augered - perhaps a special plastic auger

I am giving a talk at Penn State this year (Underground Bulk) so I will be leaving here tomorrow morning after I pick up the booth and other items for the exhibit.

I expect to be back in the office on Friday.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Propellant - 2nd look

Dennis Schulz to: Dave True

11/23/2011 10:27 AM

Dave Smith called late yesterday to talk about our possible use.

He indicated Boren was using 2 to 3 trailers a week in coal mines there in Alabama. Boren has rigged up a bobcat to handle the super sacks. They take the sack over to the hole and just open the bottom discharge to load as they load the hole with AN/FO or 25% Blend. If the holes are about 100' deep, then one bag per hole is about a 50/50 blend. Dave indicated the 50/50 was the maximum usage.

I casually asked if Boren was experiencing any post blast fume issue - and Dave said no. In fact nitrocellulose is oxygen negative, about like an AN/FO fueled at 7%. So, if anything, there would be less opportunity for the NOx creation.

I am afraid I have made it too complicated. Boren's plan is the simplest and overall lowest cost. The only requirement is big, deep holes. I am not sure this would be as good if the holes were the typical 6.75" we see in Western PA., or most of Ohio. We do have some large hole operations serviced by Summit, Montrose, Tri-Cities, New Athens and of course in Appalachia.

In the end, I (we) can analyze this forever. The only real option is to pick a location, begin with the 8" bags and just do it (after covering all the compliance issues). Then if the operation is big enough and everyone is happy, then we can expand or go to the super sacks.

Something to think about.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Propellant

Dennis Schulz to Dave True

11/14/2011 09:40 AM

Terry called late Friday wondering what was happening on our end. I responded that we were discussing options, trying to find a good one.

I caused me to re-re-think what I have said about our use of the propellant.

1. I continue to believe that putting trailers of bags at job sites or locations and then slitting the bags and pouring into holes as AN/FO is being loaded is not a good plan, without some serious controls. If we did go this direction, focus on coal shots and not use the big Appalachia jobs or the Gillette operation, then we are looking at locations like McSales, Philipsburg, Masontown, Tri-Cities, New Athens and perhaps others (leaving out Alabama). Between them they might be able to handle the a good part of the volume. There would be an extra cost - one or two extra personnel at each location that is using the propellant. However, if we did hire extra employees whose specific job it was to load up and use 5,000 # to 10,000 # a day and they were well trained, then perhaps it could work. Assuming we could charge the customer AN/FO price for the propellant, does the replacement of 5,000 lbs of AN/FO pay for an additional man and truck?

2. My thoughts regards a special truck that blends with emulsion (that special truck Kevin Waldock uses or a cement mixer) would work, but there is a lot of extra cost in terms of the equipment, mixing the product, and in my mind some unresolved issue regarding residue. So I have cooled somewhat on this idea, but it would work.

3. The more I think about it, the more I think we would need to look at Gillette. Perhaps a slightly better (more controlled) work force than Appalachia, but still lots of volume.

4. Making a Hydromite WPP packaged product like 840 with the propellant replacing the AN/FO. Still a lot of work to get set up properly (a lot would need to be done to the Mix Plant) and with a volume of up to 3 loads a day of finished product - where does it all go? For instance, Norton makes about 450,000 lbs a month - so at say optimistically 33% propellant, that would only be 150,000 pounds or 3 load a month - not much at all.

Regarding the product performance, because the propellant is such a large size, my expectation is that it would not burn completely in the initial detonation process, but a lot of the burning and gas release would be much later in the process. I don't know if this is part of Kevin's success with his product, but it might be. If the addition of 25% of this product to either AN/FO or HEET as it is loaded would produce the same kind of results, then the Gillette market would easily be large enough to handle the volume.

I know we have several large items out there that are more cost than profit related: this propellant, Inventory issues (calibration) and Kevin's or Mick's products. So when you have some time, please call.

Take Care!
Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Propellant

Dennis Schulz @ Dave True

12/13/2011 11:38 PM

I missed.

Take Care!
Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933
Dave Veres

----- Original Message -----

From: Dave Veres

Sent: 12/13/2011 09:48 PM EST

To: Dennis Schulz

Subject: Re: Propellant

I'm glad to hear from you. But I think this was meant for someone else.

Dennis Schulz/RDN/Austin

Dennis Schulz/RDN/Austin

12/13/2011 10:32 AM

To "Dave Veres" <Dave.Veres@austinpowder.com>

cc

Subject Propellant

I talked to HAD. He is interested and we are meeting next week. He also wants me to meet Jeff Hoops and that can happen next week as well.

Take Care!
Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

M6 Propellant

Dennis Schulz to terrywright
Cc: Dave True

01/10/2012 03:03 PM

Terry,

Sorry I missed your call yesterday. By way of an update.

We had a meeting last week with the group that would be using the product. I left the meeting with some technical / safety questions.

1. How can we test for the correct water content to insure safe handling?
2. Will the propellant dry out sitting in a trailer during the summer?
3. What exactly are the limitations (hazards) for dry material? What happens if the propellant is dry when it is loaded in the hole with the static that exists when loading AN/FO?
4. What happens if a single piece of the propellant is left on the bench and later hit by a loader? Will it detonate or burn like black powder?
5. Do you have any compatibility data with AN?
6. What happens with a misfire? Say a hole in the middle of the shot doesn't get tied in properly and all the powder, including the propellant, is in the muck pile. What will happen when that material is hit by a shovel or loader bucket?

Please help with these if you can.

Thanks!
Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Propellant

Dennis Schulz to Dave True

01/26/2012 11:53 AM

Explo Systems does not currently sell to Orica.
Orica is currently using a M31A1 propellant. According to Terry, they are having some problems, but have a large backlog of the propellant and have to use it up.

They are not currently selling to the old SEC, but are working toward that.
The old SEC Slurran 600 (?) product contained up to 50% of either the M6 or a similar propellant - that SEC product was designed around the M6 propellant.
In the 4" and up market, it sounds to me like a product with roughly 1/3 propellant would be a good place to start.

Tom Zukovich was the project engineer for Orica and their Granite production, so he has a lot of background on what works and is safe and what isn't. Tom was also with Trojan when they made their nitrostarch + watergel products. Tom will be at the ISEE and he will look over all his old notes to be ready for our questions. However, this will not be "simple". Clearly not outside our capability, but not as simple as a new auger feed.

Talking to Terry scared me a little. They have sold the bulk bags to a coal operator in Oklahoma to use like Boren was in Alabama. Apparently the operator loaded 100% propellant - no base of AN/FO or emulsion. The shot went off OK, but the risk for both his operation and the continued use of the product was great. A misfire would have been a mess. Apparently the operator agreed not to do that again, but I would be surprised if there wasn't some problem down the road if they continue. All this confirms our feeling about not using the propellant on the bench.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Rotary valves, rotary airlocks, rotary airlock feeders, rotary feeders, Young rotary valves are rugged and reliable providing superior performance and the lowest life cycle cost - Young Industries

Tom Zukovich

to:

Dennis Schulz

01/26/2012 02:42 PM

Show Details

Denny,

I hope this helps.

<http://www.younginds.com/WebPages/RotaryValves/RotaryValves.htm>

Tom Zukovich

Partner

Zukovich, Morhard & Wade, LLC.

+ 1 610-653-8821 Tel

+ 1 610-799-2116 Fax

tzukovich@exploenergy.com

<http://www.exploenergy.com>

Re: Questions: 
Dennis Schulz to Dave True

02/24/2012 08:51 AM

Dave,

I think I would like to visit them and will arrange with Terry for early next week, unless you suggest otherwise.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

<terrywright@explosystems.com>



<terrywright@explosystems.com>

02/23/2012 06:44 PM

Please respond to
<terrywright@explosystems.com>

To: Dave True <Dave.True@austinpowder.com>

cc: Dennis Schulz <Dennis.Schulz@austinpowder.com>

Subject: Re: Questions:

Denny

Let's talk at your earliest opportunity. I can either meet you at RD or meet you half way.

Dave thanks for the opportunity. We can help you against Gianite.
Sent via BlackBerry by AT&T

-----Original Message-----

From: Dave True <Dave.True@austinpowder.com>

Date: Thu, 23 Feb 2012 18:39:18

To: Terry Wright <terrywright@explosystems.com>

Cc: Dennis Schulz <Dennis.Schulz@austinpowder.com>

Subject: Re: Questions:

Terry,

I agree on bulk - seems like too many issues at this time.

While our package volumes have/are dropping there is some opportunity. Denny and I discussed putting the propellant in an emulsion at RD. We are working with a large consumer of Gianite and perhaps this could provide a competitive alternative. Orca sell it really cheap in 5 inch bags.

Perhaps you and Denny should talk and put together a potential plan that we could cost out.

Talk soon,

Dave

David P. True
Austin Powder Company ◊ 25800 Science Park Drive ◊ Cleveland, OH 44122
Office: 216.839.5440 ◊ Toll Free: 800.321.0752 ◊ Cell: 216.403.5096 ◊
dave.true@austinpowder.com

From: Terry Wright <terrywright@explosystems.com>
To: <dave.true@austinpowder.com>,
Date: 02/20/2012 09:55 AM
Subject: Questions:

Dave:

Hope all is well with you. I have a couple of questions and possible opportunities for both parties. Obviously Denny has decided he does not want to pursue bulk M6 and I appreciate his decision. However I hope at some point you will reconsider this opportunity and at least try it in isolated controlled situations.

I want to pose another opportunity. We are considering setting up a bag line to introduce M6 into Emulsion. I would like to pursue this with Austin and use your 1100 bulk and private label a product for you. We are willing to install the line and furnish the labor, bags, and the M6 while tolling your bulk. We would expect Austin to pick up the charges associated with gaining an EX number. All we need to negotiate would be the tolling charge to give you a final product cost. Also we are in the process of signing a licensing agreement with UTEC on 406/430. Here again Austin can be the exclusive distributor or have a distinct pricing advantage over the other users of this product. It would depend on volume that Austin would commit to or if you would like a private label. I am willing to sit down with you in Cleveland if any of this is of interest to you. If not please just say so.

I look forward to hearing from you.

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office

318-382-8601 Fax
318-470-6641 Cell

M6 Propellant

Dennis Schulz to: terrywright

cc: Keith Mills, Dave True

02/27/2012 10:28 AM

Terry,

As we discussed, please prepare 840# (1 pallet with 6 @ 140# drums) for us.

You indicated that you could get it to APC at East Camden and we will decide how to get it up here from there.

Denny

Dennis Schulz

Austin Powder

Office: 740.596.5286

Mobile: 740.649.3933

Meeting

Dennis Schulz to terrywright
cc: Keith Mills, Dave True

02/27/2012 10:31 AM

Terry,

We discussed my coming to your facility the week of March 12th. It seems that Keith Mills and Tom Zukovich will be at East Camden later in the week as well.

Can I plan on meeting with you on Wednesday and then perhaps you can spend a couple hours with Keith and Tom early Thursday as well?

Let us know if this will work for you.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Fw: M6 Propellant

Keith Mills to: Thomas Ethridge, Brian Gilliland
Cc: Dennis Schulz

02/27/2012 03:12 PM

Thomas, once this pallet of material arrives from Explo Systems please let Brain and I know so we can arrange shipment onto RD.

Brian, Once the pallet reaches EC we will need to get it to RD ASAP.

Thanks,

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com
----- Forwarded by Keith Mills/RDN/Austin on 02/27/2012 03:07 PM -----

Dennis Schulz/RDN/Austin

02/27/2012 10:28 AM

To terrywright@explosystems.com

cc Keith Mills/RDN/Austin@Austin, Dave
True/Cie/Austin@Austin

Subject M6 Propellant

Terry,

As we discussed, please prepare 840# (1 pallet with 6 @ 140# drums) for us.
You indicated that you could get it to APC at East Camden and we will decide how to get it up here from there.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Re: Fw: M6 Propellant 
Thomas Ethridge to Keith Mills
Cc: Brian Gilliland, Dennis Schulz

02/27/2012 03:14 PM

History: This message has been replied to.

Keith

Please let Explo know to send the MSDS with it.

Thanks

Thomas Ethridge, Plant Manager
Austin Powder Company
East Camden, Arkansas
870-574-0580 (Voice)
870-574-2060 (Fax)

Keith Mills Thomas, once this pallet of material arrives from... 02/27/2012 02:12:29 PM

Keith Mills/RDN/Austin
02/27/2012 02:12 PM

To: Thomas Ethridge/Mfg/Austin@Austin, Brian
Gilliland/RDN/Mfg/Austin@Austin
cc: Dennis Schulz/RDN/Austin@Austin
Subject: Fw: M6 Propellant

Thomas, once this pallet of material arrives from Explo Systems please let Brian and I know so we can arrange shipment onto RD.

Brian, Once the pallet reaches EC we will need to get it to RD ASAP.

Thanks,

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com
----- Forwarded by Keith Mills/RDN/Austin on 02/27/2012 03:07 PM -----

Dennis Schulz/RDN/Austin
02/27/2012 10:28 AM

To: terrywright@explosystems.com
cc: Keith Mills/RDN/Austin@Austin, Dave
True/Cie/Austin@Austin
Subject: M6 Propellant

Terry,

As we discussed, please prepare 840# (1 pallet with 6 @ 140# drums) for us.
You indicated that you could get it to APC at East Camden and we will decide how to get it up here from there.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Re: Fw: M6 Propellant 

Dennis Schulz to: Thomas Ethridge, terrywright
cc: Brian Gilliland, Keith Mills

02/27/2012 03:41 PM

Terry,

Would you supply the current MSDS to all above.

Thanks

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Thomas Ethridge/Mfg/Austin

Thomas Ethridge/Mfg/Austin
02/27/2012 03:14 PM

To: Keith Mills/RDN/Austin@Austin
cc: Brian Gilliland/RDN/Mfg/Austin@Austin, Dennis Schulz/RDN/Austin@Austin
Subject: Re: Fw: M6 Propellant 

Keith

Please let Explo know to send the MSDS with it.

Thanks

Thomas Ethridge, Plant Manager
Austin Powder Company
East Camden, Arkansas
870-574-0580 (Voice)
870-574-2060 (Fax)

Keith Mills Thomas, once this pallet of material arrives from... 02/27/2012 02:12:29 PM

Keith Mills/RDN/Austin
02/27/2012 02:12 PM

To: Thomas Ethridge/Mfg/Austin@Austin, Brian Gilliland/RDN/Mfg/Austin@Austin
cc: Dennis Schulz/RDN/Austin@Austin
Subject: Fw: M6 Propellant

Thomas, once this pallet of material arrives from Explo Systems please let Brian and I know so we can arrange shipment onto RD.

Brian, Once the pallet reaches EC we will need to get it to RD ASAP.

Thanks,

Keith Mills

Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ Mr.Arthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

----- Forwarded by Keith Mills/RDN/Austin on 02/27/2012 03:07 PM -----

Dennis Schulz/RDN/Austin

02/27/2012 10:28 AM

To terrywright@explosystems.com

cc Keith Mills/RDN/Austin@Austin, Dave

True/Cle/Austin@Austin

Subject M6 Propellant

Terry,

As we discussed, please prepare 840# (1 pallet with 6 @ 140# drums) for us.

You indicated that you could get it to APC at East Camden and we will decide how to get it up here from there.

Denny

Dennis Schulz

Austin Powder

Office: 740.596.5286

Mobile: 740.649.3933



RE: Fw: M6 Propellant
Terry Wright to: 'Dennis Schulz', 'Thomas Ethridge'
Cc: "Brian Gilliland", "Keith Mills"

02/27/2012 04:16 PM

History

This message has been forwarded.

Here is the MSDS for M6 propellant per your request.

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd,
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

-----Original Message-----

From: Dennis Schulz [mailto:Dennis.Schulz@austinpowder.com]
Sent: Monday, February 27, 2012 2:41 PM
To: Thomas Ethridge; terrywright@explosystems.com
Cc: Brian Gilliland; Keith Mills
Subject: Re: Fw: M6 Propellant

Terry,

Would you supply the current MSDS to all above.

Thanks

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Thomas
Ethridge/Mfg/Aust
in To
Keith Mills/RDN/Austin@Austin
02/27/2012 03:14 cc
PM Brian
Gilliland/RDN/Mfg/Austin@Austin,
Dennis Schulz/RDN/Austin@Austin

Subject
Re: Fw: M6 Propellant(Document
link: Dennis Schulz)

Keith

Please let Explo know to send the MSDS with it.

Thanks

Thomas Ethridge, Plant Manager
Austin Powder Company
East Camden, Arkansas
870-574-0580 (Voice)
870-574-2060 (Fax)

Keith
Mills/RDN/Austin
02/27/2012 02:12 PM
To
Thomas Ethridge/Mfg/Austin@Austin,
Brian
Gilliland/RDN/Mfg/Austin@Austin
cc
Dennis Schulz/RDN/Austin@Austin
Subject
Fw: M6 Propellant

Thomas, once this pallet of material arrives from Explo Systems please let Brian and I know so we can arrange shipment onto RD.

Brian, Once the pallet reaches EC we will need to get it to RD ASAP.

Thanks.

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ◊ 430 Powder Plant Road ◊ McArthur, OH
45651-0317
Office: 740.596.5286 ext 7412 ◊ Cell: 614.569.1783 ◊ Keith.Mills@austinpowder.com
----- Forwarded by Keith Mills/RDN/Austin on 02/27/2012 03:07 PM -----

Dennis
Schulz/RDN/Austin

To
02/27/2012 10:28 AM terrywright@explosystems.com
cc
Keith Mills/RDN/Austin@Austin, Dave
True/Cle/Austin@Austin
Subject
M6 Propellant

Terry,

As we discussed, please prepare 840# (1 pallet with 6 @ 140# drums) for us.
You indicated that you could get it to APC at East Camden and we will decide how to get it up
here from there.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

No virus found in this message.
Checked by AVG - www.avg.com
Version: 10.0.1424 / Virus Database: 2113/4835 - Release Date: 02/27/12

  
MSDS for M6.pdf MSDS for M6 (2).pdf MSDS for M6 (3).pdf



Explo Systems, Inc.
1600 Java Road
Minden, LA 71055

MATERIAL SAFETY DATA SHEET

PROPELLANT (Wetted)

SECTION I - PRODUCT IDENTIFICATION

PRODUCT NAME: Propellant, Explosive, Solid, Wetted

Technical Information Phone No.: 318 382 8700

For Chemical Emergency (Spill, Fire, Exposure or Accident) call CHEMTREC day or night. Within the US and Canada: +1 800-424-9300. Outside the US and Canada: +1 703-527-3887 (collect calls accepted).

Ingredient	CAS No.	Wt. %	OSHA PEL ACGIH TLV EPA RQ (if defined) DOT RQ (if defined)
Dibutyl Phthalate	84-74-2	3.00	OSHA PEL 5 mg/m ³ ACGIH TLV 5 mg/m ³ EPA RQ 10 lbs DOT RQ 10 lbs
Diphenylamine	122-39-4	1.00	OSHA PEL 10 mg/m ³ ACGIH TLV 10 mg/m ³ EPA RQ (none defined) DOT RQ (none defined)
Potassium Sulfate	7778-80-5	2.00	OSHA PEL none published ACGIH TLV none published EPA RQ (none defined) DOT RQ (none defined)
Nitrocellulose (flammable solid)	--	87.00	OSHA PEL none published ACGIH TLV none published EPA RQ (none defined) DOT RQ (none defined)
Dinitrotoluene	25321-14-6	10.00	OSHA PEL 10 mg/m ³ ACGIH TLV 10 mg/m ³ EPA RQ 10 lbs DOT RQ 10 lbs

SECTION II - HAZARDS IDENTIFICATION

PROPELLANT		HAZARDOUS MATERIALS IDENTIFICATION SYSTEM	
HEALTH	2	2	<p>4 = SEVERE HAZARD 3 = SERIOUS HAZARD 2 = MODERATE HAZARD 1 = SLIGHT HAZARD 0 = MINIMAL HAZARD</p> <p>An asterisk (*) or a W designation corresponds to additional information on a data sheet or separate chronic effects notification.</p> <p>Additional information:</p>
FLAMMABILITY	4	4	
PERSONAL PROTECTION		[B]	

Routes of Entry: Inhalation; Skin; Ingestion
 Carcinogenicity: None

First Aid Measures: **EYES** - Immediately flush with copious amount of water (low pressure) for 15 minutes, remove contact lenses; call physician. **SKIN** - Wash with soap and running water. **INGESTION** - Contact physician immediately.
INHALATION - Remove to fresh air. Treat irritation symptomatically; call physician.
 Firefighting Measures: Self-oxidizing, deluge with water. Will not be able to extinguish unless large quantity of water is used in very short time. Use NIOSH/MSHA approved SCBA and full protective equipment; evacuate area.
 Unusual Fire/Explosion Hazard: Easily ignited, highly combustible; protect from fire and sparks and extreme heat.
 Autoignition: 383°F (195°C)
 Hazardous Combustion Products: Oxides of Carbon
 Accidental Release Measures: **SPILL** - Clean immediately with soft (horsehair) brush and conductive rubber or plastic shovel. Use brass or other non-sparking tools and utensils. **DO NOT** hammer or otherwise cause impact forces to spilled material (explosion or autoignition could occur with impact force being applied).

SECTION III - HANDLING AND STORAGE

Precautions: Avoid prolonged temperature above 125°F (50°C). Normal storage conditions should be 75°F (21°C) and 50% Humidity. Storage must conform to local, state and federal regulations, specifically: 29 CFR OSHA 1910.109; 27 CFR BATF/E 55 subpart K.
 Other Special Precautions: Flammable Solid...Keep away from heat, sparks, open flame...Keep containers closed...use with adequate ventilation.
 Ventilation: Local and general ventilation necessary to keep air concentration below TLV's.
 Personal Protective Equipment: Safety Glasses, Cotton or Leather Gloves, Fire Resistant Coveralls.

SECTION IV - PHYSICAL AND CHEMICAL PROPERTIES

Specific Gravity: 1.496
 Evaporation Rate: <1 (Butylacetate = 1)
 Solubility in Water: negligible
 Appearance and Odor: Hard Cylinder Perforated, Smooth, Greenish Yellow, Odorless.
 Materials to Avoid: Oxides of Nitrogen and Carbon.

Conditions to Avoid: Open Flame, Sparks, Heat, Direct Sunlight.
Hazardous Decomposition Products: Oxides of Carbon

SECTION V - DISPOSAL CONSIDERATIONS

Disposal must be in accordance with federal, state and local regulations. Burn in open burning ground in accordance with regulatory requirements. It may also be burned in an incinerator approved for explosives.

DISCLAIMER

The information contained in this MSDS (Material Safety Data Sheet) is based upon available constituent data for the components of **Propellant** and is believed to be correct. However, as this information has been obtained from various sources, including the manufacturers of its components and independent laboratories, it is provided herein without warranty or representation that it is complete, accurate and can be relied upon. Explo Systems, Inc. has not attempted to conceal in any manner the deleterious aspects of this product, and makes no warranty as such. Explo Systems, Inc. cannot anticipate nor control the many situations in which this product or this information may be used; there is no guarantee that the health and safety precautions suggested herein will be proper under all conditions. It is the sole responsibility of each user of the product to determine and comply with the requirements of all applicable laws and regulations regarding its use. This information is given solely for the purposes of safety to persons and property. Any other use of this information is expressly prohibited.

AUTHOR

This MSDS was prepared by: Ferris Callihan, PE - Director Support Technology - Explo Systems, Inc. - 1600 Java Road - Minden, LA 71055 - Tel 318 382 8700 - E-mail: fcallihan@explosystems.com

Re: FW: Austin 1.3C 
Dennis Schulz to: Terry Wright

02/28/2012 09:25 AM

Terry,

No, at this time there isn't anything you can do.

I was surprised to see the DNT in the formula. Not surprised to see it in a propellant, but I guess I didn't ask before.

This will mean a little more attention will need to be paid to the process.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Terry Wright <terrywright@explosystems.com>



Terry Wright
<terrywright@explosystems.com>
om>
02/28/2012 09:05 AM

To <Dennis.schulz@austinpowder.com>
cc
Subject FW: Austin 1.3C

Denny:

See below. I have sent the MSDS, arranged for the pallet of M6 to get to East Camden, cleared my schedule for the 14th and 15th. Is there anything else I can do at this point?

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

From: Lionel Koons [mailto:lionelkoons@explosystems.com]
Sent: Tuesday, February 28, 2012 7:57 AM
To: 'Terry Wright'
Subject: Austin 1.3C

R/R has 2 trucks coming into here on Thursday the 1st. I am getting 1 of those trucks to take the 1 pt of M-6 to East Camden.

Lionel

LIONEL W. KOONS
EXPLO SYSTEMS INC.
1600 JAVA ROAD
MINDEN, LA 71055
318.382.8700
318.382.8434 (FAX)
318.564.0776 (CELL)

No virus found in this message.

Checked by AVG - www.avg.com

Version: 10.0.1424 / Virus Database: 2113/4837 - Release Date: 02/28/12

Shipping Paper

Dennis Schulz to: Thomas Ethridge, Monica Kelly
cc: Keith Mills, John Brulia

03/01/2012 02:15 PM

Here is the shipping paper for the propellant.
Please call if there are any problems

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933



M6 Propellant 2012.pdf

HAZARDOUS MATERIALS SHIPPING PAPER

offeror:
Austin Powder Company
 25800 Science Park Drive
 Cleveland, OH 44122
 877-836-8286
 US DOT 103999



IN CASE OF EMERGENCY CALL CHEMTREC 800-424-9300 CHEMTREC Contract Number - CCN207741
--

1	2	3	4	5	6	7	E R G	Trade Name Examples
ID Number	Proper Shipping Name	Hazard Class/Division	Packing Group	Number & Type of Package	Quantity	Special Permit		
UN0161	Powder, smokeless	1.3C	II	6 drums	840 lbs.	---	114	Oilfield Perforator
2008 Emergency Response Guide								

Shipment Date _____
 Shipping Location _____
 Carrier Austin Powder Company
 Customer _____
 Destination (City, State) _____
 Driver Name _____
 Unit Number _____
 Trailer Number _____

2012 Shipping Papers Mo Propellant 2012
--

Re: Visit 
Dennis Schulz to: Terry Wright
Cc: "Keith Mills"

03/11/2012 04:21 PM

Thanks for the reminder to contact you.

I have been called away. In the Airport now.
We have the material and have a decent array of testing planned. I will call in a week with our results and to set up a visit. It really wasn't going to work this trip with Tom Zukovich anyway.

Take Care!
Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

----- Original Message -----
From: [terrywright@explosystems.com]
Sent: 03/11/2012 08:05 PM GMT
To: Dennis Schulz
Subject: Visit

Are we still on for this week?
Sent via BlackBerry by AT&T



Fw: DSC of M-6 Propellant
Margit Chevalier to Dennis Schulz

03/15/2012 07:39 AM

Looks like back in 2002 there was some work done with M6 already....
Mike is working on the water content.

M

Margit Chevalier | Austin Powder Company **R&D** | 430 Powder Plant Rd | McArthur, OH 45651 | (Office)
740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com

----- Forwarded by Margit Chevalier/RDN/Austin on 03/15/2012 07:38 AM -----

Mark Fox/RDN/Mfg/Austin

03/14/2012 04:13 PM

To Margit Chevalier/RDN/Austin@Austin

cc

Subject DSC of M-6 Propellant

Margit,

Attached please find a DSC of the M-6 you gave me and a DSC of M-6 that was done on 11/12/02.
Sorry the the one on 11/12/02 is so light in color. I can get you a better one if you need it.
The decomposition point is the same for both samples.



M-6
Propellant
DSC
031412.doc

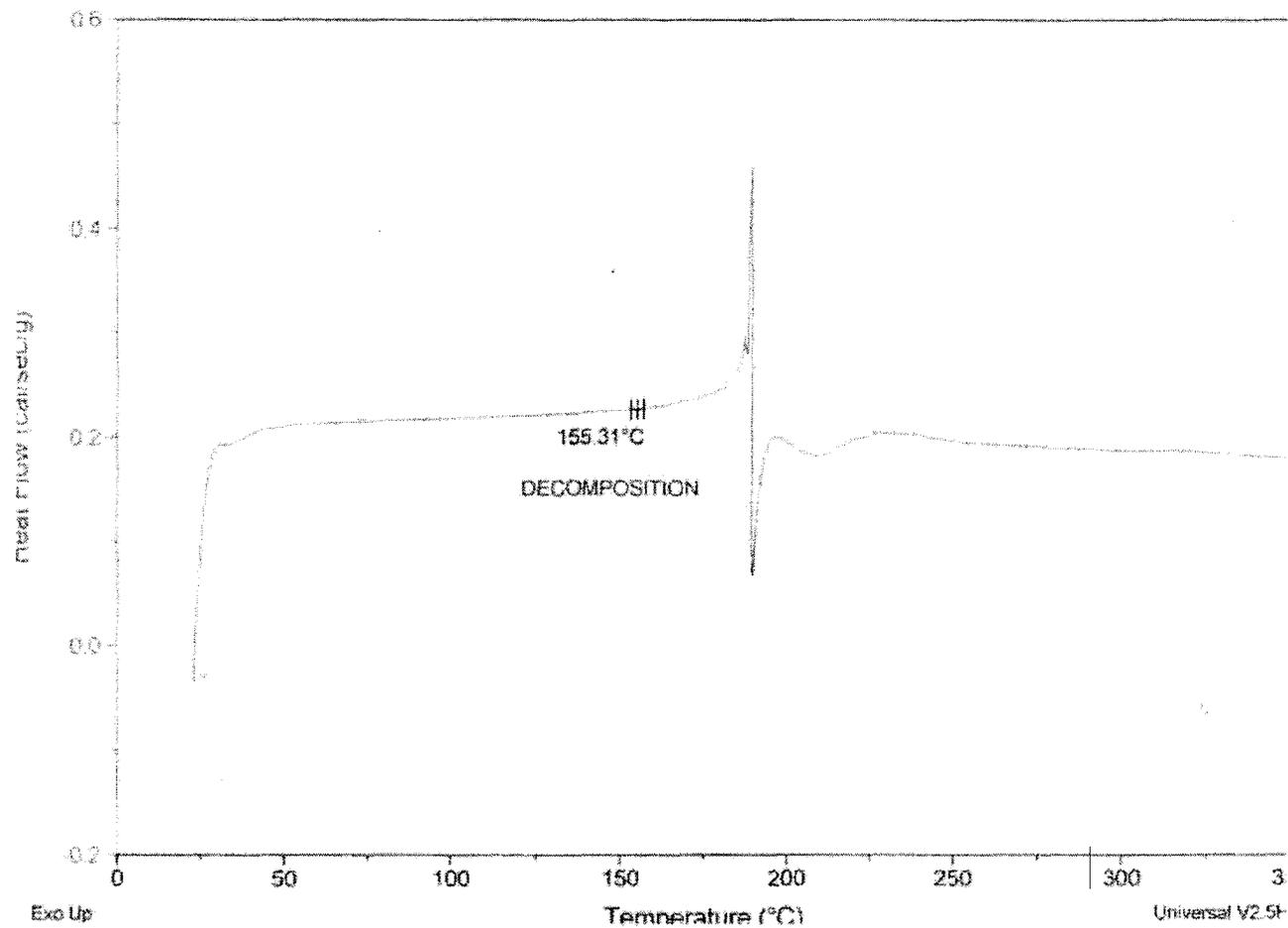


M-6
Propellant
DSC
111202.doc

Sample: M-6 Propellant
Size: 2.2800 mg
Method: general350
Comment: M-6 Single Base Propellant for R&D rec. at RD Lab 3/14/12

DSC

File: C:\DSC\Propellants.03
Operator: MF
Run Date: 14-Mar-12 15:23



EXP_000711

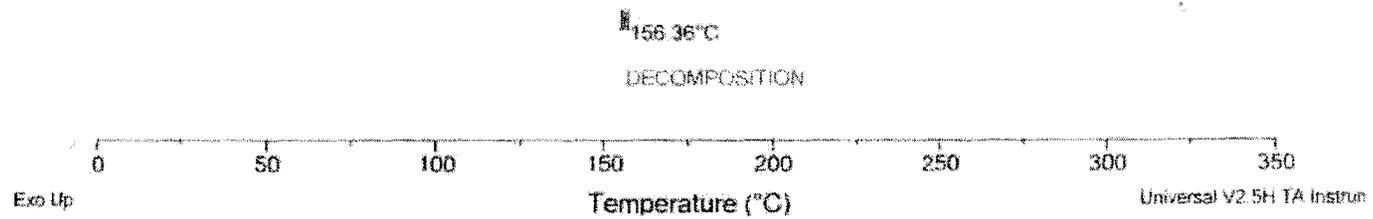
019077

Sample: M-6 Propellant
Size: 2.3200 mg
Method: general350
Comment: M-6 Single Base Propellant for R & D

DSC

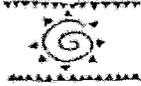
File: C:\DSC\Propellants 01
Operator: MF
Run Date: 12-Nov-02 10:35

Heat Flow (mW)



EXP_000712

019078



Fw: DENSITY - M6 blends
Margit Chevalier to Dennis Schulz

05/01/2012 11:35 AM

History

This message has been replied to.

The following batches were made today:

01MY12A1 - 30% M6 in Hydromite Advance 120
01MY12A2 - 40% M6 in Hydromite Advance 120
01MY12A3 - 100% Hydromite Advance 120

See densoties below.

We filled 2 x 16 AT to be shot for VODs tomorrow (triplicate) with diamond nugget at ambient. Mike will add the cap sensitivity data.

M

Margit Chevalier | Austin Powder Company **R&D** | 430 Powder Plant Rd | McArthur, OH 45651 | (Office)
740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com

----- Forwarded by Margit Chevalier/RDN/Austin on 05/01/2012 11:31 AM -----



Mike Abele/RDN/Mfg/Austin
05/01/2012 11:29 AM

To Margit Chevalier/RDN/Austin@Austin
cc

Subject DENSITY

Margit

Here are the densities you requested.

01MY12A1 1.26
01MY12A2=1.29
01MY12A3=1.21

Thanks Mike



Re: Fw: DENSITY - M6 blends 
Margit Chevalier to Dennis Schulz

05/03/2012 02:42 PM

Dennis

attached the VODs for the blended M6 product.

M



M6 testing.pdf

Margit Chevalier | Austin Powder Company **R&D** | 430 Powder Plant Rd | McArthur, OH 45651 | (Office)
740.596.5286 ext. 7438 | margit.chevalier@austinpowers.com

Dennis Schulz/RDN/Austin

Dennis Schulz/RDN/Austin

05/01/2012 11:41 AM

To Margit Chevalier/RDN/Austin@Austin

cc

Subject Re: Fw: DENSITY - M6 blends 

Perfect!!!!

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Margit Chevalier/RDN/Austin



Margit Chevalier/RDN/Austin

05/01/2012 11:35 AM

To Dennis Schulz/RDN/Austin@Austin

cc

Subject Fw: DENSITY - M6 blends

The following batches were made today:

01MY12A1 - 30% M6 in Hydromite Advance 120
01MY12A2 - 40% M6 in Hydromite Advance 120
01MY12A3 - 100% Hydromite Advance 120

See densoties below.

We filled 2 x 16 AT to be shot for VODs tomorrow (triplicate) with diamond nugget at ambient. Mike will add the cap sensitivity data.

M

Margit Chevalier | Austin Powder Company **R&D** | 430 Powder Plant Rd | McArthur, OH 45651 | (Office)
740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com

----- Forwarded by Margit Chevalier/RDN/Austin on 05/01/2012 11:31 AM -----



Mike Abele/RDN/Mfg/Austin

05/01/2012 11:29 AM

To Margit Chevalier/RDN/Austin@Austin

cc

Subject DENSITY

Margit

Here are the densities you requested.

01MY12A1 1.26

01MY12A2=1.29

01MY12A3=1.21

Thanks Mike

Report For Bulk Emulsions

01MY12A1 LZ27001M Corsol35 M6 propellant 30% M6

C229 41 M6 propellant in bulk

Objective: VOD and cap sensitivity testing

Product: HydAdv120

Act% 0 Treat%: 0 fuel%: 0 plantmatrix plant fuel terminated

sampletype:	temp:	visc:	density:	comments:
Premix-Refined	185	30000		
Product-End	182	33000	1.17	
Product-Cold	70		1.26	

**Visual
Amb**

Age	Grade
0	A

Age	Store	Temp	Primer	Pass	VOD	Comments:
1	A	79	20	P	19352	2 x 16 AT
1	A	79	20	P	18688	2 x 16 AT
1	A	79	20	P	19094	2 x 16 AT

Oxidizer:

Fuel:

Matrix:

Finished: see process sheet

Packaging: 2 x 16 AT - 3 in ambient, 12 lbs for cap test

Report For Bulk Emulsions

Description	Lotus	Mag	Qty
AXE BULK-R&D	11147	MAG31	12.3
AXE BULK-R&D	11147	MAG31A	7.5

Report For Bulk Emulsions

01MY12A2 LZ27001M Corsol35 M6 propellant 40% M6

C229 41

M6 propellant in bulk

Objective: VOD and cap sensitivity testing

Product: HydAdv129

Act% 0 Treat%: 0 fuel%: 0 plantmatrix plant fuel terminated

sampletype:	temp:	visc:	density:	comments:
Premix-Refined	185	30000		
Product-End	182	33000	1.17	
Product-Cold	70		1.29	

Visual
Amb

Age	Grade
0	A

Age	Store	Temp	Primer	Pass	VOD	Comments:
1	A	79	20	P	15511	2 x 16 AT
1	A	79	20	P	16240	2 x 16 AT
1	A	79	20	P	16329	2 x 16 AT

Oxidizer:

Fuel:

Matrix:

Finished: see process sheet

Packaging: 2 x 16 AT - 3 in ambient, 12 lbs for cap test

Report For Bulk Emulsions

Description	Lotus	Mag	Qty
AXE BULK-R&D	11147	MAG31	12.3
AXE BULK-R&D	11147	MAG31A	7.5

Report For Bulk Emulsions

01MY12A3 LZ27001M Corsol35 .control from plant
 C229 41 M6 propellant in bulk
Objective: VOD and cap sensitivity testing **Product:** HydAdv120
Act%: 0 **Treat%:** 0 **fuel%:** 0 **plantmatrix** **plant fuel** **terminated**
sampletype: **temp:** **visc:** **donsity:** **comments:**
 Premix-Refined 185 30000
 Product-End 182 33000 1.17
 Product-Cold 70 1.21

**Visual
Amb**

Age Grade
 0 A

Age	Store	Temp	Primer	Pass	VOD	Comments:
1	A	79	20	P	18618	2 x 16 AT
1	A	79	20	P	19427	2 x 16 AT
1	A	79	20	P	20057	2 x 16 AT

Oxidizer:

Fuel:

Matrix:

Finished: see process sheet

Packaging: 2 x 16 AT - 3 in ambient, 12 lbs for cap test

Report For Bulk Emulsions

Description	Lotus	Mag	Qty
AXE BULK-R&D	11147	MAG31	12
AXE BULK-R&D	11147	MAG31A	7.5



Re: DENSITY M6-Propellant
Mike Abele to Margit Chevalier, Dennis Schulz

05/03/2012 02:46 PM

Margit

The below date shift codes were tested for cap sensitivity test. All samples tested passed (no detonations).

Thank Mike

Mike Abele

Margit Here are the densities you requested.

05/01/2012 11:29:58 AM



Mike Abele/RDN/Mfg/Austin

05/01/2012 11:29 AM

To Margit Chevalier/RDN/Austin

cc

Subject DENSITY

Margit

Here are the densities you requested.

01MY12A1 1.26

01MY12A2=1.29

01MY12A3=1.21

Thanks Mike

M^ Propellant Tests

Dennis Schulz to Dave True

05/03/2012 03:04 PM

Dave,

Samples made using Hydromite Advance 120 (essentially the same as Hydromite 1100S) and blends with 30% and 40% M6 Propellant passed cap sensitivity tests. Density and VOD (2" unconfined with a 20g, Diamond Nugget) were:

Hydromite Advance 120	1.21 g/cc	19,400 ft/sec
HA 120 with 30% M6	1.26 g/cc	19,000 ft/sec
HA 120 with 40% M6	1.29 g/cc	16,000 ft/sec

We will be doing some cycling testing to insure a 3 or 6 month shelf life. I don't expect any problems.

What this means is that we could make a wide range of products with the propellant in the mix plant.

I don't see any responsible way to make these products in a KP package.

I will try to spend some time with Tom Justice and Tom Zukovich next week to discuss what would be needed at the mix plant.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933



Propellant Blending with Emulsions

Tom Zukovich to: Dennis Schulz
Cc: Keith.Mills, larry.mccorkle, Bob Morhard

05/15/2012 05:59 PM

History

This message has been forwarded.

Hi Denny,

Sorry to take so long with this but i did a little research on propellants as you can see in the attachments.

APC's initial thought was to use the ANFO Mix Plant to blend the proposed propellant with bulk emulsion. I looked at the building and I cannot recommend that this blending operation be placed there. There is no conductive flooring and too many places for any fugitive propellant dust to accumulate. There is also just not enough room there to add the necessary equipment and operate it safely.

Please review the attachments and let me know if there is anything else I can do to help APC with this project.

Best Regards,

Tom Zukovich
Partner
Zukovich, Morhard & Wade, LLC.
+ 1 610-653-8821 Tel
+ 1 610-799-2116 Fax
zukovich@exploenergy.com
<http://www.exploenergy.com>

Zukovich, Morhard & Wade, LLC.

P.O. Box 177
Eagleville, PA 19403 USA

1 610-653-8821 T
1 610-799-2116 F
www.exploenergy.com
zukovich@exploenergy.com



15 May 2012

**Austin Powder Co.
430 Powder Plant Rd.
McArthur, OH 45651-0317**

Attn: Denny Schulz

Dear Denny,

APC wishes to produce a blended emulsion / propellant product and package it in shot hole bags.

The blend will contain approximately 30% to 40% propellant and the balance will be bulk emulsion that is sensitized with Expancel microballoons.

In order to provide the maximum amount of safety for the employees, we talked about the possibility of using wet propellant. Testing of the dry vs wet propellant should be conducted to determine if this is true and to what extent the margin of safety would be.

Considerations:

For your reference, I have attached a NASA document "SAFETY STANDARD FOR EXPLOSIVES, PROPELLANTS AND PYROTECHNICS". This is an extensive document that covers all aspects of manufacturing and handling propellants. Section 5 describes the requirements for electrical classification, fire protection and lightning protection.

Also attached for your reference is a patent for blending propellants with water gels. I have not located any patents dealing with the mixing of propellants with emulsions.

The handling area should be protected with a deluge system. The exposed propellant needs to be protected which means the feed hopper. Testing should be done on the blended product to determine if it will burn in a fire. If it does, then the blender and storage hopper areas must also be protected.

The Electrical classification should be for explosive dust, which is Class II, Div II, Groups E, F & G if the propellant dust is only occasionally present. Or, it should be Class II, Div I, Groups E, F & G if the propellant dust is always present.

The production room that will be used should have a conductive floor anywhere the propellant may be exposed.

The propellant metering should be with a side entry rotary valve. Young Industries (www.younginds.com) can provide a side entry rotary valve. This type of rotary valve does not allow the valve pockets to fill to capacity thereby preventing any "clipping" of the propellant as the valve pockets rotate. The size of the valve needs to be determined by the expected rate of production. Keep in mind that the larger the valve is, the slower it can be run for safety considerations. An additional safety device would be to use the Type D rotor. This is a flexible tip rotor that can reduce the impact of any impingement on the propellant pieces in the event of an equipment or process malfunction.

The blender can be the in-house blender left over from the wax emulsion plant. The blender agitators need to have clearances between the paddles and the side of the blender equal to, or greater than, the size of the propellant when measured at a diagonal (currently the proposed propellant measures 17mm L x 7mm Dia and 18mm measured diagonally).

An alternative blender can be a U-trough auger with a mixing auger instead of a standard auger. This allows the mixing of the ingredients in a partially filled housing. The top of the U-trough auger should have external hinges and the rubber type of closing device to keep the lid closed during manufacturing. Again the clearance of the auger to the housing must be equal to, or greater than, the size of the propellant when measured at a diagonal.

The pump used to package the blend can be either a PC pump or a Waukesha-Bredel peristaltic pump. The peristaltic pump is recommended because there is very little possibility of crushing the propellant in the pump. There is also this type of pump in house. An encoder can be used on the shaft of the pump tied into a pre-stop counter to stop the pump when the bag is filled.

If a PC pump is used a Fault Tree Analysis should be done on the selected pump to be used. An explanation of Fault Tree Analysis can be found in A Guide to Hazard Quantification for Explosives written by J.F. Buszard and P.E Smith of the former ICI Canada. I believe there is a copy at Red Diamond.

Safety Considerations:

Determine if the propellant is single based or double based.

Determine the static sensitivity of the dry vs wet propellant.

Determine the impact sensitivity of the dry vs wet propellant.

Determine the friction sensitivity of the dry vs wet propellant.

Determine if the wet propellant can burn as compared to the dry propellant.

Determine if the blend of emulsion and propellant will burn (as opposed to an emulsion

by itself).

If wet propellant is used the amount of water on the propellant must be determined to ensure an additional margin of safety during the handling of the propellant, and that amount of water needs to be accounted for in the total blended product.

Regards,

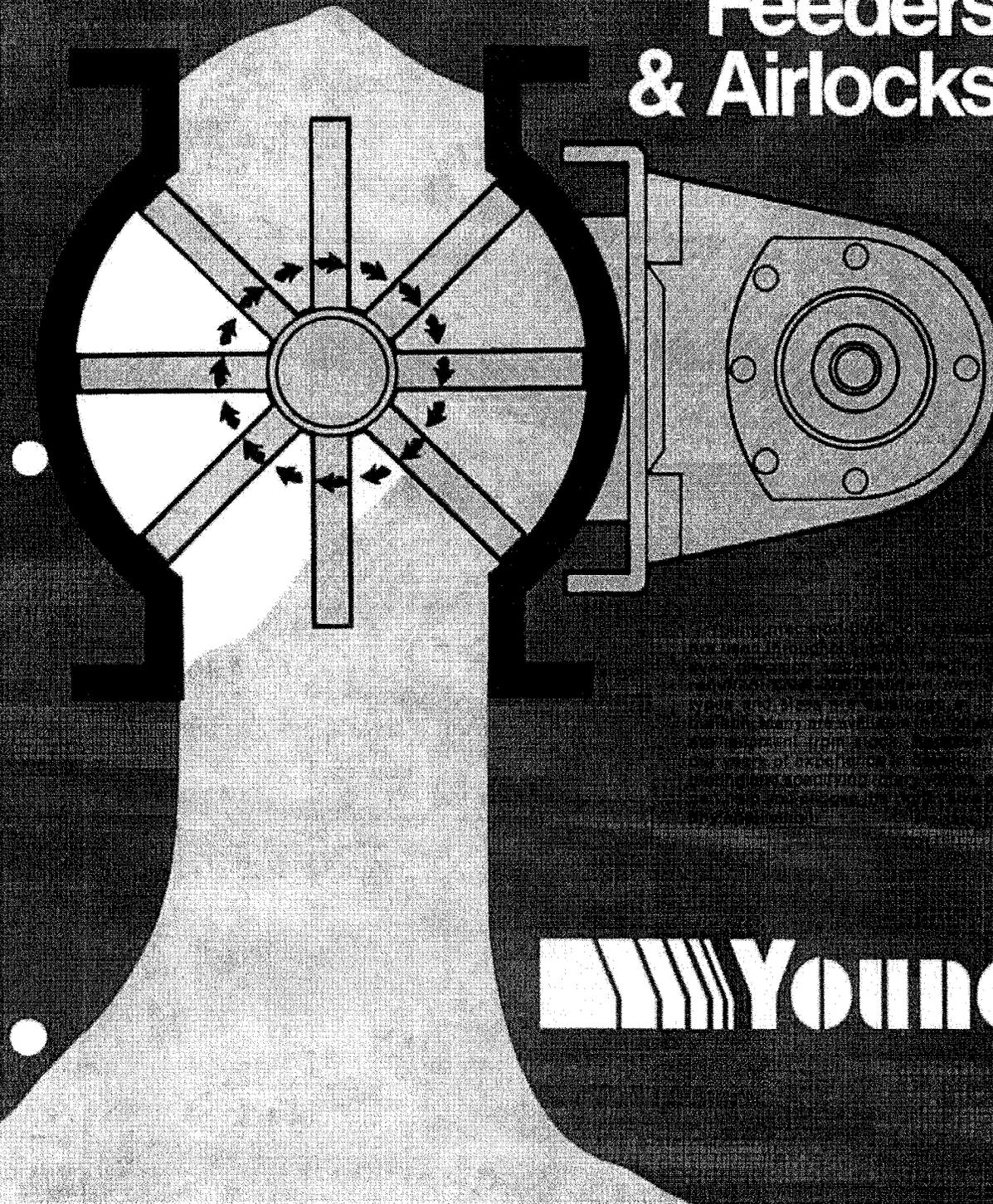
Tom Zukovich
Partner
Zukovich, Morhard & Wade, LLC

cc: Bob Morhard, Partner, Zukovich, Morhard & Wade, LLC
Larry McCorkle, Austin Powder Co.
Keith Mills, Austin Powder Co.

Attachments:

- "SAFETY STANDARD FOR EXPLOSIVES, PROPELLANTS AND PYROTECHNICS".
- Patent #5608184 Alternative use of military propellants as novel blasting agents
- Side Entry Rotary Valve Brochure from Young Industries
- Drawing APC-001 – Propellant Blending

Rotary Valves Feeders & Airlocks



Young

VALVES...

an airlock feeder for every need!

YOUR CHOICE OF ROTORS

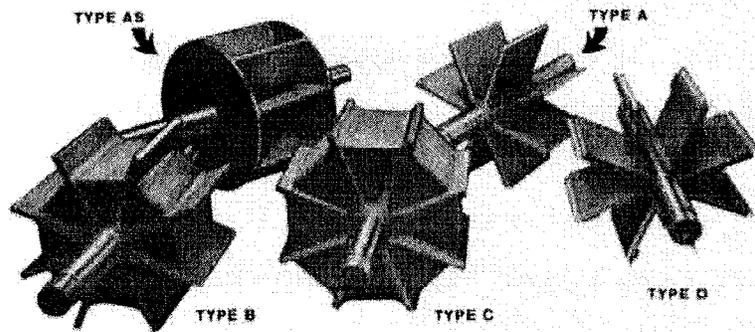
The rotor is the heart of the rotary valve. Some manufacturers use as few as four vanes, and six are in wide use.

At Young, the eight-vane rotor is standard because it provides low operating leakage. An eight-vane rotor always has a minimum of four vanes sealing the valve. For special low leakage requirements a twelve-vane rotor can be supplied.

There are many types and variations of rotors offered by Young. Type A — standard rotor; Types B & C — partially-filled rotors; and Type D — adjustable tip rotor. A partially-

filled rotor is used when a lower throughput is required for a given size of valve. Adjustable tip rotors are available with rigid or flexible tips. Shrouded rotors can be provided in all basic types. Purging is always required with shrouded rotors.

The Young standard design uses a larger diameter rotor and **unrestricted inlet and outlet**. Full-sized openings at the rotor results in "straight through" action and lower operating speeds. Heavy shafts are standard on all valves to eliminate deflection.



Shown are typical Rotors used in Young Rotary Valves. Type A is standard for most applications. Types B and C are partially filled. Type D is used where adjustable tips are required. Type AS is a Shrouded Rotor for special applications. Types BS and CS (not illustrated) are Shrouded Rotors that are partially filled. Type DS (not illustrated) is a Shrouded Rotor with adjustable tips.

IN STOCK FOR IMMEDIATE DELIVERY

Rotary Valves have generally been considered special order equipment. When you need a rotary valve, you often need it in a hurry. Young has a stocking program for the most frequently used types and sizes, both in Iron and Stainless Steel. When we get your rush order, we can assemble these valves, generally the same day, and get them on their way to you. These "stock" valves are designated in this catalog.

Fast delivery when you need it is part of the service we offer all our customers.



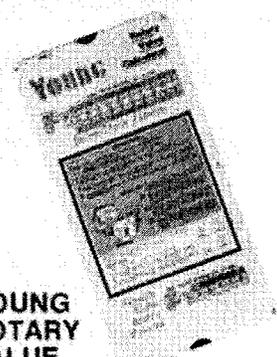
Our Rotary Valve Stocking Program assures fast delivery on the most commonly used types and sizes.

SPECIAL APPLICATIONS

For special requirements, Young offers many options and additions... special metals of construction, special platings or coatings, choice of rotor designs, inspection ports, purge and vent connections, special bearings and seals, and rotary valves designed for high temperature, high pressure. End Seal designs are available for low-leakage requirements. *Consult the Young factory for details.*



Direct Drive Side Entry Valves for a customer's special application.



YOUNG ROTARY VALUE CALCULATOR

Our engineers have developed a slide calculator that greatly simplifies the selection of rotary valves. If you know your capacity requirement, the Calculator will show you the right model and size valve, and rotor type. It also gives you the recommended drive assembly for the valve selected.

Ask your Young Representative for your Rotary Valve Calculator, or write or call us at the factory. It's free to all rotary valve users.

PRECISION ROTARY

Young Industries manufactures the market's broadest line of **precision rotary valves**. Rotary valves have always been a major product line at Young, not a side line.

Our engineering laboratory has developed extensive data over the years, based on hundreds of tests with many types of products, each plotted at a full range of operating speeds.

The Young Rotary Valve Product Line includes: Drop-Thru; Side Entry; V-Orifice; Bio-Thru; and Dust Collection models. Each is a

complete series. Each is the best answer to a specific application.

Rotary Valves manufactured by Young Industries are used as metering devices, feeders and rotary airlocks for dry free-flowing materials of varying sizes and shapes. Used with bins, tanks, mixers, silos, classifiers, dryers, collectors, hoppers, cyclone collectors, dust collectors, and other equipment for pneumatic systems and process operations in virtually every industry.

Applications are too numerous to

list but include these products: CHEMICALS, CLAY, COFFEE, COMPOUNDS, DETERGENTS, DRY FOODS, DRUGS, DUST, FLOUR, GRAINS, GRAPHITE, GYPSUM, MEALS, MINERALS, ORES, PLASTICS, POWDERS, POWDERED METALS, SALT, SAWDUST, SOAPS, SPICES, STARCH, SUGAR, ETC.

Should you have questions regarding handling of a specific product, consult your Young Sales Engineer.

BUILT BETTER TO PERFORM BETTER

Each Young Rotary Valve is precision built. Standard housings and end bells are cast in Iron, Aluminum or Stainless Steel; or fabricated of Carbon Steel or Stainless Steel. Special construction materials, platings or coatings are provided when a particular requirement dictates. For example, when a product is known to adhere to metal surfaces, a coating with a low friction coefficient, such as Teflon, can be used. Chrome plating is often used with an abrasive product to reduce valve wear.

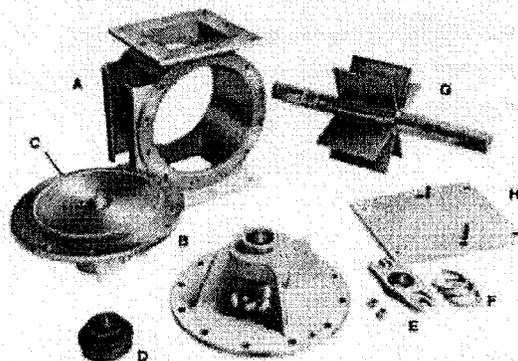
Flanges are available in round, square or rectangular, as shown on the specifications for each model.

All valve components are built rugged for heavy-duty applications, and precision machined to exacting tolerances. *Rotors are fabricated on all models.*

Standard Rotary Valves use heavy-duty ball bearings, outboard mounted for free access to packing and to isolate the bearing from the product area. Lubricated and sealed for life. Generous packing glands accept standard square packing. Units are shipped with braided asbestos and Teflon packing.

Standard Young Rotary Valves are rated at 15 PSIG, and temperatures to 250° F.

Young takes great pride in the quality and precision of these Rotary Valves. The result ... high performance and long life ... features for which these products are widely known.



Standard cast Rotary Valve components:
A. Housing; B. End Plates; C. "O" Rings (optional); D. Sealed Ball Bearings; E. Packing Followers; F. Packing Rings; G. Type A Rotor; H. Gear Motor Support.

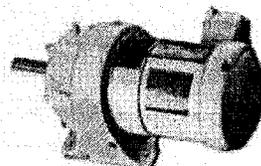
DRIVES AND ACCESSORIES

Young Rotary Valves are usually supplied complete with gear motor, sprockets, drive chain and safety guard to OSHA requirements. We use first quality gear motors from a leading manufacturer. (A different motor can be supplied if the model is specified on your order.)

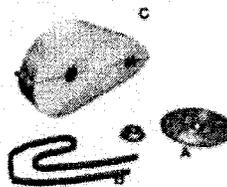
The Drives recommended allow a sprocket change in the field to increase or decrease valve speed.

Our standard drive uses a parallel-shaft gear motor because it delivers full horsepower to the rotary valve.

Other drive configurations, custom mounting plates, and arrangements can be supplied on special order.



Typical Parallel-Shaft Gear Motor.



Drive Components: A. Sprockets; B. Roller Chain; C. Safety Guard.

Side Entry Rotary Valves

This series of valves was designed by Young to overcome serious jamming problems common to conventional feeders when used for some types of cubes, pellets, chips, flakes, prills and other products. These are particularly prevalent in the plastics industry. While these products are free-flowing, they have a tendency to become pinched between rotor and housing at the inlet. The resultant shearing action creates "fines" and can greatly increase load on the drive motor, damage rotor and housing, and jam the valve interrupting the process and greatly increasing maintenance costs.

Young Side Entry Valves are non-jamming and eliminate the need for adjustable or flexible tips, which in most cases, will not satisfactorily solve the problem. The inlet and outlet flanges are offset and the product enters from the side. Side Entry Valves operate at a fixed speed and a maximum of 40% pocket fill with the integral inlet slide fully opened. Lesser throughput can be obtained by slide adjustment.

Type A or AS Rotors of eight-vane design are standard. Rotor always has two vanes sealing each side of the housing for low leakage. Standard Valves are rated at 15 PSIG.

Rectangular Side Entry Valves are specified when extra capacity is required without increasing the flange-to-flange dimension. Double-length valves are cataloged; longer lengths are available on special order.

For applications where the product is heat sensitive and "smears" or is abrasive, a Type AS Shrouded Rotor is supplied. Gas purging is required with the shrouded rotor.

A venting connection can be provided in the valve housing, if required by conditions.

Other special applications are covered on pages 2 & 3.

FEATURES:

- PRECISION CONSTRUCTION
- NON-JAMMING DESIGN
- 15 PSIG AIRLOCK STANDARD OR SHROUDED ROTORS
- 8-VANE ROTOR STANDARD
- OUTBOARD MOUNTED, SEALED BALL BEARINGS
- INSPECTION DOOR STANDARD
- ADJUSTABLE FLOW-CONTROL GATE
- OPTIONAL PURGING
- OPTIONAL VENTING

STANDARD SPECIFICATIONS

OPERATION: Heavy-duty operation up to 15 PSIG, and temperatures up to 250 F.

CONSTRUCTION: Fabricated Carbon Steel or Stainless Steel.

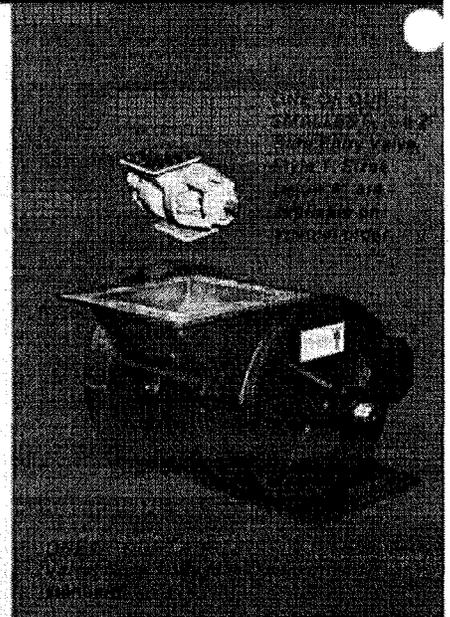
ROTOR: 8 vanes, fabricated construction, Types A (open ends), or AS (shrouded).

FLANGES: Square, Round or Rectangular Inlets; Square or Rectangular Outlets.

BEARINGS: Sealed, heavy duty, ball bearings.

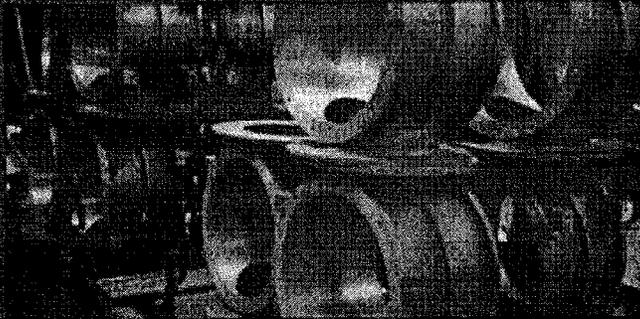
PACKING: Three Ring Shaft Packing Glands with square braided asbestos and Teflon packing.

DRIVE: First quality parallel-shaft gear motor, side mounted, 3 phase, 60 Hertz, 230-460 Volt, totally enclosed, includes: sprockets, roller chain, and safety guard to OSHA requirements.

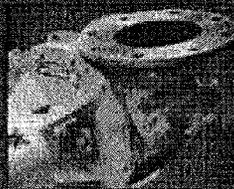


SPECIFICATIONS — SIDE ENTRY VALVES

Model	Flange	Weight	Capacity	Motor	Speed	Power	Pressure	Temp
Style 1 Side Entry Rotary Valves								
4-S	50x8	0210	30	1/2	4	2 1/2	100	105
5-S	50x5	0490	30	1/2	5	2 1/2	150	110
6-S	100x6	0940	30	1/2	6	3	200	110
8-S	120x8	1772	30	1/2	8	4	275	120
10-S	150x10	3585	26	1/2	9 1/2	5	400	120
12-S	170x12	5616	26	1	11	6	525	135
14-S	190x13	7646	26	1	12	6 1/2	750	135
16-S	230x15	12768	26	1 1/2	15	7 1/2	1100	160
18-S	250x17	17476	26	1 1/2	16	8 1/2	1340	160
Style 2 Double-Length Side Entry Rotary Valves								
4-2-S	60x8	0420	30	1/2	4	2 1/2	150	110
5-2-S	80x10	0992	30	1/2	5	2 1/2	225	120
6-2-S	100x12	1696	30	1/2	6	3	300	120
8-2-S	120x16	3544	30	1	8	4	415	135
10-2-S	150x20	7176	26	1	9 1/2	5	640	135
12-2-S	170x24	11032	26	1 1/2	11	6	840	160
14-2-S	190x26	15280	26	1 1/2	12	6 1/2	1200	160
16-2-S	230x30	25536	26	2	15	7 1/2	1760	220
18-2-S	250x34	34952	26	2	16	8 1/2	2145	220
STOCK VALVES —models shown in blue are in stock for immediate shipment.								
SPECIFICATIONS: Housings of fabricated stainless steel; Type A Rotor, Square Inlet and Outlet Flanges.								



**YOUNG
INDUSTRIES
TRUSTED FOR
QUALITY**



WARNING NOTICE

Some machines in this bulletin are shown with guards or covers removed, or partially disassembled for the purpose of illustration. Machines must not be operated with guards, covers, or other protective devices removed or disabled. Machines must not be operated in a partially disassembled condition.

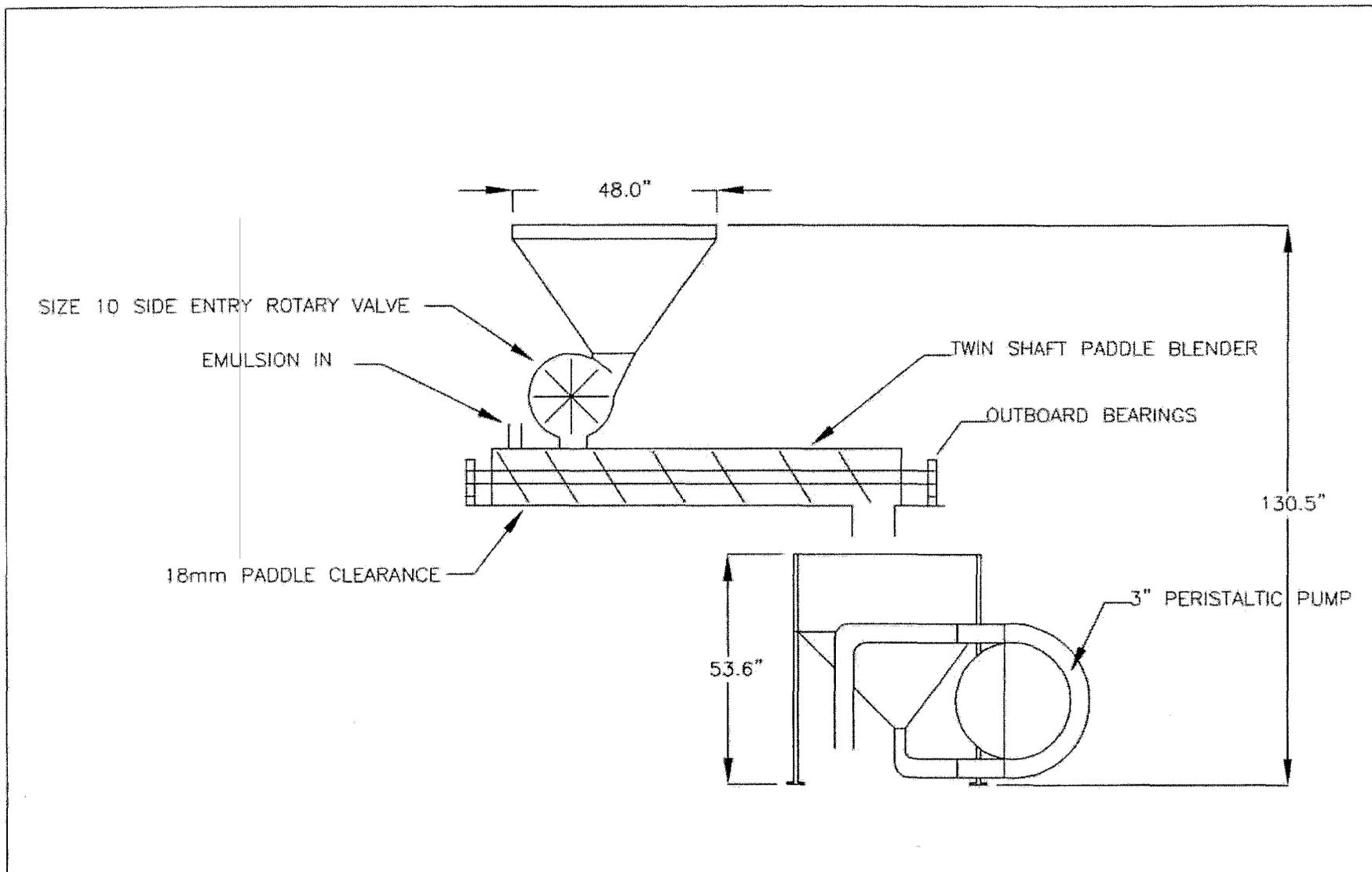
The photographs, illustrations, drawings and descriptions contained in this publication are not intended to depict actual operating conditions or to suggest operating procedures. They are included only for the purpose of portraying the features of the machinery. The manufacturer's installation, operation and maintenance instructions and recommended safety procedures must be expressly followed during installation, operation or maintenance of the equipment.

YOUNG
INDUSTRIES, INC.

ROTARY VALVE SPECIFICATION SHEET

BY _____ DATE _____

1	PROPOSAL TYPE: <input type="checkbox"/> FIRM <input type="checkbox"/> BUDGET	DATE REQUIRED:
2	CUSTOMER:	PROJECT NO.:
3		PLANT LOCATION:
4		
5		
6	CONTACT:	PHONE: () -
7		FAX:
8	APPLICATION	
9	<input type="checkbox"/> METERING <input type="checkbox"/> AIRLOCK	CAPACITY: NORMAL LBS/HR
10	MATERIAL HANDLED:	MAX LBS/HR
11	BULK DENSITY:	OPERATION: <input type="checkbox"/> CONTINUOUS
12	MATERIAL TEMPERATURE:	<input type="checkbox"/> INTERMITTENT
13	MATERIAL CHARACTERISTICS:	LOCATION: <input type="checkbox"/> INDOOR
14	<input type="checkbox"/> STICKY <input type="checkbox"/> HYGROSCOPIC	<input type="checkbox"/> OUTDOOR
15	<input type="checkbox"/> TOXIC <input type="checkbox"/> EXPLOSIVE	MATERIAL FEED FROM:
16	<input type="checkbox"/> ABRASIVE <input type="checkbox"/> OTHER	MATERIAL DISCHARGE TO:
17	<input type="checkbox"/> CORROSIVE	DIFFERENTIAL PRESSURE:
18	PARTICLE SIZE:	
19	SPECIAL CONDITIONS:	
20		
21		
22	VALVE DATA	
23	VALVE SIZE:	INLET FLANGE <input type="checkbox"/> ROUND <input type="checkbox"/> SQUARE
24	MODEL:	OUTLET FLANGE: <input type="checkbox"/> ROUND <input type="checkbox"/> SQUARE
25	TYPE:	MATERIAL OF CONSTRUCTION:
26	<input type="checkbox"/> DROP - THRU	<input type="checkbox"/> C/S
27	<input type="checkbox"/> SIDE - ENTRY	<input type="checkbox"/> CAST IRON
28	<input type="checkbox"/> BLOW - THRU	<input type="checkbox"/> ALUM
29	<input type="checkbox"/> QUICK CLEAN	<input type="checkbox"/> 304 S/S
30	<input type="checkbox"/> CANTILEVERED	<input type="checkbox"/> 316 S/S
31	ROTOR TYPE:	<input type="checkbox"/> _____
32	<input type="checkbox"/> OPEN END	DRIVE TYPE: <input type="checkbox"/> FIXED
33	<input type="checkbox"/> CLOSED END	<input type="checkbox"/> VARIABLE
34	ROTOR OPTIONS:	<input type="checkbox"/> NOT REQ'D
35	<input type="checkbox"/> ADJUSTABLE TIPS	<input type="checkbox"/> _____
36	<input type="checkbox"/> BEVELS	MOTOR TYPE: <input type="checkbox"/> TEFC
37	<input type="checkbox"/> FLEX. TIPS	<input type="checkbox"/> MILL & CHEM
38		<input type="checkbox"/> EXPLOSION PROOF
39	ADDITIONAL FEATURES:	XP RATING: <input type="checkbox"/> _____
40	<input type="checkbox"/> INSPECTION DOOR	
41	<input type="checkbox"/> VENT	
42	<input type="checkbox"/> PACKING PURGE	NOTES:
43	<input type="checkbox"/> HARD COATINGS	
44	<input type="checkbox"/> MOTION SWITCH	
45	<input type="checkbox"/> O-RINGS	
46	<input type="checkbox"/> HI-TEMP	
47	<input type="checkbox"/> INVERTER	
48	<input type="checkbox"/> BAFFLE	
49	<input type="checkbox"/> _____	



PRELIMINARY
 CONFIDENTIAL AND PROPRIETARY INFORMATION
 AUSTIN POWDER COMPANY

				SCALE: AS NOTED DRAWN: T. BILKOVICH DATE: 11 MAY 2010	TOLERANCES UNLESS NOTED 2 PL. DEC. XXXX 3 PL. DEC. XXXX ANGLES: 4 FRACTIONS: XXXXX FINISH: XXXXX	ZUKOVICH, NORMAND & WADE, LLC P.O. BOX 177 EAGLEVILLE, PA 15463 USA www.exploenergy.com	PROPELLANT BLENDING
NO.	DATE	BY	REVISION	REFERENCE DRAWINGS	REFERENCE DRAWINGS	SIZE: D DRAWING NUMBER: APC-001 REV: 0	REV:

Report For Bulk Emulsions

01MY12A1 LZ27001M CorsoI35 M6 propellant 30% M6
 C229 41 M6 propellant in bulk
Objective: VOD and cap sensitivity testing **Product:** HydAdv120
Act%: 0 **Treat%:** 0 **fuel%:** 0 **plantmatrix** **plant fuel** **terminated**
sampletype: **temp:** **visc:** **density:** **comments:**
 Premix-Refined 185 30000
 Product-End 182 33000 1.17
 Product-Cold 70 1.26

**Visual
Amb**

Age Grade
 0 A

Age	Store	Temp	Primer	Pass	VOD	Comments:
1	A	79	20	P	19352	2 x 18 AT
1	A	79	20	P	18688	2 x 18 AT
1	A	79	20	P	19094	2 x 18 AT

Oxidizer:

Fuel:

Matrix:

Finished: see process sheet

Packaging: .2 x 16 AT - 3 in ambient, 12 lbs for cap test

Report For Bulk Emulsions

Description	Lotus	Mag	Qty
AXE BULK-R&D	11147	MAG31	12.3
AXE BULK-R&D	11147	MAG31A	7.5

Report For Bulk Emulsions

01MY12A2 LZ27001M CorsoI35 M6 propellant 40% M6

C229 41 M6 propellant in bulk

Objective: VOD and cap sensitivity testing

Product: HydAdv120

Act% 0 Treat%: 0 fuel%: 0 plantmatrix plant fuel terminated

sampletype:	temp:	visc:	density:	comments:
Premix-Refined	185	30000		
Product-End	182	33000	1.17	
Product-Cold	70		1.29	

**Visual
Amb**

Age	Grade
0	A

Age	Store	Temp	Primer	Pass	VOD	Comments:
1	A	79	20	P	15511	2 x 16 AT
1	A	79	20	P	16240	2 x 16 AT
1	A	79	20	P	16329	2 x 16 AT

Oxidizer:

Fuel:

Matrix:

Finished: see process sheet

Packaging: 2 x 16 AT - 3 in ambient, 12 lbs for cap test

Report For Bulk Emulsions

Description	Lotus	Mag	Qty
AXE BULK-R&D	11147	MAG31	12.3
AXE BULK-R&D	11147	MAG31A	7.5

Report For Bulk Emulsions

01MY12A3 LZ27001M Corsol35 .control from plant
 C229 41 M6 propellant in bulk
Objective: VOD and cap sensitivity testing **Product:** HydAdv120
Act%: 0 **Treat%:** 0 **fuel%:** 0 **plantmatrix** **plant fuel** **terminated**
sampletype: **temp:** **visc:** **density:** **comments:**
 Premix-Refined 185 30000
 Product-End 182 33000 1.17
 Product-Cold 70 1.21

**Visual
Amb**

Age Grade
 0 A

Age	Store	Temp	Primer	Pass	VOD	Comments:
1	A	79	20	P	18618	2 x 16 AT
1	A	79	20	P	19427	2 x 16 AT
1	A	79	20	P	20057	2 x 16 AT

Oxidizer:

Fuel:

Matrix:

Finished: see process sheet

Packaging: 2 x 16 AT - 3 in ambient, 12 lbs for cap test

Report For Bulk Emulsions

Description	Lotus	Mag	Qty
AXE BULK-R&D	11147	MAG31	12
AXE BULK-R&D	11147	MAG31A	7.5



Re: DENSITY M6-Propellant 
Mike Abele to Margit Chevalier, Dennis Schulz

05/03/2012 02:46 PM

Margit

The below date shift codes were tested for cap sensitivity test. All samples tested passed (no detonations).

Thank Mike

Mike Abele

Margit Here are the densities you requested.

05/01/2012 11:29:58 AM



Mike Abele/RDN/Mfg/Austin

05/01/2012 11:29 AM

To Margit Chevalier/RDN/Austin

cc

Subject DENSITY

Margit

Here are the densities you requested.

01MY12A1 1.26

01MY12A2=1.29

01MY12A3=1.21

Thanks Mike

M^ Propellant Tests

Dennis Schulz to Dave True

05/03/2012 03:04 PM

Dave,

Samples made using Hydromite Advance 120 (essentially the same as Hydromite 1100S) and blends with 30% and 40% M6 Propellant passed cap sensitivity tests. Density and VOD (2" unconfined with a 20g. Diamond Nugget) were:

Hydromite Advance 120	1.21 g/cc	19,400 ft/sec
HA 120 with 30% M6	1.26 g/cc	19,000 ft/sec
HA 120 with 40% M6	1.29 g/cc	16,000 ft/sec

We will be doing some cycling testing to insure a 3 or 6 month shelf life. I don't expect any problems.

What this means is that we could make a wide range of products with the propellant in the mix plant. I don't see any responsible way to make these products in a KP package.

I will try to spend some time with Tom Justice and Tom Zukovich next week to discuss what would be needed at the mix plant.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933



Propellant Blending with Emulsions
Tom Zukovich to: Dennis Schulz
Cc: Keith.Mills, larry.mccorkle, Bob Morhard

05/15/2012 05:59 PM

History

This message has been forwarded.

Hi Denny,

Sorry to take so long with this but i did a little research on propellants as you can see in the attachments.

APC's initial thought was to use the ANFO Mix Plant to blend the proposed propellant with bulk emulsion. I looked at the building and I cannot recommend that this blending operation be placed there. There is no conductive flooring and too many places for any fugitive propellant dust to accumulate. There is also just not enough room there to add the necessary equipment and operate it safely.

Please review the attachments and let me know if there is anything else I can do to help APC with this project.

Best Regards,

Tom Zukovich
Partner
Zukovich, Morhard & Wade, LLC.
+ 1 610-653-8821 Tel
+ 1 610-799-2116 Fax
zukovich@exploenergy.com
<http://www.exploenergy.com>

Zukovich, Morhard & Wade, LLC.

P.O. Box 177
Eagleville, PA 19403 USA

1 610-653-8821 T
1 610-799-2116 F
www.exploenergy.com
zukovich@exploenergy.com



15 May 2012

**Austin Powder Co.
430 Powder Plant Rd.
McArthur, OH 45651-0317**

Attn: Denny Schulz

Dear Denny,

APC wishes to produce a blended emulsion / propellant product and package it in shot hole bags.

The blend will contain approximately 30% to 40% propellant and the balance will be bulk emulsion that is sensitized with Expancel microballoons.

In order to provide the maximum amount of safety for the employees, we talked about the possibility of using wet propellant. Testing of the dry vs wet propellant should be conducted to determine if this is true and to what extent the margin of safety would be.

Considerations:

For your reference, I have attached a NASA document "SAFETY STANDARD FOR EXPLOSIVES, PROPELLANTS AND PYROTECHNICS". This is an extensive document that covers all aspects of manufacturing and handling propellants. Section 5 describes the requirements for electrical classification, fire protection and lightning protection.

Also attached for your reference is a patent for blending propellants with water gels. I have not located any patents dealing with the mixing of propellants with emulsions.

The handling area should be protected with a deluge system. The exposed propellant needs to be protected which means the feed hopper. Testing should be done on the blended product to determine if it will burn in a fire. If it does, then the blender and storage hopper areas must also be protected.

The Electrical classification should be for explosive dust, which is Class II, Div II, Groups E, F & G if the propellant dust is only occasionally present. Or, it should be Class II, Div I, Groups E, F & G if the propellant dust is always present.

The production room that will be used should have a conductive floor anywhere the propellant may be exposed.

The propellant metering should be with a side entry rotary valve. Young Industries (www.younginds.com) can provide a side entry rotary valve. This type of rotary valve does not allow the valve pockets to fill to capacity thereby preventing any "clipping" of the propellant as the valve pockets rotate. The size of the valve needs to be determined by the expected rate of production. Keep in mind that the larger the valve is, the slower it can be run for safety considerations. An additional safety device would be to use the Type D rotor. This is a flexible tip rotor that can reduce the impact of any impingement on the propellant pieces in the event of an equipment or process malfunction.

The blender can be the in-house blender left over from the wax emulsion plant. The blender agitators need to have clearances between the paddles and the side of the blender equal to, or greater than, the size of the propellant when measured at a diagonal (currently the proposed propellant measures 17mm L x 7mm Dia and 18mm measured diagonally).

An alternative blender can be a U-trough auger with a mixing auger instead of a standard auger. This allows the mixing of the ingredients in a partially filled housing. The top of the U-trough auger should have external hinges and the rubber type of closing device to keep the lid closed during manufacturing. Again the clearance of the auger to the housing must be equal to, or greater than, the size of the propellant when measured at a diagonal.

The pump used to package the blend can be either a PC pump or a Waukesha-Bredel peristaltic pump. The peristaltic pump is recommended because there is very little possibility of crushing the propellant in the pump. There is also this type of pump in house. An encoder can be used on the shaft of the pump tied into a pre-stop counter to stop the pump when the bag is filled.

If a PC pump is used a Fault Tree Analysis should be done on the selected pump to be used. An explanation of Fault Tree Analysis can be found in A Guide to Hazard Quantification for Explosives written by J.F. Buszard and P.E Smith of the former ICI Canada. I believe there is a copy at Red Diamond.

Safety Considerations:

Determine if the propellant is single based or double based.

Determine the static sensitivity of the dry vs wet propellant.

Determine the impact sensitivity of the dry vs wet propellant.

Determine the friction sensitivity of the dry vs wet propellant.

Determine if the wet propellant can burn as compared to the dry propellant.

Determine if the blend of emulsion and propellant will burn (as opposed to an emulsion

by itself).

If wet propellant is used the amount of water on the propellant must be determined to ensure an additional margin of safety during the handling of the propellant, and that amount of water needs to be accounted for in the total blended product.

Regards,

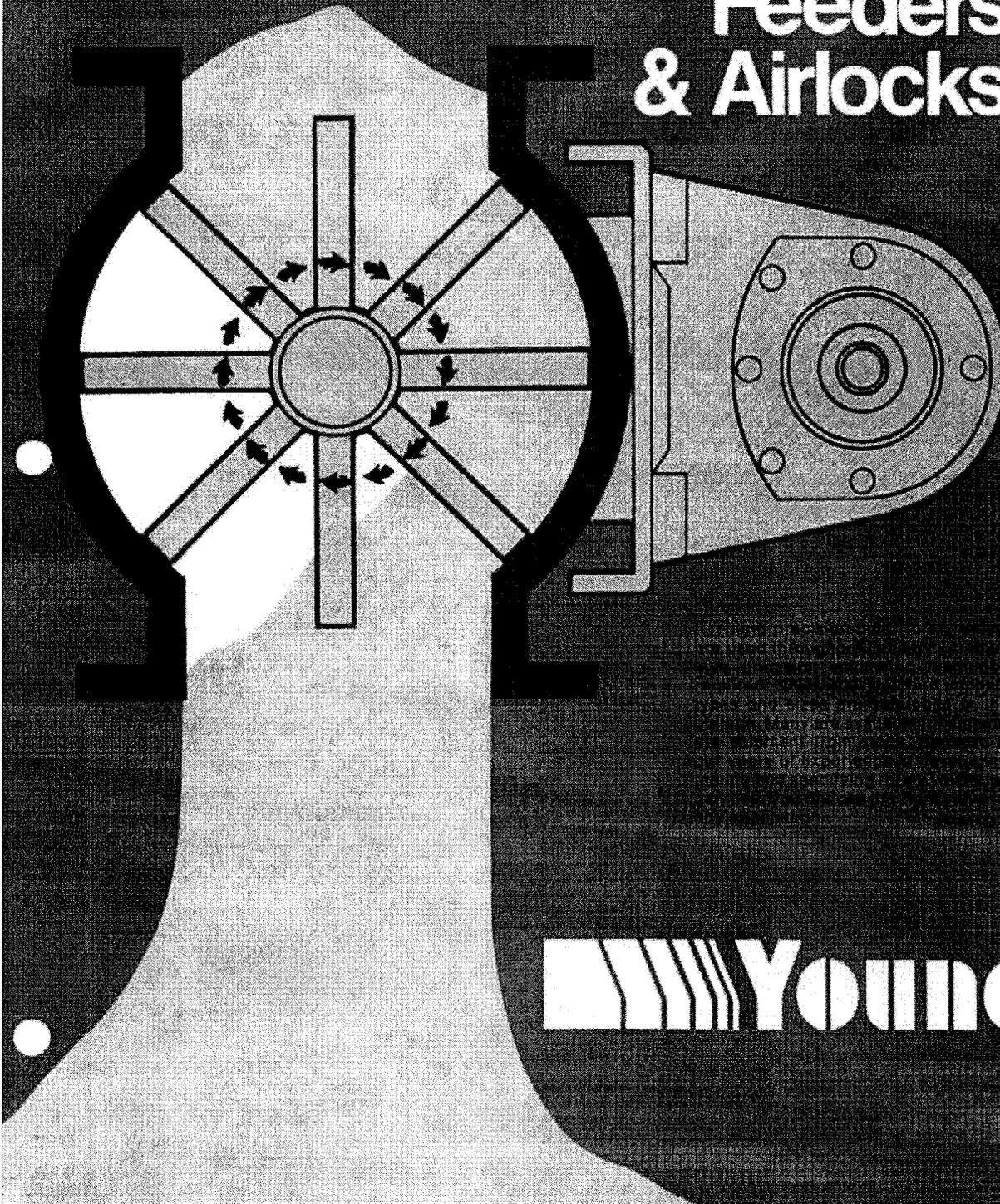
Tom Zukovich
Partner
Zukovich, Morhard & Wade, LLC

cc: Bob Morhard, Partner, Zukovich, Morhard & Wade, LLC
Larry McCorkle, Austin Powder Co.
Keith Mills, Austin Powder Co.

Attachments:

- "SAFETY STANDARD FOR EXPLOSIVES, PROPELLANTS AND PYROTECHNICS".
- Patent #5608184 Alternative use of military propellants as novel blasting agents
- Side Entry Rotary Valve Brochure from Young Industries
- Drawing APC-001 – Propellant Blending

Rotary Valves Feeders & Airlocks



Young

VALVES...

an airlock feeder for every need!

YOUR CHOICE OF ROTORS

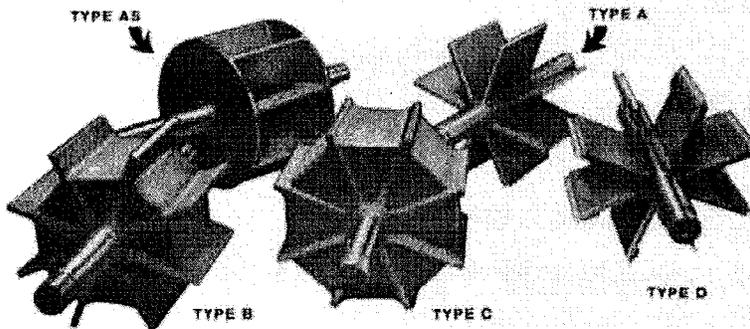
The rotor is the heart of the rotary valve. Some manufacturers use as few as four vanes, and six are in wide use.

At Young, the eight-vane rotor is standard because it provides low operating leakage. An eight-vane rotor always has a minimum of four vanes sealing the valve. For special low leakage requirements a twelve-vane rotor can be supplied.

There are many types and variations of rotors offered by Young. Type A — standard rotor; Types B & C — partially-filled rotors; and Type D — adjustable tip rotor. A partially-

filled rotor is used when a lower throughput is required for a given size of valve. Adjustable tip rotors are available with rigid or flexible tips. Shrouded rotors can be provided in all basic types. Purging is always required with shrouded rotors.

The Young standard design uses a larger diameter rotor and **unrestricted inlet and outlet**. Full-sized openings at the rotor results in "straight through" action and lower operating speeds. Heavy shafts are standard on all valves to eliminate deflection.



Shown are typical Rotors used in Young Rotary Valves. Type A is standard for most applications. Types B and C are partially filled. Type D is used where adjustable tips are required. Type AS is a Shrouded Rotor for special applications. Types BS and CS (not illustrated) are Shrouded Rotors that are partially filled. Type DS (not illustrated) is a Shrouded Rotor with adjustable tips.

IN STOCK FOR IMMEDIATE DELIVERY

Rotary Valves have generally been considered special order equipment. When you need a rotary valve, you often need it in a hurry. Young has a stocking program for the most frequently used types and sizes; both in Iron and Stainless Steel. When we get your rush order, we can assemble these valves, generally the same day, and get them on their way to you. These "stock" valves are designated in this catalog.

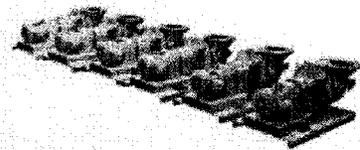
Fast delivery when you need it is part of the service we offer all our customers.



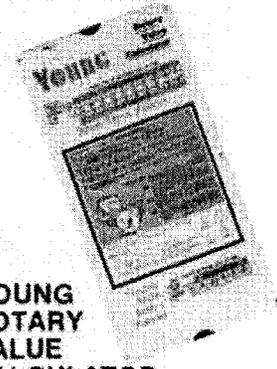
Our Rotary Valve Stocking Program assures fast delivery on the most commonly used types and sizes.

SPECIAL APPLICATIONS

For special requirements, Young offers many options and additions: special metals of construction, special platings or coatings, choice of rotor designs, inspection ports, purge and vent connections, special bearings and seals, and rotary valves designed for high temperature, high pressure. End Seal designs are available for low-leakage requirements. Consult the Young factory for details.



Direct Drive Side Entry Valves for a customer's special application.



YOUNG ROTARY VALUE CALCULATOR

Our engineers have developed a slide calculator that greatly simplifies the selection of rotary valves. If you know your capacity requirement, the Calculator will show you the right model and size valve and rotor type. It also gives you the recommended drive assembly for the valve selected.

Ask your Young Representative for your Rotary Value Calculator, or write or call us at the factory. It's free to all rotary valve users.

PRECISION ROTARY

Young Industries manufactures the market's broadest line of **precision rotary valves**. Rotary valves have always been a major product line at Young, not a side line.

Our engineering laboratory has developed extensive data over the years, based on hundreds of tests with many types of products, each plotted at a full range of operating speeds.

The Young Rotary Valve Product Line includes: Drop-Thru; Side Entry; V-Orifice; Bio-Thru; and Dust Collection models. Each is a

complete series. Each is the best answer to a specific application.

Rotary Valves manufactured by Young Industries are used as metering devices, feeders and rotary airlocks for dry free-flowing materials of varying sizes and shapes. Used with bins, tanks, mixers, silos, classifiers, dryers, collectors, hoppers, cyclone collectors, dust collectors, and other equipment for pneumatic systems and process operations in virtually every industry.

Applications are too numerous to

list but include these products: CHEMICALS, CLAY, COFFEE, COMPOUNDS, DETERGENTS, DRY FOODS, DRUGS, DUST, FLOUR, GRAINS, GRAPHITE, GYPSUM, MEALS, MINERALS, ORES, PLASTICS, POWDERS, POWDERED METALS, SALT, SAWDUST, SOAPS, SPICES, STARCH, SUGAR, ETC.

Should you have questions regarding handling of a specific product, consult your Young Sales Engineer.

BUILT BETTER TO PERFORM BETTER

Each Young Rotary Valve is precision built. Standard housings and end bells are cast in Iron, Aluminum or Stainless Steel; or fabricated of Carbon Steel or Stainless Steel. Special construction materials, platings or coatings are provided when a particular requirement dictates. For example, when a product is known to adhere to metal surfaces, a coating with a low friction coefficient, such as Teflon, can be used. Chrome plating is often used with an abrasive product to reduce valve wear.

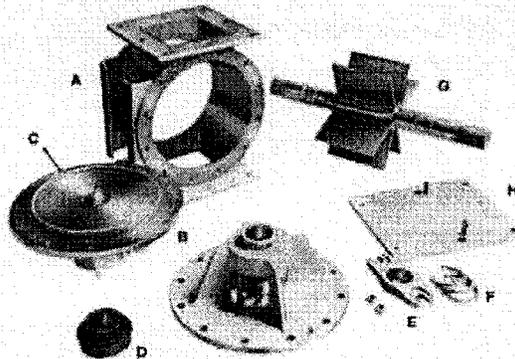
Flanges are available in round, square or rectangular, as shown on the specifications for each model.

All valve components are built rugged for heavy-duty applications, and precision machined to exacting tolerances. *Rotors are fabricated on all models.*

Standard Rotary Valves use heavy-duty ball bearings, outboard mounted for free access to packing and to isolate the bearing from the product area. Lubricated and sealed for life. Generous packing glands accept standard square packing. Units are shipped with braided asbestos and Teflon packing.

Standard Young Rotary Valves are rated at 15 PSIG, and temperatures to 250° F.

Young takes great pride in the quality and precision of these Rotary Valves. The result ... high performance and long life ... features for which these products are widely known.



Standard cast Rotary Valve components:
A. Housing; B. End Plates; C. "O" Rings (optional); D. Sealed Ball Bearings; E. Packing Followers; F. Packing Rings; G. Type A Rotor; H. Gear Motor Support.

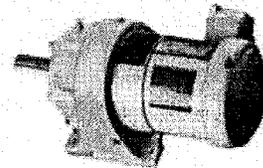
DRIVES AND ACCESSORIES

Young Rotary Valves are usually supplied complete with gear motor, sprockets, drive chain and safety guard to OSHA requirements. We use first quality gear motors from a leading manufacturer. (A different motor can be supplied if the model is specified on your order.)

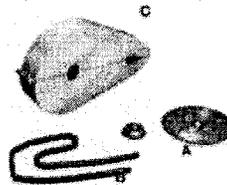
The Drives recommended allow a sprocket change in the field to increase or decrease valve speed.

Our standard drive uses a parallel-shaft gear motor because it delivers full horsepower to the rotary valve.

Other drive configurations, custom mounting plates, and arrangements can be supplied on special order.



Typical Parallel-Shaft Gear Motor.



Drive Components: A Sprockets; B Roller Chain; C Safety Guard.

Side Entry Rotary Valves

This series of valves was designed by Young to overcome serious jamming problems common to conventional feeders when used for some types of cubes, pellets, chips, flakes, prills and other products. These are particularly prevalent in the plastics industry. While these products are free-flowing, they have a tendency to become pinched between rotor and housing at the inlet. The resultant shearing action creates "fines" and can greatly increase load on the drive motor, damage rotor and housing, and jam the valve... interrupting the process and greatly increasing maintenance costs.

Young Side Entry Valves are non-jamming and eliminate the need for adjustable or flexible tips, which in most cases, will not satisfactorily solve the problem. The inlet and outlet flanges are offset and the product enters from the side. Side Entry Valves operate at a fixed speed and a maximum of 40% pocket fill with the integral inlet slide fully opened. Lesser throughput can be obtained by slide adjustment.

Type A or AS Rotors of eight-vane design are standard. Rotor always has two vanes sealing each side of the housing for low leakage. Standard Valves are rated at 15 PSIG.

Rectangular Side Entry Valves are specified when extra capacity is required without increasing the flange-to-flange dimension. Double-length valves are cataloged; longer lengths are available on special order.

For applications where the product is heat sensitive and "smears" or is abrasive, a Type AS Shrouded Rotor is supplied. Gas purging is required with the shrouded rotor.

A venting connection can be provided in the valve housing, if required by conditions.

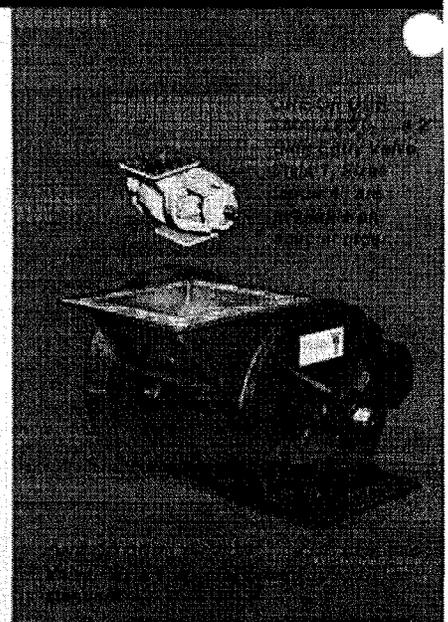
Other special applications are covered on pages 2 & 3.

FEATURES:

- PRECISION CONSTRUCTION
- NON-JAMMING DESIGN
- 15 PSIG AIRLOCK STANDARD OR SHROUDED ROTORS
- 8-VANE ROTOR STANDARD
- OUTBOARD MOUNTED, SEALED BALL BEARINGS
- INSPECTION DOOR STANDARD
- ADJUSTABLE FLOW-CONTROL GATE
- OPTIONAL PURGING
- OPTIONAL VENTING

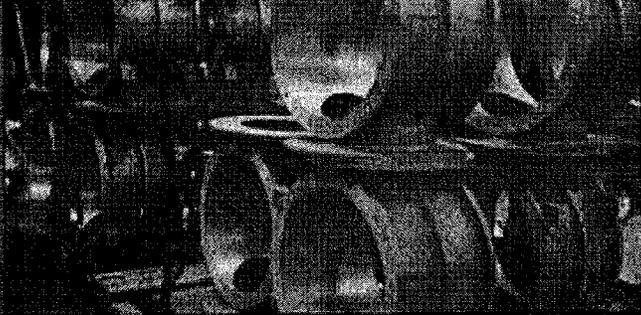
STANDARD SPECIFICATIONS

- OPERATION: Heavy-duty operation up to 15 PSIG, and temperatures up to 250° F.
- CONSTRUCTION: Fabricated Carbon Steel or Stainless Steel.
- ROTOR: 8 vanes, fabricated construction, Types A (open ends), or AS (shrouded).
- FLANGES: Square, Round or Rectangular Inlets; Square or Rectangular Outlets.
- BEARINGS: Sealed, heavy duty, ball bearings.
- PACKING: Three Ring Shaft Packing Glands with square braided asbestos and Teflon packing.
- DRIVE: First quality parallel-shaft gear motor, side mounted, 3 phase, 60 Hertz, 230-460 Volt, totally enclosed, includes: sprockets, roller chain, and safety guard to OSHA requirements.



SPECIFICATIONS — SIDE ENTRY VALVES

VALVE DESIGNATION	HOUSING MAT. DIMENSIONS	ROTOR MAT. DIMENSIONS	INLET FLANGE DIMENSIONS	INLET FLANGE						
Style 1 Side Entry Rotary Valves										
4-5	80x4	0210	30	1/2	4	2 1/4	100	105		
5-5	80x5	0496	30	1/2	5	2 1/2	150	110		
6-5	100x6	0940	30	1/2	6	3	200	110		
6-6	120x6	1172	30	1/2	6	4	275	120		
10-5	150x10	3588	26	1/2	10 1/2	5	400	120		
12-5	170x12	5616	26	1	11	6	525	135		
14-5	190x13	7640	26	1	12	8 1/2	750	135		
16-5	230x15	12768	26	1 1/2	15	11 1/2	1100	160		
18-5	250x17	17476	26	1 1/2	16	8 1/2	1340	160		
Style 2 Double-Length Side Entry Rotary Valves										
4-2-5	80x8	0420	30	1/2	4	2 1/4	150	110		
5-2-5	80x10	0982	30	1/2	5	2 1/2	225	120		
6-2-5	100x12	1896	30	1/2	6	3	300	120		
6-2-6	120x10	3544	30	1	6	4	415	135		
10-2-5	150x20	7176	26	1	10 1/2	5	640	135		
12-2-5	170x24	11200	26	1 1/2	11	6	840	160		
14-2-5	190x26	15290	26	1 1/2	12	8 1/2	1200	160		
16-2-5	230x30	25536	26	2	15	11 1/2	1760	320		
18-2-5	250x34	34952	26	2	16	8 1/2	2145	320		
<p>STOCK VALVES—models shown in blue are in stock for immediate shipment.</p> <p>SPECIFICATIONS: Housings of fabricated stainless steel; Type A Rotor, Square Inlet and Outlet Flanges.</p>										



**YOUNG
INDUSTRIES
TRUSTED FOR
QUALITY**



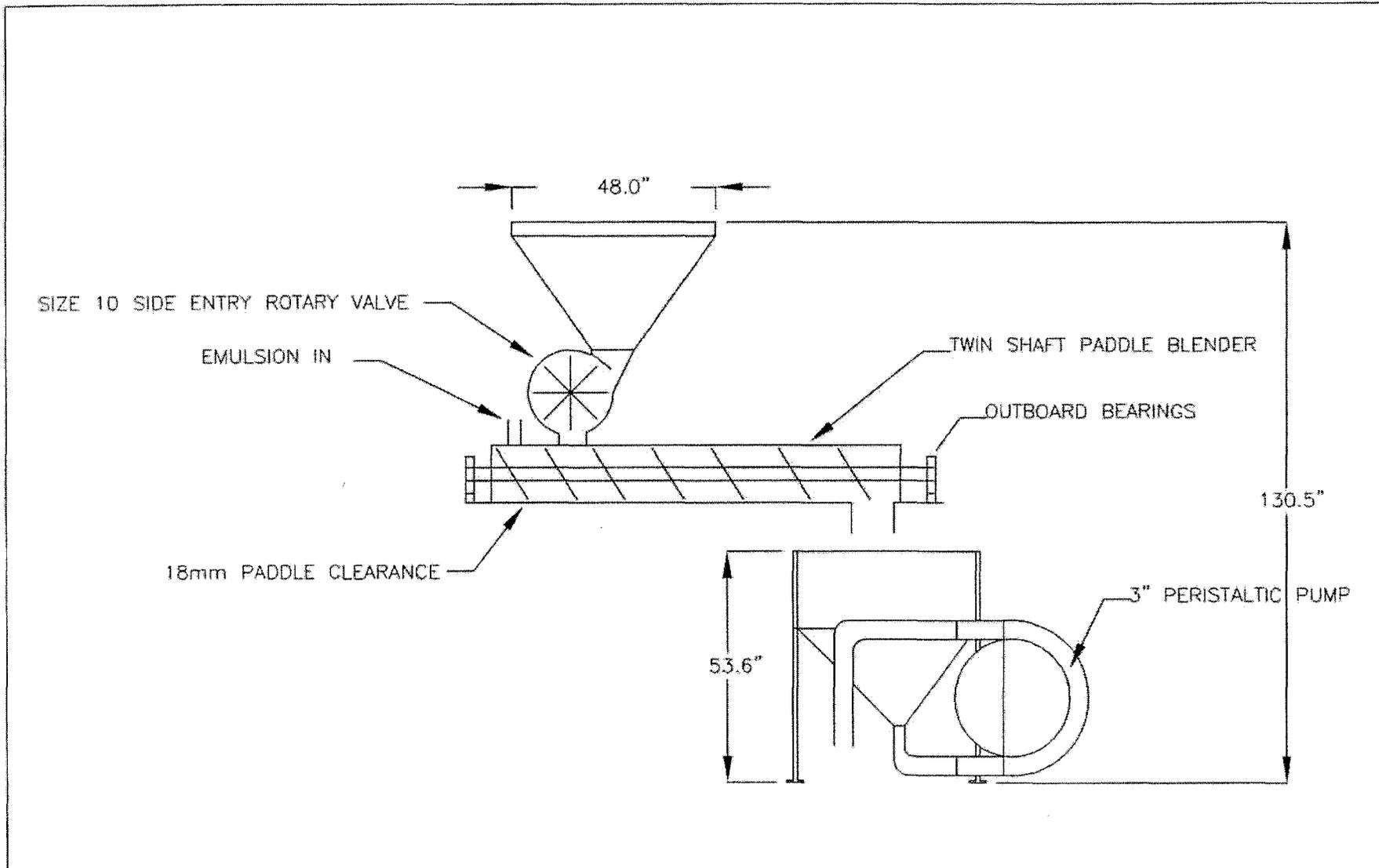
WARNING NOTICE

Some machines in this bulletin are shown with guards or covers removed, or partially disassembled for the purpose of illustration. Machines must not be operated with guards, covers, or other protective devices removed or disabled. Machines must not be operated in a partially disassembled condition.

The photographs, illustrations, drawings and descriptions contained in this publication are not intended to depict actual operating conditions or to suggest operating procedures. They are included only for the purpose of portraying the features of the machinery. The manufacturer's installation, operation and maintenance instructions and recommended safety procedures must be expressly followed during installation, operation or maintenance of the equipment.

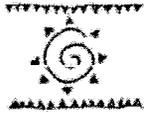
YOUNG

INDUSTRIES, INC.



PRELIMINARY
 CONFIDENTIAL AND PROPRIETARY INFORMATION
 AUSTIN POWDER COMPANY

				SCALE: AS NOTED DRAWN: T.M. ZURLOUGH DATE: 14 MAY 2016 CHECKED: [blank] DATE: [blank] APPROVED: [blank] DATE: [blank] PRODUCT: [blank]	TOLERANCES UNLESS NOTED 2 PL. DEC. XXXXX 3 PL. DEC. XXXXX ANGLES ± XXXXX FRACTIONS XXXXX FINISH XXXXX	ZUKOVICH, MOHRARD & WADE, LLC P.O. BOX 177 EAGLEVILLE, PA 19403 USA www.exploenergy.com	PROPELLANT BLENDING
NO.	DATE	BY	REVISION	REFERENCE DRAWING	REFERENCE DRAWING	SIZE: D DRAWING NUMBER: APC-001 REV: 0	



M6 propellant in 503
Margit Chevalier to Mike Abele
cc: Dennis Schulz

05/22/2012 11:39 AM

Mike,

the samples I've send to you are labelled as follows:

22MY12A1 - plain 503 control
22MY12A2 - 503 with 30% M6
22MY12A3 - 503 with 40% M6

Could you do the regular DOT cap test as well as ambient density like last time?

Thanks

M

Margit Chevalier | Austin Powder Company **R&D** | 430 Powder Plant Rd | McArthur, OH 45651 | (Office)
740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com

shipments

Dennis Schulz to terrywright

06/01/2012 08:40 AM

Just to confirm:

1. Cost of material is \$1 per load - we pay freight.
2. How many pounds per load if:
 - a. drums
 - b. super sacks in gaylord boxes

Thanks!

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933



RE: shipments
Terry Wright to: 'Dennis Schulz'

06/01/2012 08:47 AM

Yes Denny \$1.00 per load and you pay the freight. We can either load a common carrier or you can drop a couple of Austin trailers in here and we can pre load them for a back haul.

Generally it does not matter if it's drums or super-sacks. We usually get about 40,000# of either. It's your choice as to how you want it packaged. I can assure you we can get more weight with an Austin truck over a common carrier. I would however like the drums or super-sacks back at my cost if it is possible to accumulate them at RD.

Denny I really appreciate your interest and help with this project. I hope Austin kicks you know who's butt with the product.

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

-----Original Message-----

From: Dennis Schulz [mailto:Dennis.Schulz@austinpowder.com]
Sent: Friday, June 01, 2012 7:41 AM
To: terrywright@explosystems.com
Subject: shipments

Just to confirm:

1. Cost of material is \$1 per load - we pay freight.
2. How many pounds per load if:
 - a. drums
 - b. super sacks in gaylord boxes

Thanks!

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

No virus found in this message.

Checked by AVG - www.avg.com

Version: 2012.0.2178 / Virus Database: 2425/5038 - Release Date: 06/01/12

new product cost

Dennis Schulz to John Balish

06/01/2012 08:59 AM

John,

We need a cost estimate for a new product.

This will be a 33% blend of M6 Propellant with Hydromite 1100S (67%).

The product will be made at the mix plant - similar to the Hydromite 820 in WPP bags we currently make there.

The M6 Propellant will cost about \$0.08 per pound - delivered to Red Diamond (freight included).

We need pricing for a product in a 5" x 30# bag with the same labor and overhead costs associated with Hydromite 820.

As soon add to your response the cost for HEET 130 in 5" x 30# and Hydromite 820 in 5" x 30# as well.

If you have any questions, please call me.

Thanks!
Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Re: new product cost 

Dennis Schulz to John Balish
Cc: Dave True

06/01/2012 09:32 AM

Correct, no fuel.

I slightly overstated the transportation cost just to be on the safe side.
The actual transportation cost calculated at about \$0.065 per pound, so I thought the \$0.08 would cover some unexpected costs.

But in any case only slightly lower cost than current products.

Thanks for the prompt response, greatly appreciated!

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

John Balish/Cle/Austin



John Balish/Cle/Austin
06/01/2012 09:25 AM

To: Dennis Schulz/RDN/Austin@Austin
cc

Subject: Re: new product cost 

I'm assuming the the new product does not include fuel?

Therefore,
The new product estimated standard will be: \$9.76/bag or \$.325/lb
Current H-820 5 x 30 = \$10.03/bag or \$.334/lb
Current H-130 5 x 30 = \$10.17/bag or \$.339/lb

John

Dennis Schulz John, We need a cost estimate for a new product. 06/01/2012 08:59:07 AM

From: Dennis Schulz/RDN/Austin
To: John Balish/Cle/Austin@Austin
Date: 06/01/2012 08:59 AM
Subject: new product cost

John,

We need a cost estimate for a new product.
This will be a 33% blend of M6 Propellant with Hydromite 1100S (67%).
The product will be made at the mix plant - similar to the Hydromite 820 in WPP bags we currently make there.

The M6 Propellant will cost about \$0.08 per pound - delivered to Red Diamond (freight included).

We need pricing for a product in a 5" x 30# bag with the same labor and overhead costs associated with Hydromite 820.

As soon add to your response the cost for HEET 130 in 5" x 30# and Hydromite 820 in 5" x 30# as well.

If you have any questions, please call me.

Thanks!
Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933



M6 Propellant - MSDS
Margit Chevalier to Dennis Schulz

06/01/2012 01:22 PM

History:

This message has been replied to.

Dennis,

while over in the lab Bob B called and discussed his opinion about the MSDS on hand. He would like to see a MSDS provided by the actual manufacturer since he sees flaws in the one from EXPLO Systems. I think all concerns by everyone should be brought to the table in an open disussion with someone keeping notes for future reference.

I leave it up to you.

M

Margit Chevalier | Austin Powder Company **R&D** | 430 Powder Plant Rd | McArthur, OH 45651 | (Office)
740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com



RE: MSDS
Terry Wright to: 'Dennis Schulz'

06/01/2012 01:39 PM

History:

This message has been replied to and forwarded.

Understand the Hercules MSDS sheet is dealing with the manufacturing of the propellant and it's components not the finished product. You need a good SOP that identifies static in the process and good housekeeping

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

-----Original Message-----

From: Dennis Schulz [mailto:Dennis.Schulz@austinpowder.com]
Sent: Friday, June 01, 2012 12:26 PM
To: terrywright@explosystems.com
Subject: MSDS

We do have your MSDS and that is helpful.
Is it possible to obtain the original MSDS from the military?

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2012.0.2178 / Virus Database: 2425/5038 - Release Date: 06/01/12

HERCULES INCORPORATED -- PROPELLANT,EXPLOSIVE,SOLID,M6+2F/76MM -- 1376-00N010938

=====
Product Identification
=====

Product ID:PROPELLANT,EXPLOSIVE,SOLID,M6+2F/76MM
MSDS Date:01/09/1986
FSC:1376
NIIN:00N010938
MSDS Number: BHVKT
==== Responsible Party ====
Company Name:HERCULES INCORPORATED
Address:RADFORD ARMY AMMUNITION PLANT
City:RADFORD
State:VA
ZIP:24141
Info Phone Num:703-639-7294
Emergency Phone Num:703-639-7294
CAGE:2D295

==== Contractor Identification ====
Company Name:HERCULES INC
Address:RADFORD ARMY AMMUNITION PLANT
Box:City:RADFORD
State:VA
ZIP:24141
Country:US
Phone:703-639-7294
CAGE:2D881
Company Name:HERCULES INCORPORATED
Address:84 5TH AVE
City:NEW YORK
State:NY
ZIP:10011-7603
Country:US
CAGE:2D295

=====
Composition/Information on Ingredients
=====

Ingred Name:DIBUTYL PHTHALATE (SARA III)
CAS:84-74-2
RTECS #:TI0875000
Fraction by Wt: 3.00%
Other REC Limits:N/K
OSHA PEL:5 MG/M3
ACGIH TLV:5 MG/M3; 9192
EPA Rpt Qty:10 LBS
DOT Rpt Qty:10 LBS

Ingred Name:DIPHENYLAMINE
CAS:122-39-4
RTECS #:JJ7800000
Fraction by WE: 1.00%
Other REC Limits:N/K
OSHA PEL:10 MG/M3
ACGIH TLV:10 MG/M3; 9192

Ingred Name:POTASSIUM SULFATE
CAS:7778-80-8
RTECS #:TT5900000

<http://hazard.com/msds/t2/bhv/bhvkt.html>

3/29/2012

Fraction by Wt: 2.00%
 Other REC Limits:N/K
 OSHA PEL:N/K
 ACGIH TLV:N/K

Ingrad Name:NITROCELLULOSE (FLAMMABLE SOLID)
 Fraction by Wt: 87.00%
 Other REC Limits:N/K
 OSHA PEL:N/K
 ACGIH TLV:N/K

Ingrad Name:DINITROTOLUENE (SARA III)
 CAS:25321-14-6
 RTECS #:XT1300000
 Fraction by Wt: 10.00%
 Other REC Limits:N/K
 OSHA PEL:S;A2;0.15 MG/M3;9293
 ACGIH TLV:S, 1.5 MG/M3
 EPA Rpt Qty:10 LBS
 DOT Rpt Qty:10 LBS

=====
 Hazards Identification
 =====

LD50 LC50 Mixture:N/K
 Routes of Entry: Inhalation:YES Skin:YES Ingestion:YES
 Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
 Health Hazards Acute and Chronic:SEE SIGNS AND SYMPTOMS OF
 OVEREXPOSURE.
 Explanation of Carcinogenicity:NONE
 Effects of Overexposure:EYES:N/K .SKIN:TOXIC,AVOID SKIN
 CONTACT.INGESTION:TOXIC,AVOID INGESTION. INHALATION:TOXIC,AVOID
 INHALATION.
 Medical Cond Aggravated by Exposure:N/K

=====
 First Aid Measures
 =====

First Aid:EYES:IN CASE OF CONTACT, IMMEDIATELY FLUSH WITH PLENTY OF LOW
 PRESSURE WATER FOR AT LEAST 15 MINUTES.REMOVE ANY CONTACT LENSES TO
 ASSURE THOROUGH FLUSHING.CALL A PHYSICIAN.SKIN:WASH WITH SOAP AND
 RUNNI NG WATER.INGESTION:CONTACT MD IMMEDIATELY . INHALATION:REMOVE
 TO FRESH AIR.TREAT ANY IRRITATION SYMPTOMATICALLY.CALL A PHYSICIAN.

=====
 Fire Fighting Measures
 =====

Extinguishing Media:SELF-OXIDIZING,DELUGE W/ H*20.MAY NOT BE ABLE TO
 EXTING MATL BEFORE IT IS CONSUMED UNLESS LRG QTY USED IN SHORT
 TIME.
 Fire Fighting Procedures:USE NIOSH/MSHA APPROVED SCBA AND FULL
 PROTECTIVE EQUIPMENT .EVACUATE THE AREA.
 Unusual Fire/Explosion Hazard:EASILY IGNITED,HIGHLY COMBUSTIBLE;PROTECT
 FROM FIRE,SPARKS & EXTREME HEAT.AUTOIGNITION
 TEMP:383F,195C.HAZARDOUS DECOMPOSITION PRODUCTS:OXIDES OF CARBON.

=====
 Accidental Release Measures
 =====

Spill Release Procedures:CLEAN UP SPILLS IMMEDIATELY USING A SOFT
 BRISTLE BRUSH AND A CONDUCTIVE RUBBER OR PLASTIC SHOVEL.USE
 CAUTION,MATERIAL SENSITIVE TO IMPACT,FRICTION AND ELECTROSTATIC
 DISCHARGE.
 Neutralizing Agent:N/K

<http://hazard.com/msds/f2/bhv/bhvykt.html>

3/29/2012

=====
 Handling and Storage
 =====

Handling and Storage Precautions: AVOID PRLNG TEMP ABOVE
 50C, 125F. REC: 21C, 75F; 50% HUMIDITY. STOR MUST CONFORM TO
 LOCAL, STATE, FEDERAL REGS (OSHA 29CFR1910.109; BATE 27CFR55 SUBPART
 K).
 Other Precautions: WARNING, FLAMMABLE SOLID. KEEP AWAY FROM HEAT, SPARKS
 AND OPEN FLAME. KEEP CONTAINERS CLOSED. USE WITH ADEQUATE
 VENTILATION.

=====
 Exposure Controls/Personal Protection
 =====

Respiratory Protection: NIOSH/MSHA APPROVED RESPIRATOR APPROPRIATE FOR
 EXPOSURE OF CONCERN .
 Ventilation: LOCAL AND GENERAL VENTILATION NECESSARY TO KEEP AIR
 CONCENTRATION BELOW TLV .
 Protective Gloves: COTTON OR LEATHER.
 Eye Protection: SAFETY GLASSES
 Other Protective Equipment: FLAMEPROOF COVERALLS AND CONDUCTIVE SHOES.
 Work Hygienic Practices: N/K
 Supplemental Safety and Health
 ROUTES OF ENTRY: INGEST/SKIN/INHAL .

=====
 Physical/Chemical Properties
 =====

Melt/Freeze Pt: M.P/F.P Text: N/K
 Decomp Temp: Decomp Text: N/K
 Vapor Pres: NEGLIGIBLE
 Spec Gravity: 1.4955, WATER=1
 Evaporation Rate & Reference: <1 (BUTYL ACETATE=1)
 Solubility in Water: NEGLIGIBLE
 Appearance and Oder: HARD CYLINDER, PERFORATED, SMOOTH, GREENISH YELLOW
 COLOR. ODORLESS.

=====
 Stability and Reactivity Data
 =====

Stability Indicator/Materials to Avoid: YES
 OXIDES OF NITROGEN AND CARBON.
 Stability Condition to Avoid: AVOID OPEN FLAME, SPARKS AND HEAT.
 Hazardous Decomposition Products: OXIDES OF CARBON.

=====
 Disposal Considerations
 =====

Waste Disposal Methods: DISPOSAL MUST BE IN ACCORDANCE WITH
 FEDERAL, STATE AND LOCAL REGULATIONS . BURN IN OPEN BURNING GROUND IN
 ACCORDANCE WITH REGULATIONS. MAY ALSO BE BURNED IN AN INCINERATOR
 APPROVED FOR EXPLOSIVES.

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 assume responsibility for the suitability of this information to their
 particular situation.

New Propellant Product

Dennis Schulz to Scooter King

08/09/2012 11:48 AM

Scooter,

We are going to move forward with a new product. A blend of emulsion and a propellant (M6). This will be packaged in WPP bags and then either loose loaded in a van trailer or place in Gaylord boxes - then into a van trailer. I expect the product to be 1.5D. Planned sizes are from 2" up to 8". We have done the detonator sensitivity test.

My question regards specific products and the testing.

It would not surprise me for one of the following 2 options to happen:

1. Only 1 blend percentage - say 30% for all the products.
2. 2 or 3 blend percentages. 20% at 2" to 40% at 6" and some in-between.

My issue is classification testing.

What tolerance on the "physical sensitizer" do you think we can get away with?

Call when you can.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933



RE: Quote #1438 Examination, Testing and Recommendation for Hazard Classification

Bernadette Reyes to 'Dennis Schulz'

08/10/2012 04:57 PM

Denny,

Glad to hear from you. There will be no change or update on the quote (#1438) for testing the 3 emulsion-based products. The cost remains the same.

I will have the quote on the 1.5D packaged regular emulsion product/propellant blend for you by Wednesday next week. I will be @ the test site on Monday.

Have a good weekend.

Best Regards,
Bernadette

-----Original Message-----

From: Dennis Schulz [mailto:Dennis.Schulz@austinpowder.com]

Sent: Thursday, August 09, 2012 11:57 AM

To: Ami McCarthy

Cc: bernadette.reyes@dekra.com; Margit Chevallier; Scooter King

Subject: Re: Quote #1438 Examination, Testing and Recommendation for Hazard Classification

Contrary to popular belief, I did not fall off a cliff.
We got distracted here and I let a number of things fall behind.

I understand that there will be a means of getting the samples to Dixon, IL next week - so that is a positive. With business being so slow and the regulatory being what it is, it is difficult to do some of the things that were so easy in the past.

So, I would like to get an update on the quote for the 3 samples of 1.1D, if needed.

I also have another project, that will require a quotation.

We are looking at making a 1.5D packaged product that would be a blend of a regular emulsion and a propellant. The mixture would be 60% to 80% emulsion with the balance being the propellant (20% to 40%). We need your advice regarding the testing and approval process. The question is what samples do we test and what tolerance do you think will be allowed. As we have not had a production trial, we are unsure if the product will package well in small diameter packages at a very high solids content (40%).

What ingredient tolerance do you think will be acceptable: +/- 5.0% or something less?

Whatever is decided for the tolerance and the number of samples, we would be willing to test the sample at the high end of the specification. For instance if we called the product containing 30% of the propellant and we

asked for a +/- 5.0% tolerance, then we would test a product with 35% to cover the worst case.

How much sample do you need for the 1.5D packaged product test?

Please let us know what your thoughts are regarding this.
I will keep you informed on the arrival of all the products at Dixon.

Thanks,
Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Quote # 1438 Examination, Testing and Recommendation for Hazard Classification

Ami McCarthy
to:
Dennis.Schulz@austinpowder.com
07/06/2012 10:27 AM

Cc:
"bernadette.reyes@dekra.com"

Dear Mr. Schulz,

We are pleased to present the attached quotation for Examination, Testing and Recommendation for Hazard Classification of Emulsion-based Products. If you have any questions regarding this quotation, please do not hesitate to contact us.

Best Regards,

Ami McCarthy
Administrative Assistant
Explosion and Process Safety

Safety Consulting Engineers, Inc.
2131 Hammond Drive
Schaumburg, Illinois 60173
Phone: 1+ 847-925-8100
Fax: 1+ 847-925-8120
ami.mccarthy@dekra.com
www.sceinc.com

(Embedded image moved to file: pic12352.jpg)Description: Description:
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(See attached file: 1438 Austin Powder Company.pdf)

Propellant Handling and Safety Information

Dennis Schulz @ terrywright

cc: Tom Justice

08/13/2012 10:10 AM

Terry,

What we are looking for is:

1. Impact sensitivity data
2. Static sensitivity data
3. Heat stability data

Ideally we would like to see data for "dry" propellant and for a wetted propellant.

Additionally, it would be extremely useful in our planning process to have an accepted handling procedure.

Do you have a procedure that would cover basic handling, including the transferring of the propellant from the storage container to a metal bin?

Any help you can provide would be greatly appreciated.

Denny

Dennis Schulz

Austin Powder

Office: 740.596.5286

Mobile: 740.649.3933

New Sample DOT Testing

Dennis Schulz to breyes

Cc: Scooter King

08/13/2012 10:56 AM

Bernadette,

We have some questions regarding the new 1.5D packaged product we want to test.

This product will be a blend of a 1.3C reclaimed propellant and an 1.5D emulsion.

We are working to identify the exact concentration that will produce the best overall product. We would like to begin the testing / approval process before we have completed the evaluation the % propellant in the blend.

Consequently, we are going to want to test a relatively wide range of propellant concentrations to cover the spectrum of perhaps as low as 10% propellant to a maximum of 40% propellant.

My first question relates to the tolerance SCE will accept for the % propellant.

If you are willing to accept a +/- 5%, then we can see our way clear to test a blend of 15%, 25% and 35%.

With the tolerance, this would give use 10% to 40%. We would be willing to test the 35% sample at 40% so we would have the worst case.

So, the question is what tolerance will SCE accept.

Secondly, could we get some kind of package deal for these multiple samples?

Would it just be best to ship the materials and then I could be there for the testing and help make the specific samples as needed?

Any help you can give use will be greatly appreciated.

Denny

Dennis Schulz

Austin Powder

Office: 740.596.5286

Mobile: 740.649.3933

Re: M6 test plan for shelflife 
Dennis Schulz to Margit Chevalier

08/14/2012 10:36 AM

I think that is adequate to establish shelf life limits.
I also like the 20g booster.

I think cycling is most useful with products containing AN Prill - as the prill is what changes with temperature.
We don't have anything better - other than the Hot storage, which might be the more definitive test in this case.

If you need help, let me know.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

M6 test plan for shelflife

M6 test plan for shelflife

Margit Chevalier to Dennis Schulz

08/14/2012 10:05 AM

Dennis,

since the 30% blend in Hydrox 503 had a pass / fail, I suggest a minimum of 40% propellant in all mixes (unless expancel sensitized - a 30% would work)

Test Plan:

800 premix (RDT27 fuel) with 40% M6: 2" Valeron, enough for 20 cycles, 6 months ambient, 2 months hot storage (not worried about cold storage)
Hydromite Advance with 40% M6: same samples as above

Testing with 20g booster at ambient, hopefully with VOD.

Any other thoughts?

M

Margit Chevalier | Austin Powder Company **R&D** | 430 Powder Plant Rd | McArthur, OH 45651 | (Office)
740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com



FW: chapter1.vp:CorelVentura 7.0
Terry Wright to Dennis.schulz

08/14/2012 11:23 AM

History

This message has been replied to.

Denny:

I am forwarding you a report issued by DOD. This is a very good report on the dangers and positives of Propellants. There is some information in this report that will scare you to death but remember the key is handling and good housekeeping and controlling your inventory.

What we do here is do a stability test on all material coming in and that report will be supplied to you on a per shipment situation. The second thing is we will retain a sample of each load so in case there is a problem in the future we can retest that material.

You should receive the DOT report today plus this report. When you have gone to sleep after reading all this information please let me know what other information you need.

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

-----Original Message-----

From: David Fincher [mailto:d.fincher@explosystems.com]
Sent: Tuesday, August 14, 2012 10:09 AM
To: Terry Wright
Subject: chapter1.vp:CorelVentura 7.0

http://www.fas.org/man/dod-101/sys/land/docs/prop_guide.pdf

Sent from my iPad

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2012.0.2197 / Virus Database: 2437/5200 - Release Date: 08/14/12

Propellant Handling Guide
Dennis Schulz to Sandy Seitz
Cc: Tom Justice, Margit Chevalier

08/14/2012 11:34 AM

Sandy,

Would you print 2 copies of this for us.
1 Copy for Tom and engineering group and 1 Copy for Margit and I.

Thanks

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933



DOD_propellant handling guide.pdf

Re: FW: chapter1.vp:CorelVentura 7.0 
Dennis Schulz to: Terry Wright

08/14/2012 01:25 PM

Terry,

The Hazard Review document just arrived.

Thanks!!

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

FW: chapter1.vp:CorelVentura 7.0

FW: chapter1.vp:CorelVentura 7.0

Terry Wright to: Dennis.schulz

08/14/2012 11:23 AM

Denny:

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You should receive the DOT report today plus this report. When you have gone to sleep after reading all this information please let me know what other information you need.

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

-----Original Message-----

From: David Fincher [mailto:d.fincher@explosystems.com]

Sent: Tuesday, August 14, 2012 10:09 AM

To: Terry Wright

Subject: chapter1.vp:Corel Ventura 7.0

http://www.fas.org/man/dod-101/sys/land/docs/prop_guide.pdf

Sent from my iPad

No virus found in this message.

Checked by AVG - www.avg.com

Version: 2012.0.2197 / Virus Database: 2437/5200 - Release Date: 08/14/12

Propellant

Dennis Schulz to Dave True

08/23/2012 08:45 AM

I got an email Monday (I can't find it) from Terry wondering if we would be interested in putting in a mobile emulsion plant at their location.

I also understand from John (from M&S) that Orica is discontinuing the Giantite products, but neither of us have seen anything from Orica.

We just tested a 2" blend of 40% M6 Propellant with 60% unsensitized Hydromite 600 matrix. Shot at 16,000 ft/sec with a 20 gram booster.

Regarding overall sensitivity there are 2 pieces of data:

1. We can get a Hydrox 542 (40% ANFO) to pass the vented burn test.
2. I understand that Orica could never get any blends with propellant to pass the vented burn test.

I recognize we aren't going to do bulk, but I think it is an interesting comparison.

I am still working on the premise we want to make this product.

Please let me know how to respond to Terry regarding a plant at their location.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933



Re: Propellant
Dave True to Dennis Schulz

08/23/2012 08:55 AM

Did not know Orica was discontinuing - decision after the fire??

Agree won't work in bulk - Hercules tried 40 years ago

Not excited about making in La.- what are the pros/cons?

I think we do and if Orica out our margins may have just improved!!

David P. True

Austin Powder Company ♦ 25800 Science Park Drive ♦ Cleveland, OH 44122
Office: 216.839.5440 ♦ Toll Free: 800.321.0752 ♦ Cell: 216.403.5096 ♦ dave.true@austinpowder.com

Dennis Schulz I got an email Monday (I can't find it) from Terry... 08/23/2012 08:45:43 AM

From: Dennis Schulz/RDN/Austin
To: Dave True/Cle/Austin@Austin,
Date: 08/23/2012 08:45 AM
Subject: Propellant

I got an email Monday (I can't find it) from Terry wondering if we would be interested in putting in a mobile emulsion plant at their location.

I also understand from John (from M&S) that Orica is discontinuing the Giantite products, but neither of us have seen anything from Orica.

We just tested a 2" blend of 40% M6 Propellant with 60% unsensitized Hydromite 600 matrix. Shot at 16,000 ft/sec with a 20 gram booster.

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I am still working on the premise we want to make this product.

Please let me know how to respond to Terry regarding a plant at their location.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933



RE: Update and Questions
Terry Wright to: 'Dennis Schulz'
Cc: tom.justice, margit.chavalier

09/07/2012 02:30 PM

History

This message has been replied to.

Denny

I am glad to hear everything is moving forward. Here are your answers and have a great weekend.

The stabilizers are in the propellant not on it. The color difference is related to the amount of graphite used to get the flow characteristics necessary for loading the various extruders. Sometimes the coating process is better than others or more or less is needed on a particular machine.

The net weight on the super sacks is 880#.

There is a bottom discharge on the super sack with a flow control throat.

I hope this answers your questions.

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

-----Original Message-----

From: Dennis Schulz [mailto:Dennis.Schulz@austinpowder.com]
Sent: Friday, September 07, 2012 9:31 AM
To: terrywright@explosystems.com
Cc: Margit Chevalier; Tom Justice
Subject: Update and Questions

We are moving forward with our plans for making a packaged product. We had a very good Thursday meeting yesterday and we have a couple simple questions.

1. What does the different color indicate? More or Less Stabilizer?
2. What is the net weight for the super sacks?
3. Is there a discharge spout on the bottom of the super sacks?

Thanks!
Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2012.0.2197 / Virus Database: 2437/5254 - Release Date: 09/07/12

RE: Update and Questions

Dennis Schulz to Terry Wright

Cc: margit.chavalier, tom.justice

09/07/2012 02:35 PM

Thanks Terry,

New question - there is a comment somewhere in the documents about moisture - reducing the stabilizer.

Have you heard of this?

I will get the quote if you need it.

Denny

Dennis Schulz

Austin Powder

Office: 740.596.5286

Mobile: 740.649.3933

RE: Update and Questions

RE: Update and Questions

Terry Wright to 'Dennis Schulz'

09/07/2012 02:30 PM

Cc: tom.justice, margit.chavalier

Denny

I am glad to hear everything is moving forward. Here are your answers and have a great weekend.

The stabilizers are in the propellant not on it. The color difference is related to the amount of graphite used to get the flow characteristics necessary for loading the various extruders. Sometimes the coating process is better than others or more or less is needed on a particular machine.

The net weight on the super sacks is 880#.

There is a bottom discharge on the super sack with a flow control throat.

I hope this answers your questions

Wm. Terry Wright

Vice-President of Operations

Explo Systems, Inc.

1600 Java Rd.

Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

-----Original Message-----

From: Dennis Schulz [mailto:Dennis.Schulz@austinpowder.com]
Sent: Friday, September 07, 2012 9:31 AM
To: terrywright@explosystems.com
Cc: Margit Chevalier; Tom Justice
Subject: Update and Questions

We are moving forward with our plans for making a packaged product.
We had a very good Thursday meeting yesterday and we have a couple simple questions.

1. What does the different color indicate? More or Less Stabilizer?
2. What is the net weight for the super sacks?
3. Is there a discharge spout on the bottom of the super sacks?

Thanks!
Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2012.0.2197 / Virus Database: 2437/5254 - Release Date: 09/07/12

Fw: Haz evaluation M6
Dennis Schulz to breyes

09/07/2012 02:46 PM

This is in reference to a Hazard Study for M-6 Propellant.
That is the material we intend to use.

Can we get (buy) a copy?

Have a great weekend!!

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

----- Forwarded by Dennis Schulz/RDN/Austin on 09/07/2012 02:45 PM -----

Haz evaluation M6

Bob Hivick to: Dennis Schulz

09/07/2012 02:43 PM

FYI,

I'm not sure if these folks would be worth contacting. They appear to have done a good hazop on M6 use.

<http://www.sceinc.com/index.cfm>

8. 170-155 PROPELLANT WEIGH SCALE SYSTEM

A hazards and risk analysis was performed on a Netweigh/Checkweigh propellant weigh propellant weigh system for lo the 105 through 155 propellant changes. A complete series of material response testing was performed on M1, M6, M3 Numerous hazards were identified and recommendations were made to bring them into acceptable levels. The hazard OSM 385-1, MIL-STD-882A, and ARRADCOM Reg. 385-4



M6 color

Margit Chevalier to Dennis Schulz

09/07/2012 02:46 PM

Should have known better about the spelling....

What Terry is saying:

In the beginning all pellets are cobalt blue, then get coated with graphite to flow better. The graphite does obviously not come off easily, but some pellets just did not get coated at all and remain blue.

I understand the stabilizer is in the product, but would slow degradation over time cause a color change despite the graphite?

M

Margit Chevalier | Austin Powder Company **R&D** | 430 Powder Plant Rd | McArthur, OH 45651 | (Office)
740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com

Fw: propellants M6
Dennis Schulz to: terrywright
Cc: Margit Chevalier

09/07/2012 02:53 PM

See Page 24.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

----- Forwarded by Dennis Schulz/RDN/Austin on 09/07/2012 02:52 PM -----

propellants M6

Bob Hivick to: Dennis Schulz

09/07/2012 02:51 PM



m6 and other propellants see page 24 moisture and bulk storage single base prop_guide.pdf

days-to-fume in the heat chamber to the actual days storage in the ambient environment. Various attempts over the years to impart a predictive meaning for the AAT have met with frustration. In practice, the AAT has not been used successfully in any predictive manner; it is only used to provide a pass/fail stability determination. Attempts to make the test predictive still occur, and someone may eventually be successful.

(2) The AAT is still used to establish a "base line" for newly received propellants. All new master samples are accelerated aged for 160 days to observe fume behavior. This test assures that newly manufactured propellant has no incompatibility or inhomogeneity present that would affect long term stability.

(3) All propellants which are nearing the end of their safe life are AAT'd for 45 days to observe for possible 30 day fume failures. This procedure allows full compliance with existing Tri-Service criteria.

(4) If the fume time is short (30 days or less) or an unusual result is indicated on an individually tested sample, the propellant lab conducts an analysis of the propellant to determine the percentage of remaining effective stabilizer (RES) to better determine the safety status of the propellant.

(5) If this test, in conjunction with the 65.5°C results, confirms the impending instability of the propellant, the program manager at IOC, Ammunition Surveillance Division, is immediately notified.

c. SAFE INTERVAL PREDICTION TEST:

(1) The SIP test uses zero order reaction kinetics to assess the safe storage condition on all of the Army's 30-plus types of propellant in its inventory. The test generates its own safe storage and retest interval on a lot-to-lot basis.

(2) The test measures the decrease of virgin stabilizer using High Performance Liquid Chromatography (HPLC) at regular intervals. The test is run at 65.5°C, like the AAT. Each sample also is tested prior to aging and the level of remaining effective stabilizer (RES) is determined.

(a) The SIP test is designed to provide the retest intervals normally provided by the certain, yet often capriciously unpredictable fume event. The kinetic calculations estimate the time required to deplete the effective stabilizer to zero concentration. Routinely, fume times for a single propellant lot vary greatly from one cycle to another; the intervals can decrease over time and then increase before failure occurs. The *advantage* of the SIP test is that predictable behavior is being measured that relates chemically to what we understand to be the onset of instability.

(b) The SIP test avoids the problems associated with wide variations in the change in the rate of a reaction for each 10 degree change in reaction temperature by using the kinetic

data it produces to establish reasonably conservative retest intervals (similar to the widely-accepted NATO method). These intervals are fractions of the typical shelf life of the propellant tested. The SIP test data provides an estimate of the time for the effective stabilizer to be depleted at the aging temperature.

(c) Using this SIP information, plus the known average life of propellants under ambient storage conditions, a reasonable factor is used that provides multiple retests over the life of the propellant. For example, a single base propellant generally has a life of 50 to 75 years. The safe interval predicted by the SIP method is not allowed to exceed 15 years. The method then establishes three to five intervals or more over the life of a typical single base propellant. More and closer intervals are usually required as the propellant ages because the predicted safe interval becomes smaller.

(3) No attempt to predict the entire shelf life of a propellant is made. The retest interval represents a period of time where the rate of reaction is such that the effective stabilizer cannot be brought to a dangerously low level. Sufficient stabilizer will be present at the end of the interval, thus no self-ignition can occur.

(4) The largest test interval allowed is 15 years. The safe storage and retest interval decreases over the life of the propellant, increasing the test frequency as the propellant approaches instability. Additional control measures include:

(a) All Stability Category "C" propellant is tested each year for remaining effective stabilizer level and 30-day fume failure; they are not SIP tested.

(b) Propellants with retest intervals of 3 years or less are not SIP tested.

d. *WHEN MPP STABILITY FAILURE OCCURS.* In the case of indication of stability failure for any of the test methods used on the Master Sample, the IOC, Ammunition Surveillance Division is notified. Normally, one of two actions will occur:

(1) IOC will permanently suspend the propellant lot and transmit a Notice of Ammunition Reclassification (NAR) message which will require *immediate destruction* of that lot when packaged as bulk propellant, bulk component charges, or as separate loading propelling charges.

(2) IOC will review the storage records and determine the impact on the stockpile if the lot is destroyed. If the Master Sample test results are considered to *not* be reflective of actual stockpile conditions, a sample (or samples) may be selected from a storing installation for special test. Any action concerning destruction of the lot will be held in abeyance pending stockpile test results.

NOTE: Master Sample test failure usually results in the destruction of a propellant lot, and the second option is seldom taken.

e. *Storing Installation Surveillance Responsibilities* for the Master Propellant Program are quite limited and usually consist of nothing more than the infrequent preparation of a specified quantity (3-5 pounds) of propellant for shipment to Picatinny Arsenal to replace a depleted or missing Master Sample. This action may involve the disassembly of a propelling charge. Assure the Depot Surveillance Record (DSR) card is annotated to the effect that:

(1) the sample was selected and shipped for the Master Propellant Program

(2) *no action* on the propellant lot is pending, sample selection and shipment for the MPP is simply a shipment. You will *not* receive test results or other feedback.

NOTE: The condition code of the parent lot will *not* change due to the sampling. Do *not* apply "CC-D pending test results" unless specifically directed by IOC.

2-5. STOCKPILE PROPELLANT PROGRAM (SPP)

a. The SPP is the more visible arm of the PSP with which the storing installations have the greatest contact. This test program uses small sample quantities which are provided from propellant lots actually in storage. The samples are packaged and sent to Picatinny Arsenal for laboratory analysis of remaining effective stabilizer. Samples are prepared at the request of the IOC Ammunition Surveillance Division, normally on a once-per-year basis in order to limit the workload burden to the storing installations.

(1) The remaining effective stabilizer (RES) level is determined in duplicate for both the field sample and for the Master Propellant sample. A comparison of the results for the two storage sites for the propellant lot identifies errant behavior in the fielded propellant and provides the basis along with SIP testing of the Master Propellant sample for establishing the next field sampling date for the IOC. This next sample date is based on kinetic data and is a true prediction of future behavior. Testing based on the field retest date is less frequent than past criteria and represents a decreased burden to the storing installations.

(2) The current RES, safe storage category, and next field test date for all the lots in the Stockpile Propellant Program are available through the World Wide Web. This data base is provided to the IOC by the Army Propellant Surveillance Laboratory and is available through the IOC web site.

b. *Selection, Preparation and Shipment of Samples* will always be as instructed by SB 742-1, SB 742-1300-94-895, or as directed by special instruction (usually received with sample nomination letter) from HQ IOC. Since those instructions are quite specific, this Pamphlet will not elaborate further, except to point out the following:

(1) Most samples will consist of separate loading propelling charges, normally one complete charge per lot requested, although samples will also be requested from bulk propellant and bulk-packed component charges. Some charges (such as the 105mm M67 charge) are of dual-granulation. Dual granulation charges contain two individual lots of propellant per



Re: Fw: propellants M6 - moisture 
Margit Chevalier to: Dennis Schulz, Bob Hivick

09/07/2012 03:05 PM

History.

This message has been forwarded.

"c. Bulk storage or bulk-packed component storage of these items are of particular concern. Inspect the condition of the packaging for these items to be certain of package integrity and that they have not been exposed to moisture. Both these conditions may lead to rapid degradation of the propellant. Such conditions should prompt a request for testing the stability of such propellants.

6-2. OTHER PROPELLANTS AND PROPELLING CHARGES

a. As a general rule, single base propellant types M6 and M1 will exhibit similar aging profiles. The Army continues to maintain a large volume of aged M6 propellant which results in many more lots of M6 with lower levels of stability."

How much moisture? How rapid can it degrade and self ignite? What if a small % of the emulsion droplets will break releasing AN and water? Can we find out some more specific data or come up with our own?

M

Margit Chevalier | Austin Powder Company **R&D** | 430 Powder Plant Rd | McArthur, OH 45651 | (Office)
740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com

Fw: propellants M6 - moisture
Dennis Schulz to terrywright

09/07/2012 03:08 PM

Here are the questions the paper raised.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

----- Forwarded by Dennis Schulz/RDN/Austin on 09/07/2012 03:08 PM -----

Re: Fw: propellants M6 - moisture 

Margit Chevalier to Dennis Schulz, Bob Hivick

09/07/2012 03:05 PM

"c. Bulk storage or bulk-packed component storage of these items are of particular concern.

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740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com

propellants little more data

Bob Hivick To: Dennis Schulz, Margit Chevalier

09/07/2012 03:11 PM

take a look at **chapter 9**. Better tables than what we have already as well as a good description of processing manufacturing. They indicate residual water is 0.5% after drying step in manufacturing.



tm91300214 military explosives.pdf

RE: propellants M6 - moisture 
Dennis Schulz to: Terry Wright
Cc: Margit Chevalier, Bob Hivick

09/07/2012 03:15 PM

Thanks.

We will need to look at stability after extended contact with the emulsion - we will need the data.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

RE: propellants M6 - moisture

RE: propellants M6 - moisture

Terry Wright to 'Dennis Schulz'

09/07/2012 03:14 PM

I'm no scientist but it appears they are referring to M10 as the culprit. This is a very true statement. M10 will not hold up in high humidity and or water. We proved this back in the late 90's when trying to use in a water gel. I have never heard of any issues or experienced any issues with M6 and or M30. As I stated before the bread and butter of all mixes we made for 430, 406 and or 600-20 were made using M6. Think about how many millions of pounds Austin has used of 600-20. I can't answer this question.

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

-----Original Message-----

From: Dennis Schulz [mailto:Dennis.Schulz@austinpowder.com]
Sent: Friday, September 07, 2012 2:09 PM
To: terrywright@explosystems.com
Subject: Fw: propellants M6 - moisture

Here are the questions the paper raised.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

----- Forwarded by Dennis Schulz/RDN/Austin on 09/07/2012 03:08 PM -----

Re: Fw: propellants M6 - moisture (Document link: Dennis Schulz)

Margit Chevalier

to:

Dennis Schulz, Bob Hivick

09/07/2012 03:05 PM

"c. Bulk storage or bulk-packed component storage of these items are of particular concern.

Inspect the condition of the packaging for these items to be certain of package integrity and that they have not been exposed to moisture. Both these conditions may lead to rapid degradation of the propellant. Such conditions should prompt a request for testing the stability of such propellants.

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M

Margit Chevalier | Austin Powder Company R&D | 430 Powder Plant Rd |
McArthur, OH 45651 | (Office) 740.596.5286 ext. 7438 |
margit.chevalier@austinpowder.com

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Version: 2012.0.2197 / Virus Database: 2437/5254 - Release Date: 09/07/12



Re: propellants M6 - moisture
terrywright to Dennis Schulz
Please respond to terrywright

09/07/2012 03:20 PM

History

This message has been replied to.

I agree. Emulsion and water gels are two different animals. I do however know that M6 has been used in granite but they prefer M1 due to grain size. I wish I could help but I don't have this information. You will have a base line stabilizer content with each load from us. Our tests are DOD approved and audited yearly by DOD
Sent via BlackBerry by AT&T

-----Original Message-----

From: Dennis Schulz <Dennis.Schulz@austinpowder.com>
Date: Fri, 7 Sep 2012 15:15:51
To: Terry Wright <terrywright@explosystems.com>
Cc: Margit Chevalier <Margit.Chevalier@austinpowder.com>; Bob Hivick <Bob.Hivick@austinpowder.com>
Subject: RE: propellants M6 - moisture

Thanks.

We will need to look at stability after extended contact with the emulsion
- we will need the data.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

RE: propellants M6 - moisture

Terry Wright
to:
'Dennis Schulz'

09/07/2012 03:14 PM

I'm no scientist but it appears they are referring to M10 as the culprit. This is a very true statement. M10 will not hold up in high humidity and or water. We proved this back in the late 90's when trying to use in a water gel. I have never heard of any issues or experienced any issues with M6 and or M30. As I stated before the bread and butter of all mixes we made for 430, 406 and or 600-20 were made using M6. Think about how many millions of pounds Austin has used of 600-20. I can't answer this question.

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
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318-382-8601 Fax
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-----Original Message-----

From: Dennis Schulz [mailto:Dennis.Schulz@austinpowder.com]
Sent: Friday, September 07, 2012 2:09 PM
To: terrywright@explosystems.com
Subject: Fw: propellants M6 - moisture

Here are the questions the paper raised.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

----- Forwarded by Dennis Schulz/RDN/Austin on 09/07/2012 03:08 PM -----

Re: Fw: propellants M6 - moisture (Document link: Dennis Schulz)

Margit Chevalier

to:

Dennis Schulz, Bob Hivick

09/07/2012 03:05 PM

"c. Bulk storage or bulk-packed component storage of these items are of particular concern.

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How much moisture? How rapid can it degrade and self ignite? What if a small % of the emulsion droplets will break releasing AN and water? Can we find out some more specific data or come up with our own?

M

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Version: 2012.0.2197 / Virus Database: 2437/5254 - Release Date: 09/07/12

Re: M6 IR 

Bob Hivick to Margit Chevalier
Cc: Dennis Schulz

09/12/2012 01:35 PM

The spectra look very similar, although the green-blue sample has a noticeably stronger -CH₂- peak at 2853 cm⁻¹ than the twin sample. This could be the result of hydrocarbon contamination on the surface. (I wore latex gloves while handling and cutting the sample, so I am not sure where the contamination came from.) When preparing the sample we scraped/sliced with a new razor blade. It was quite apparent that the green-blue sample was much harder to cut and broke off in small pieces. The "twin" sample shaved readily and came away as a single thin strip of material (much softer).



M6 zoom in ftir.pdf



M6 full scale ftir.pdf

Margit Chevalier

Bob did you get a chance to look at the IR, see...

09/12/2012 12:27:39 PM



Margit Chevalier/RDN/Austin

09/12/2012 12:27 PM

To Bob Hivick/RDN/Mfg/Austin@Austin, Dennis
Schulz/RDN/Austin@Austin

cc

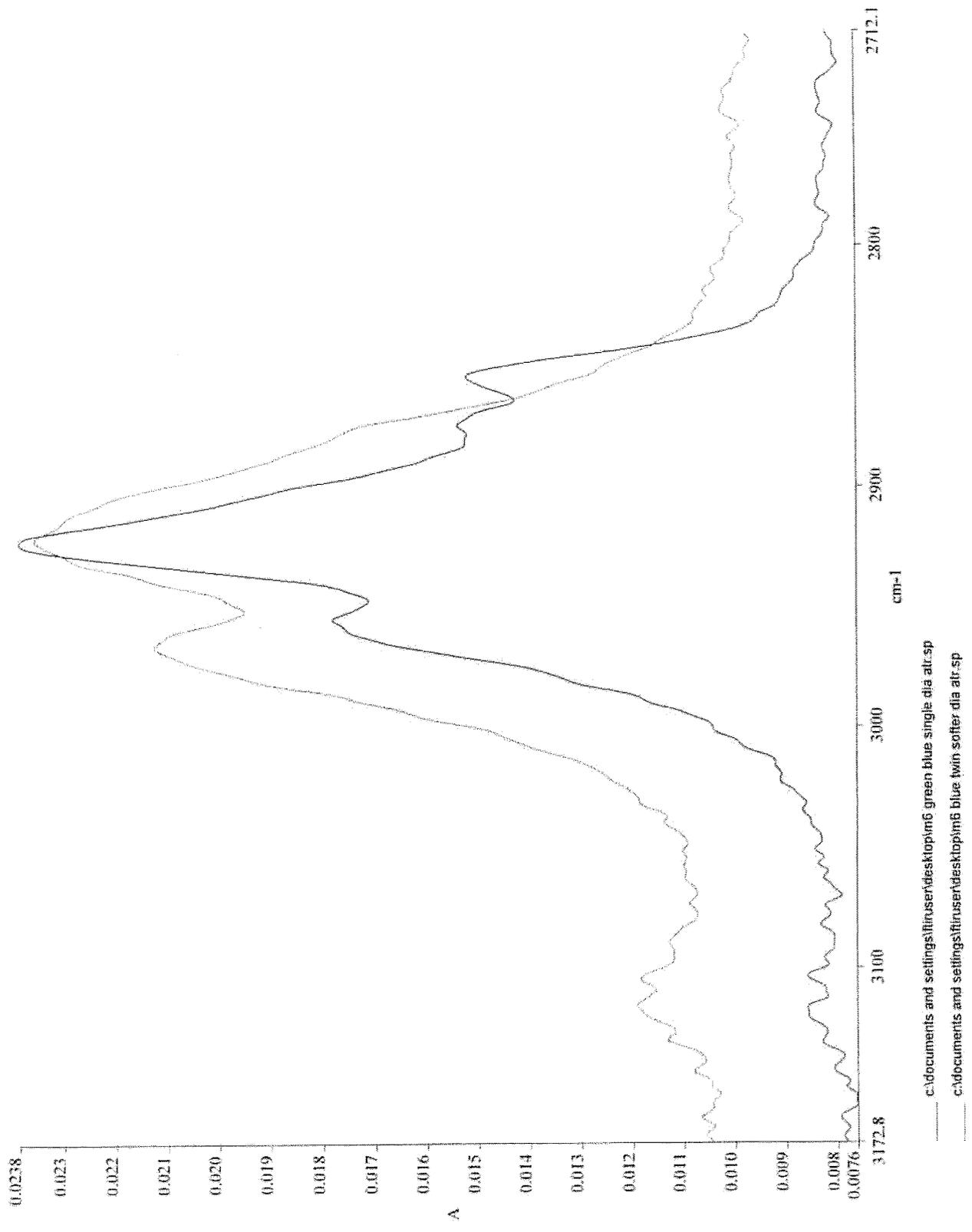
Subject M6 IR

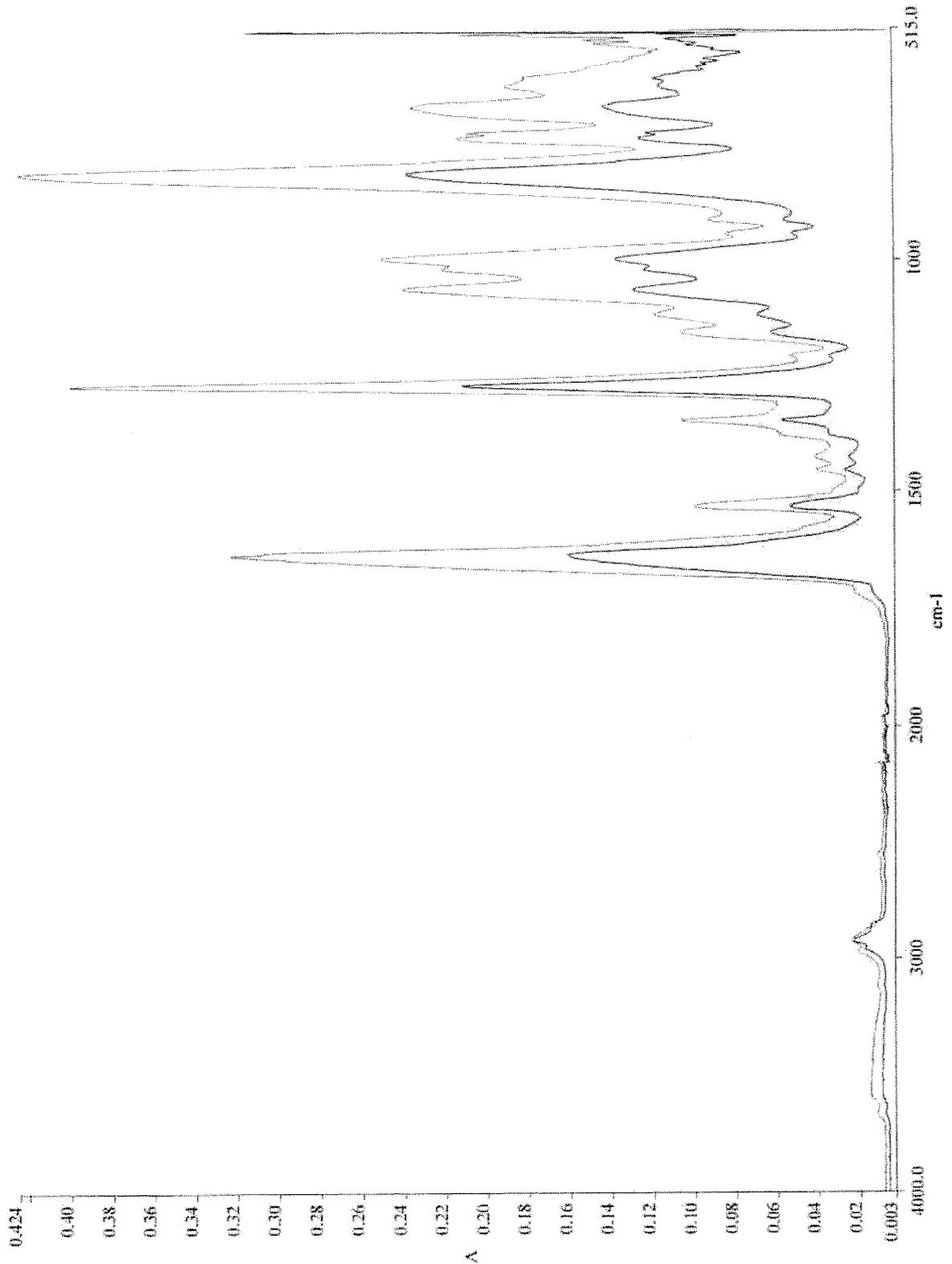
Bob

did you get a chance to look at the IR, see anything significant between the different colored pellets?

M

Margit Chevalier | Austin Powder Company R&D | 430 Powder Plant Rd | McArthur, OH 45651 | (Office)
740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com





some more M6 info

Bob Hivick to: Dennis Schulz, Margit Chevalier, Mike Abele, Tom Justice

09/17/2012 09:29 AM

Found some additional information this weekend on M6. I will move this to the share file on the server. Note that drop impact studies have been done on M6+2 (M6 with 2% potassium sulfate to make it "no flash"). These values report a sensitivity greater than RDX and HMX.

References indicate that the addition of the potassium sulfate neither increased or decreased the sensitivity of the base M6.

I am not sure why the values we saw on our large scale impact test indicated no reaction even at much greater force. Perhaps the weight is not truly free falling but is rubbing against the pipe therefore not delivering full energy.



M6 properties.pdf



Re: M6 
Dennis Schulz to: Margit Chevalier

09/19/2012 08:06 AM

I dont think I got the email.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

-----Margit Chevalier/RDN/Austin@Austin wrote: -----

=====
To: Dennis Schulz/RDN/Austin@Austin
From: Margit Chevalier/RDN/Austin@Austin
Date: 09/18/2012 09:08PM
Subject: M6
=====

Just saw Bob's email on the not free falling weight. Our world is just not perfect! How will we cope...

M

P.s.: This is of course not to be put on the shared file - just had to say it to someone who might understand!

Margit Chevalier | Austin Powder Company R&D | 430 Powder Plant Rd | McArthur, OH 45651
| (Office) 740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com



Propellents

Tom Justice to: Tom Zukovich
Cc: Dennis Schulz, Margit Chevalier, Shawn Fee

09/25/2012 12:54 PM

Tom,

I am feeling a little apprehensive about the idea of pumping the propellents through an Allweiler or a peristaltic pump. I'm curious of what percentage by weight you would recommend for pumping. We are looking at a 60/40 mix with the propellents being 40. I am attaching a couple of pictures of this blend and in my opinion even if we could pump it we would be crushing a good amount of the propellents each rev. I am thinking more in the way of an auger packer with either a plastic auger or auger tube. Your thoughts on this subject would be highly appreciated..



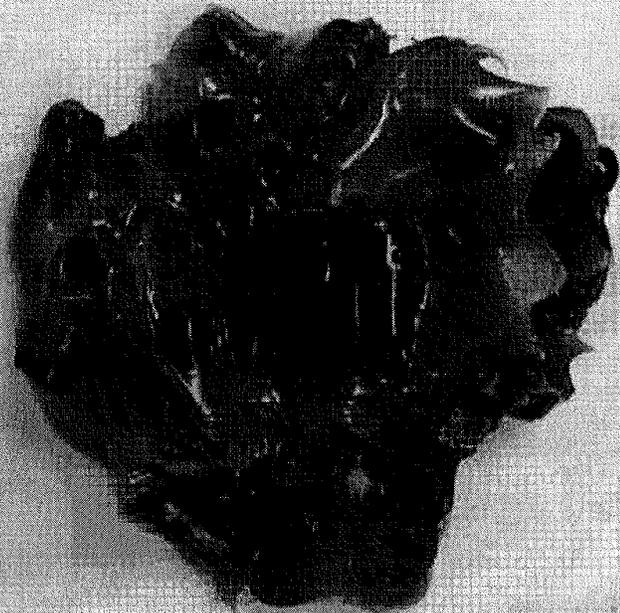
M6 in 503 a.jpg M6 in 503 b.jpg

Tom Justice
Project Manager
Austin Powder Co.
Work : 740-596-5286 ext. 7427
Cell : 740-503-4567
Fax : 740-596-5396
Email : tom.justice@austinpowder.com

503

in

40% Mb



503
in
40% M6



Re: Propellents
Dennis Schulz to: Margit Chevalier
Cc: Tom Justice

09/25/2012 02:28 PM

Yes, both the 60% Propellant and the mandrel are worth trying.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Re: Propellents

Re: Propellents

Margit Chevalier to: Tom Justice

09/25/2012 02:23 PM

Cc: Dennis Schulz

We could simply test this in R&D using a mandrel and a 3' or 4" clear PVC pipe. We could visually see dry M6 spots where the Matrix didn't reach. A clear bag might tell us something as well, using the liner of a WPP bag, I assume even if the M6 won't get 100% wetted out initially, after retracting the mandrel and clipping and handling the bag we would get enough mixing.

But the way the 50% M6 passed the 20g booster sensitivity test in 2", we will shoot the 60% M6 blend tomorrow.

Worth a try?
M

Margit Chevalier | Austin Powder Company R&D | 430 Powder Plant Rd | McArthur, OH 45651 | (Office)
740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com

Tom Justice

Denny, If we looked at putting the propellents in... 09/25/2012 02:16:08 PM

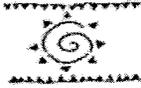
From: Tom Justice/RDN/Mfg/Austin
To: Dennis Schulz/RDN/Austin@Austin
Cc: Margit Chevalier/RDN/Austin@Austin
Date: 09/25/2012 02:16 PM
Subject: Propellents

Denny,

If we looked at putting the propellents in the hand pack bag first and then putting a mandrel down the center and filled the bag the rest of the way with the 60% do you think that it would have the same test

results as if they both would have been blended together? I am not talking a mandrel with holes in the sides and a plugged end because my feeling is how would they know when to lower the bag during the filling process. When running hydromite they use the product pressure to help with the timing in lowering the bag which helps keep the mandrel clean. Just a regular mandrel that would fill through the bottom which would probably leave most of the propellents on the sides.

Tom Justice
Project Manager
Austin Powder Co.
Work : 740-596-5286 ext. 7427
Cell : 740-503-4567
Fax : 740-596-5396
Email : tom.justice@austinpowder.com



M6 bag filling trial with 503
Margit Chevalier to Dennis Schulz

10/09/2012 12:33 PM

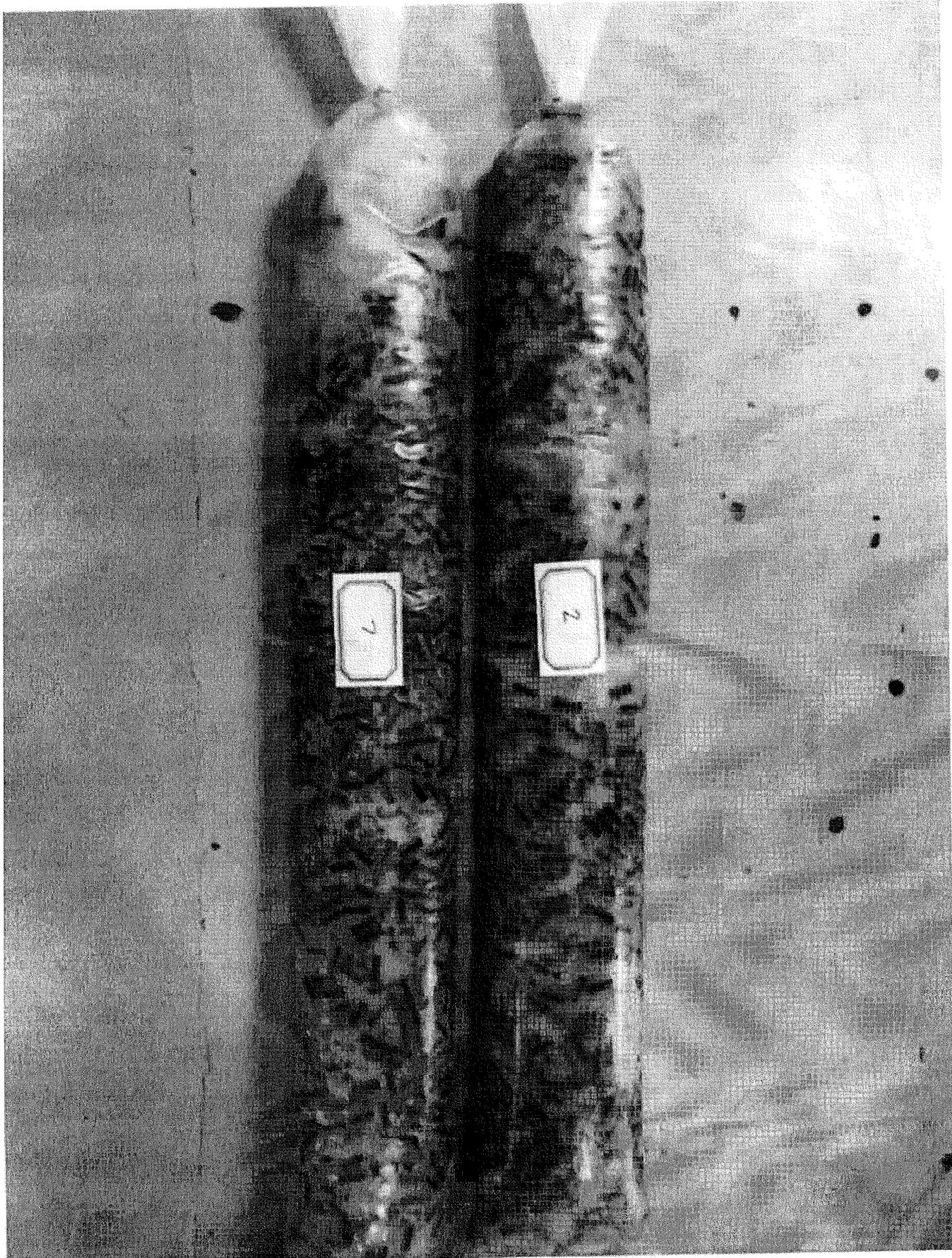
Dennis

you might want to add these pictures to your notes.



M6 004.jpg M6 001.jpg

Margit Chevalier | Austin Powder Company **R&D** | 430 Powder Plant Rd | McArthur, OH 45651 | (Office)
740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com







M6 project #

Margit Chevalier to: Dennis Schulz

10/09/2012 12:39 PM

If need need to get more detailed:

We made 8 bags - 4" x 20lbs, labelled as AXEBulk - 09OC12A1 - total 160 lbs stored at ambient until burn test. R&D project number for this is C229/41.

M

Margit Chevalier | Austin Powder Company **R&D** | 430 Powder Plant Rd | McArthur, OH 45651 | (Office)
740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com

Burn Test

Dennis Schulz To: Keith Mills

10/09/2012 12:57 PM

Keith,

We would like to do a burn test of a larger amount of the M6 propellant / emulsion product. We think it is appropriate to begin small and then get to a larger sample - perhaps as much as 100 lbs. We also want to try to burn this product with another aluminized product, such as Emulex 927.

I don't see a problem with this, especially if we start small. The data is needed to help APC make an informed decision regarding this product.

We have enough material to begin testing, the smaller quantities, right now. Please let me know what needs to be done to accomplish this task.

Thanks!
Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Lunch

Dennis Schulz to: Tom Justice, Brian Bias, Tom Reed, Broderick Speraw,
Margit Chevalier, Steven Dickerson, Shawn Fee, Bob
Hivick, Mike Abele, Mark Fox, Roberta Yates, Dee Wells, 10/09/2012 01:17 PM
Larry McCorkle, Gerald Stewart

Co: Keith Mills

We had a very encouraging packaging test today of the 40% M6 / 60% emulsion product. While the test left us with some questions, it seems clear that the concept of simultaneously filling both emulsion and M6 propellant will work.

This is a big step!
Still many hurdles to cross.

So, I would like to have a group lunch on Friday - Pizza, Sandwiches and Salad - unless someone wants something else.
All of you have been involved in some way or another and the effort is appreciated..

Please let me know if you will join us - or at least take the food, so we can get a good estimate of how much to get.

Again, thanks for all the effort!

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

M6 Packaging Test

Dennis Schultz To: Tom Justice, Tom Reed, Broderick Speraw, Margit Chevalier, Steven Dickerson, Brian Bias
Cc: Keith Mills

10/09/2012 04:02 PM

This morning we tested several different potential methods of packaging the material. We made 8 bags - 4" x 20 lbs. (160 lbs.), labelled as AXE bulk - 09OC12A1. The R&D project number for this is C229/41. The product will be stored in ambient until it can be used in a burn test.

Summary:

- It appears that the simultaneous filling of the M6 and emulsion will work. This means it wouldn't be necessary to blend, store, auger or pump the blended product.
- Pumping the emulsion through the inner mandrel appeared to give better mixing and be a cleaner system
- The 0.75" inner mandrel appeared to be better than the 1.5"
- It seems like the product opens the bag well enough that it won't be necessary to push the bag to the top of the mandrel and load from the bottom of the bag.
- Very low pumping pressures and mostly good flow of propellant through the annulus.
- Overall very encouraging.

Next Step

- Repeat the Trials with the emulsion in the 0.75" inner mandrel and the propellant in the annulus using a "warm" Hydromite 600/800 matrix to see what the thicker emulsion does to the mixing and pumping pressures.

Here are my notes from the Trials:

All tests were run using:

1. Nominal 40% M6 and 60% Hydrox 503 at ambient.
2. Filled the 20 lbs. in 13 seconds (92 lb/min. or 4 bags/min.)
3. The propellant (8 lbs) was pre-weighed and misted with water.
4. The propellant was manually poured in the top of the system at a rate to approximate the 13 second filling time.

Trial #1 - Bag #1

- A single 3/4" id mandrel was placed in a bag, to the bottom of the bag.
- The 8 lbs of M6 was poured around the 3/4" mandrel.
- The emulsion was then pumped at the 12 lbs in 13 seconds rate to approximate filling in 13 seconds.
- The bag was lowered as the emulsion filled the bag.

Results:

- The emulsion mixed into the propellant well.
- The extent of mixing was entirely depended on the rate the bag was lowered.
If the bag was lowered too fast, there was unblended propellant
If the bag was lowered too slow, there was a section of mostly emulsion
- Overall a relatively clean system, only a little emulsion stuck to the outside of the mandrel
- For this method to work properly the lowering of the bag would have to be exactly synchronized with the emulsion pumping

Trial #2A - Bag #2

- A two mandrel set-up with a 3" outer mandrel with a 1.5" id inner mandrel was placed in a bag, to the

bottom of the bag.

- The 8 lbs. of M6 was poured in the annulus simultaneous with pumping the emulsion through the inner mandrel.
- The bag was lowered as the M6 and emulsion filled the bag.

Results:

- The emulsion mixed into the propellant well.
- Problems getting the propellant to flow evenly through the entire annulus - it was a problem with the set-up, the inner mandrel had moved over to one side.
- Overall a relatively clean system, very little emulsion dripped after loading
- For this method to work properly the lowering of the bag would have to be exactly synchronized with the emulsion pumping

Trial #2B - Bag #3

- Same two mandrel set-up with a 3" outer mandrel, but an 0.75" id inner mandrel was placed in a bag, to the bottom of the bag.
- The 8 lbs. of M6 was poured in the annulus simultaneous with pumping the emulsion through the inner mandrel.
- The bag was lowered as the M6 and emulsion filled the bag.

Results:

- The emulsion mixed into the propellant well. Perhaps slightly better than Trial #2A with the larger inner mandrel
- Problems
- Overall a very clean system, very little emulsion (even less than #2A) dripped after loading
- For this method to work properly the lowering of the bag would have to be exactly synchronized with the emulsion pumping

Trial #3 - Bag #4

- Same mandrel set-up as in Trial #2B A two mandrel set-up with a 3" outer mandrel with a 1.5" id inner mandrel was placed in a bag.
- The bag was only put a couple inches up the mandrel, with the bottom on the floor.

Results:

- The emulsion mixed into the propellant well.
- Overall a very clean system, very little emulsion dripped after loading. There were no problems with the product not opening the bag or bridging off.
- This method of leaving the bag on the floor and filling from the top will work without the operator needed to gauge the speed of filling.

Trial #4 - Bag #5

- A two mandrel set-up with a 3" outer mandrel with a 2" id inner mandrel was placed in a bag, to the bottom of the bag.
- The 8 lbs. of M6 was poured in the inner mandrel with the emulsion being pumped through the annulus.
- The bag was lowered as the M6 and emulsion filled the bag.

Results:

- The propellant in the center of the bag did not mix as well into the emulsion. In the other cases it appeared the emulsion "seeped" to the outer edge of the bag. In this case we didn't see the M6 migrating to the outer edge of the bag
- Overall not as clean a system as the trials with the emulsion in the middle and the M6 in the annulus.

Trial #5A - Bag #6

- A repeat of the two mandrel set-up with a 3" outer mandrel with a 0.75" id inner mandrel with the bag on the floor. In this case the inner mandrel was centered in the outer mandrel.

- The 8 lbs. of M6 was poured in the annulus simultaneous with pumping the emulsion through the inner mandrel.

Results:

- My initial thought was that the mixing wasn't as good. But looking late indicated good mixing

Trial #5B - Bag #7 - repeat of Trial #5A to see if the results would be the same with better propellant pouring. The results were the same.

Trial #6 - Bag #8

- Brody's set-up with a single 3" mandrel.
- The emulsion was pumped into the middle inlet of a tee at the top of the mandrel and the M6 was poured from the top section of the tee.
- Essentially the emulsion and M6 met and mixed at the top of the 3" mandrel.
- The bag was filled with the bag on the ground.

Results:

- The emulsion mixed into the propellant well.
- A little less consistent filling - more globs of product.
- OK system for the bag, but it looked like the emulsion and propellant that stuck to the side of the mandrel would leak onto the floor over time.

An excellent effort by all involved!

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933



M6 004.jpg M6 001.jpg



Propellant Burn Test.

Dennis Schulz, Margit Chevalier, Bob Hivick,
Mike Abele to: Larry McCorkle, Gerald Stewart, Shawn Fee, Tom Justice 10/12/2012 03:18 PM
Cc: Keith Mills

We performed burn test on samples of propellant from R&D today. The video's turned out great. They can be seen on Library drive under propellant "Burn Test". There are two (2) video's, one close up and one at a distance. Also under folder "burn test" are two (2) still pictures showing description of what was burned.

Thanks Mike



large scale burn test

Margit Chevalier to Dennis Schulz

10/16/2012 01:18 PM

History

This message has been replied to.

Just finished the large scale burn in 3 bins, looks like M6 blends burn cleaner and better than our current 927 mixed with the blend. Mike will send a report and we can go from there...

We are still on for the drum trial in production tomorrow, let you know how that works.

Any news on who is going to Minden?

M

Margit Chevalier | Austin Powder Company **R&D** | 430 Powder Plant Rd | McArthur, OH 45651 | (Office)
740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com



M6 blend DOT test

Margit Chevalier to: Dennis Schulz

10/16/2012 01:50 PM

Dennis

why not simply test the following:

40% unsensitized - 4" and up
35% sensitized - 3" and below
30% sensitized - 3" and below

given the 2% tolerance that would cover the small diameter and still give us a good finished product density.

Talking to Tom we would have to come up with a new filling station set up for 3" and below which I agree on. Maybe filling the M6 inside the tube and the premix via the annulus - messy we know but maybe reduced since your diameters are a lot smaller. I think the product would blend okay if we used a 503 base.

M

Margit Chevalier | Austin Powder Company **R&D** | 430 Powder Plant Rd | McArthur, OH 45651 | (Office)
740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com

Re: large scale burn test 
Dennis Schulz to Margit Chevalier

10/16/2012 02:19 PM

Minden won't be for at least 2 weeks.

Good on burn.

Luck with trial!

Take Care!
Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Margit Chevalier Just finished the large scale burn in 3 bins, loo... 10/16/2012 01:18 PM EDT

From: Margit Chevalier
To: Dennis Schulz
Cc:
Date: 10/16/2012 01:18 PM EDT
Subject: large scale burn test

Just finished the large scale burn in 3 bins, looks like M6 blends burn cleaner and better than our current 927 mixed with the blend. Mike will send a report and we can go from there...
We are still on for the drum trial in production tomorrow, let you know how that works.
Any news on who is going to Minden?

M

Margit Chevalier | Austin Powder Company **R&D** | 430 Powder Plant Rd | McArthur, OH 45651 | (Office)
740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com

Fw: large scale burn test
Dennis Schulz to Dave True
Cc: Keith Mills

10/16/2012 03:09 PM

Bunker detonated at Explo Systems, Monday night.
No reported injury.

Terry Wright is spokesman.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

----- Forwarded by Dennis Schulz/RDN/Austin on 10/16/2012 03:07 PM -----

From: Margit Chevalier/RDN/Austin
To: Dennis Schulz/RDN/Austin@Austin
Date: 10/16/2012 02:23 PM
Subject: Re: large scale burn test

<http://www.nydailynews.com/news/national/military-explosion-shakes-louisiana-article-1.1184633>

Is that why it won't be for 2 weeks - I think it will be longer...

M

Margit Chevalier | Austin Powder Company **R&D** | 430 Powder Plant Rd | McArthur, OH 45651 | (Office)
740.596.5286 ext. 7438 | margit.chevallier@austinpowder.com

Dennis Schulz Minden won't be for at least 2 weeks. Good on b... 10/16/2012 02:19:46 PM

From: Dennis Schulz/RDN/Austin
To: Margit Chevalier/RDN/Austin@Austin
Date: 10/16/2012 02:19 PM
Subject: Re: large scale burn test

Minden won't be for at least 2 weeks.

Good on burn.

Luck with trial!

Take Care!
Denny

Dennis Schulz

Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Margit Chevalier

Just finished the large scale burn in 3 bins, loo...

10/16/2012 01:18 PM EDT



Re: Propellant Burn Test.

Bob Hivick, Dennis Schulz, Gerald Stewart, Keith
Mike Abele to: Mills, Larry McCorkle, Margit Chevalier, Shawn Fee, Tom Justice 10/16/2012 03:25 PM

Additional testing was performed on a larger scale today. The close up video is 80 lbs 40% M6 in 600 and 50 lbs 927 (made with Al and Expancels in R&D).

The distant video shows all three(3) items below including the product that was shown close-up.

left bin: 80 lbs 40% M6 in 600 and 50 lbs 927 (made with Al and Expancels in R&D) - filmed on close up
middle bin: 160 lbs of 40% M6 in 503
right bin: 80 lbs of 40% M6 in 600

They can be seen on Library drive under propellant "Burn Test / Large Burn"

Thanks Mike

Mike Abele We performed burn test on samples of propellan... 10/12/2012 03:18:40 PM



Mike Abele/RDN/Mfg/Austin
10/12/2012 03:18 PM

To: Dennis Schulz/RDN/Austin, Margit Chevalier/RDN/Austin,
Bob Hivick/RDN/Mfg/Austin, Larry
McCorkle/RDN/Mfg/Austin, Gerald Stewart/RDN/Austin,
Shawn Fee/RDN/Austin, Tom Justice/RDN/Mfg/Austin
cc: Keith Mills/RDN/Austin@Austin

Subject: Propellant Burn Test.

We performed burn test on samples of propellant from R&D today. The video's turned out great. They can be seen on Library drive under propellant "Burn Test". There are two (2) video's, one close up and one at a distance. Also under folder "burn test" are two (2) still pictures showing description of what was burned.

Thanks Mike



Re: Incident

Dave True to Mr. Wm. Terry Wright, Dennis Schulz
Cc: Nick Rupert, Keith Mills

10/17/2012 11:27 AM

Thanx Terry,
Let us know if we can be of assistance.
Dave

From: Terry Wright [terrywright@explosystems.com]
Sent: 10/17/2012 08:54 AM EST
To: Dave True; Dennis Schulz
Cc: Nick Rupert; Keith Mills
Subject: Incident

Gentlemen:

I want to clear up any misconceptions of our incident. The material that was stored and detonated was Ball Powder (reloading powder) from St. Marks Powder. This was not the material that we demil out of the prop charges that you are considering making a product with. We are still in the middle of our investigation and I will inform you of any finding.

Guys I want to thank you for considering letting me store some material at Camden but at this point they are not requiring me to move the material out of the neighboring magazines.

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

?

Dennis Schulz to Terry Wright

10/24/2012 11:01 AM

What is moisture content of material?

Ship stacked? 40 bags to shipment?

Minimum safe storage after we get it?

We are doing a review.

Take Care!
Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933



Propellant Handling and Safety

Tom Zukovich to Dennis Schulz, larry.mccorkle, bob.hivic, Tom Justice, Keith.Mills

10/25/2012 08:14 AM

History

This message has been forwarded.

Guys,

Here's another document that's full of info we were discussing yesterday. I glanced through it, but it's over 300 pages!

Tom Zukovich

Partner

Zukovich, Morhard & Wade, LLC.

+ 1 610-653-8821 Tel

+ 1 610-799-2116 Fax

zukovich@exploenergy.com

<http://www.exploenergy.com>

Re: ? 

Dennis Schulz to: Terry Wright

10/25/2012 09:43 AM

Out in field today.

Will try tomorrow.

Take Care!
Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

----- Original Message -----

From: Terry Wright [terrywright@explosystems.com]
Sent: 10/25/2012 07:52 AM EST
To: Dennis Schulz
Subject: RE: ?

Denny:

I should have a quiet day today (if that is still possible in this business)
if you need any questions answered or information please don't hesitate to
call.

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

-----Original Message-----

From: Dennis.Schulz@austinpowder.com [mailto:Dennis.Schulz@austinpowder.com]

Sent: Wednesday, October 24, 2012 10:01 AM
To: Terry Wright
Subject: ?

What is moisture content of material?

Ship stacked? 40 bags to shipment?

Minimum safe storage after we get it?

We are doing a review.

Take Care!
Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

No virus found in this message.
Checked by AVG - www.avg.com
Version: 2012.0.2221 / Virus Database: 2441/5351 - Release Date: 10/24/12



M6 delivery date

Margit Chevalier to Dennis Schulz

11/09/2012 03:05 PM

Just for your records:

M6 was delivered to us on March 6, 2012.

M

Margit Chevalier | Austin Powder Company **R&D** | 430 Powder Plant Rd | McArthur, OH 45651 | (Office)
740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com

Propellant

Dennis Schulz to Keith Mills
Cc: Dave True

11/29/2012 03:18 PM

This is not Explo, but Goex.
It would be nice to know what "improperly stored" means.

Did you know about this incident involving M6 two weeks ago?

<http://www.nbc33tv.com/news/local-news/lsp-camp-minden-explosion>

Margit Chevalier | Austin Powder Company **R&D** | 430 Powder Plant Rd | McArthur, OH 45651 | (Office)
740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com

Re: M6 Storage 
Dennis Schulz to: Margit Chevalier

11/30/2012 07:31 AM

How much do we have ?

Take Care!
Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Margit Chevalier It was written up in an older document I saw (...) 11/30/2012 07:19 AM EST

From: Margit Chevalier
To: Dennis Schulz
Cc:
Date: 11/30/2012 07:19 AM EST
Subject: Re: M6 Storage

It was written up in an older document I saw (paper copy from the lab). After reading about storage I had those questions and handed it to you, you said you would check it out. Haven't seen it since. Don't know where that paper went, in your office or back to the lab.

Margit Chevalier | Austin Powder Company **R&D** | 430 Powder Plant Rd | McArthur, OH 45651 | (Office)
740.596.5286 ext. 7438 | margit.chevalier@austinpowder.com

Dennis Schulz Please save me some time and remind me when... 11/29/2012 04:24:30 PM

From: Dennis Schulz/RDN/Austin
To: Margit Chevalier/RDN/Austin@Austin
Date: 11/29/2012 04:24 PM
Subject: M6 Storage

Please save me some time and remind me where the 6 month storage limit in the drums is identified.

Thanks!
Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

M-6

Dennis Schulz to Scooter King

12/03/2012 10:18 AM

MSDS and Competent Authority for super sacks.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

----- Forwarded by Dennis Schulz/RDN/Austin on 12/03/2012 10:17 AM -----

From: Terry Wright <terrywright@explosystems.com>
To: <Dennis.schulz@austinpowder.com>
Date: 10/26/2011 02:10 PM
Subject: Comp. Authority

Denny:

I am sending you the Comp. Authority showing that we have DOT approval to ship in Polywoven Bags. I only bring this up because this is a first in the Propellant business. People who have been around as long as you and I have may question this knowing it has always shipped in drums. Just an FYI email.

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell



Competant Authority.pdf

----- Forwarded by Dennis Schulz/RDN/Austin on 12/03/2012 10:17 AM -----

From: Terry Wright <terrywright@explosystems.com>
To: "Dennis Schulz" <Dennis.Schulz@austinpowder.com>, "Thomas Ethridge" <Thomas.Ethridge@austinpowder.com>
Cc: "Brian Gilliland" <Brian.Gilliland@austinpowder.com>, "Keith Mills" <Keith.Mills@austinpowder.com>
Date: 02/27/2012 04:16 PM
Subject: RE: Fw: M6 Propellant

Here is the MSDS for M6 propellant per your request.

Wm. Terry Wright
Vice-President of Operations
Explo Systems, Inc.
1600 Java Rd.
Minden, La. 71055
318-382-8756 Office
318-382-8601 Fax
318-470-6641 Cell

-----Original Message-----

From: Dennis Schulz [mailto:Dennis.Schulz@austinpowder.com]
Sent: Monday, February 27, 2012 2:41 PM
To: Thomas Ethridge; terrywright@explosystems.com
Cc: Brian Gilliland; Keith Mills
Subject: Re: Fw: M6 Propellant

Terry,

Would you supply the current MSDS to all above.

Thanks

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

Thomas
Ethridge/Mfg/Aust
in
02/27/2012 03:14
PM
Keith Mills/RDN/Austin@Austin
cc
Brian
Gilliland/RDN/Mfg/Austin@Austin,
Dennis Schulz/RDN/Austin@Austin
Subject
Re: Fw: M6 Propellant(Document
link; Dennis Schulz)

Keith

Please let Explo know to send the MSDS with it.

Thanks

Thomas Ethridge, Plant Manager
Austin Powder Company
East Camden, Arkansas
870-574-0580 (Voice)
870-574-2060 (Fax)

Keith
Mills/RDN/Austin

02/27/2012 02:12 PM
To
Thomas Ethridge/Mfg/Austin@Austin,
Brian
Gilliland/RDN/Mfg/Austin@Austin
cc
Dennis Schulz/RDN/Austin@Austin
Subject
Fw: M6 Propellant

Thomas, once this pallet of material arrives from Explo Systems please let Brain and I know so we can arrange shipment onto RD.

Brian, Once the pallet reaches EC we will need to get it to RD ASAP.

Thanks,

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH
45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com
---- Forwarded by Keith Mills/RDN/Austin on 02/27/2012 03:07 PM ----

Dennis
Schulz/RDN/Austin

02/27/2012 10:28 AM

To
terrywright@explosystems.com
CC
Keith Mills/RDN/Austin@Austin, Dave
True/Cle/Austin@Austin
Subject
M6 Propellant

Terry,

As we discussed, please prepare 840# (1 pallet with 6 @ 140# drums) for us.
You indicated that you could get it to APC at East Camden and we will decide how to get it up here from there.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

No virus found in this message.

Checked by AVG - www.avg.com

Version: 10.0.1424 / Virus Database: 2113/4835 - Release Date: 02/27/12



MSDS for M6.pdf



MSDS for M6 (2).pdf



MSDS for M6 (3).pdf



U.S. Department
of Transportation

East Building, PHH-32
1200 New Jersey Avenue, Southeast
Washington, D.C. 20590

Pipeline and Hazardous
Materials Safety Administration

The US Department of Transportation
Competent Authority for the United States

CLASSIFICATION OF EXPLOSIVES
FIRST REVISION

Based upon a request by Explo Systems Inc., 1600 Java Road, Minden, LA 71055, United States the following items are classed in accordance with Section 173.56, Title 49, Code of Federal Regulations (49 CFR). A copy of your application, all supporting documentation and a copy of this approval must be retained and made available to DOT upon request.

U.N. PROPER SHIPPING NAME AND NUMBER:

Powder, smokeless, UN0161

U.N. CLASSIFICATION CODE: 1.3C

REFERENCE NUMBER

EX2010040603

PRODUCT DESIGNATION/PART NUMBER

Reclaimed M6 Propellant

NOTES: This classification is only valid when the smokeless powder has been tested and found to have sufficient residual stabilizers present per US Army Safety Bulletin: "Inspection of Supplies and Equipment, Ammunition Surveillance Procedures" (SB 742-1). The following packaging methods are assigned:

Packaging Method A: Inner Packaging - Not necessary. Outer Packaging - UN 1G fiberdrum, each containing not more than one hundred and forty (140) pounds of smokeless propellant.

Packaging Method B: Inner Packaging: Flexible static-resistant reinforced plastic cloth and strapping lifting bag, each containing not more than eight hundred and eighty (880) pounds of smokeless propellant. Outer Packaging - UN 4G heavy-wall fiberboard box with a volumetric capacity of 119 gallons or less. (see 49 CFR Section 171.8 Definition for "Non-bulk packaging")

DATED: 05/05/2011

For Dr. Magdy El-Sibaie
Associate Administrator for Hazardous Materials Safety

Tracking No: 2011040848

Page 1 of 1

DNT

Dennis Schulz to: Dave True, Keith Mills

12/05/2012 02:12 PM

I am confident we can make the product safely and with no adverse health effects.
But, we will have to be careful.

I have lost some confidence in Explo Systems and that has caused second thoughts.
The Goex incident was identified as M6 initially and that was a major concern, but as we have learned the Goex incident involved black powder and that was a relief.

I remain very confident of the manufacturing process that was invented here for the 60% emulsion / 40% M6 product in WPP bags.
It seems the biggest obstacle to manufacturing here is the state approvals.

Very simplistic what if? (Vic Sterner would be proud of me)

1. Austin were to buy out Explo (less the existing liabilities).
2. Make the product there.

The manufacturing process will only involve an emulsion storage tank (could be run directly from a tanker to start), a feed hopper and special rotary valve for the M6, a simple mandrel and some controls.
Really easy to set up and run. Instead of shipping the M6 here, ship the emulsion to Minden.
I would assume (I know about assumptions) that the fact that the M6 is already approved for manufacturing processes at the site, that this might not be as big a problem there.

If the Explo site is still in operation after this is over, perhaps we can at least discuss making the product there?

Take Care!
Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933



Fw: M-6 Safety

Broderick Speraw to Keith Mills, Dennis Schulz
Cc: Tom Justice

01/22/2013 08:58 AM

The attached documents are from the Department of Defense regarding M6 propellant and deluge systems. Please give these a look so that we can discuss them this afternoon.

Broderick Speraw
Project Engineer
Austin Powder Company
Phone: 740-596-5286 ext. 7415
Fax: 740-596-5396
Email: broderick.speraw@austinpowder.com
----- Forwarded by Broderick Speraw/RDN/Austin on 01/22/2013 08:51 AM -----

From: Nick Rupert/RDN/Mfg/Austin
To: Broderick Speraw/RDN/Austin@Austin
Cc: Larry McCorkle/RDN/Mfg/Austin@Austin, Keith Mills/RDN/Austin@Austin, chad.cochran@austinpowder.com
Date: 01/21/2013 04:21 PM
Subject: M-6 Safety

Brody,

Have a look at the attached and then we'll call Bob Lloyd!

Nick

----- Forwarded by Nick Rupert/RDN/Mfg/Austin on 01/21/2013 04:19 PM -----



"Kieler, Nick"
<Nick.Kieler@aolllc.biz>
01/21/2013 04:03 PM
To: "nick.rupert@austinpowder.com"
<nick.rupert@austinpowder.com>
cc
Subject

Nick, I have attached several HCSDS and the paper entitled "UV Study".

Below are Mr. Lloyd's phone number(s):

Telephone: COM (309) 782-2975

DSN 793-2975

Hope this information helps.



Safety is our # 1 Value, 24/7, On the Job, On the Road, At Home

Nicholas M. Kieler

Sr. Safety & Health Manager

American Ordnance, LLC

Iowa Army Ammunition Plant

Land-Line: 319-753-7434

Mobile Phone: 319-572-0027

Pager: 716

Fax: 319-753-7321

Email: kielernm@aollic.biz

			
40032_A	447_D	807_D	UV
PROPELLANT	PROPELLANT	PROPELLANT	Study.pdf
M6+2.pdf	M1.pdf	M2.pdf	

visit from Buchi NIR instrument for M6 project.
Bob Hivick to: Dennis Schulz, Keith Mills

01/22/2013 09:14 AM

The local Buchi instrument salesman asked to visit today on his way to Ky and will be at the plant at 2:30 pm. I would like to see what he has to say regarding a quote for a near infrared spectrometer for measuring the diphenylamine in our M6. The quote over the phone was quite high 90,000 and I mentioned that at this point he needs to be competitive with a Perkin Elmer instrument update quote of 38,000. We will see what he says.

Thanks,

Bob

Temporary Shipping Classification No. TA-060313, Austin Powder, SCE No. 770

Ami McCarthy

to:

Dennis Schulz

03/07/2013 11:01 AM

Cc:

Thaddeus Speed, "bernadette.reyes@dekra.com"

Show Details

History: This message has been replied to.
Dear Mr. Schultz,

Attached is our Tentative Shipping Classification letter No. TA-060313, authorizing Austin Powder Company to ship 150 lbs. each of AXE 611 (40% M6 single base propellant in Hydrox 503 Emulsion) and AXE 612 (25% M6 in Hydrox 1100 Emulsion) to our test site facility in Forreston, Illinois.

We sincerely apologize for the tardiness of sending this letter. The TSC must be reviewed and approved by our DOT Examiner, Mr. Thaddeus C. Speed. He was traveling and on a plane, yesterday, and only received the emailed copy in his mailbox this morning.

Please contact Bernadette N. Reyes at (847) 925-8100 or bernadette.reyes@dekra.com with any questions or concerns.

For further illustration of our safety hazard analyses and testing capabilities, please visit our website at <http://www.sceinc.com>.

Best Regards,

Ami McCarthy

Administrative Assistant
Explosion and Process Safety

Safety Consulting Engineers, Inc.
2131 Hammond Drive
Schaumburg, Illinois 60173
Phone: 1+ 847-925-8100
Fax: 1+ 847-925-8120
ami.mccarthy@dekra.com
<http://www.sceinc.com>

Safety Consulting Engineers

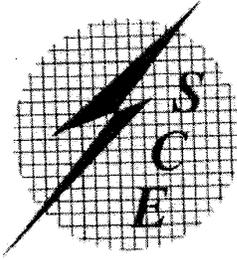
a DEKRA company



Please do not print this email unless it is absolutely necessary. Spread environmental awareness.

DISCLAIMER

This e-mail, and any associated attachment(s), is confidential and may contain personal views which are not necessarily the views of Safety Consulting Engineers, Inc./DEKRA/Chilworth Technology, Inc./Chilworth Global unless specifically stated. If you have received this email in error, please notify the sender and delete it from your system and do not use, copy or disclose the information in any way nor act in reliance on it.



Safety Consulting Engineers, Inc.

A DEKRA Company

2131 Hammond Drive

Schaumburg, Illinois 60173

Phone: (847) 925-8100, Fax: (847) 925-8120

Email: sceinc@sceinc.com Website: www.sceinc.com

TEMPORARY SHIPPING CLASSIFICATION

March 6, 2013

Mr. Dennis Schulz
Austin Powder Company
25800 Science Park Drive
Cleveland, Ohio 44122

SCE Approval CA-2010040008
SCE Project No. 770
Ref: TA-060313

Subject: Temporary Shipping Classification (TSC) Authorization

Dear Mr. Schulz:

Safety Consulting Engineers, Inc. (SCE) is providing you this temporary one-time authorization to ship 150 lbs. each of AXE 611 (40% M6 single base propellant in Hydrox 503 Emulsion) and AXE 612 (25% M6 in Hydrox 1100 Emulsion) under the following classification:

Tentative Classification

Proper Shipping Name:	Explosive, blasting, type E (emulsions with M6 single base propellant)
Hazard Class/Division:	Class 1.5D,
Packing Group	II
Identification Number:	UN0332
Additional Package Marking\Label per 49 CFR 173.56(d)(3):	SAMPLES FOR LABORATORY TESTING
Label Code:	Explosives, 1.5D
Maximum package content:	150-lbs each per container
Packing Method:	PG 173.62, PI 116 or 117

In addition to the above, for each packaged shipped under this temporary authorization, our approval number "CA-2010040008" must be clearly marked on each package near the proper shipping name and noted on the shipping papers.

Please note: This temporary authorization is only valid for a one-time shipment to SCE's designated test site listed below.

Page 2

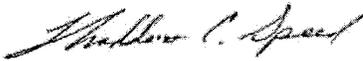
The test samples shall be sent to:

Safety Consulting Engineers, Inc.
9180 White Eagle Road
Forreston, Illinois 61030
Attn: Ms. Kellie Cullor
Ref: TA-060313
Tel No. 815-938-2578

Please coordinate your proposed delivery date and time with Ms. Kellie Cullor. Sample shipments may be received Monday through Friday, but only at pre-approved dates and times.

If you have any questions on the requirements to ship under this temporary shipping authorization, please feel free to contact us at any time.

Respectfully,



Thaddeus C. Speed
DOT Approved Examiner
Technical Director
SAFETY CONSULTING ENGINEERS, INC.

TCS/bnr

Propellant Lab Equipment

Dennis Schulz to Dave True, Keith Mills

03/08/2013 11:08 AM

Attached is a lease agreement for a \$75,000 NIR (Near Infrared) Instrument. This instrument is capable of completing an analysis in about 6 minutes, with minimal extra cost. Put the sample in a special beaker, put the beaker in the machine and push go.

The lease is \$2,400 a month for 3 years - then buy for \$1 or \$3,450 per month for 2 years with the same \$1 buy out. The unit can also be purchased directly.

2,400 x 36 = \$86,400

3,450 x 24 = \$82,800

We started looking at this for the propellant - as we are not completely confident with the analysis that has been supplied by Expro Systems, this seems like a reasonable way to confirm the amount of stabilizer in the propellant.

One issue is that we would need to get someone to force the Army to release their stabilizer calibration program, without this the instrument will require a long and expensive calibration process.

There is a very significant additional benefit.

We have been struggling with our fuel analysis for emulsions.

The more critically we looked at our procedures, the more we understood the lack of accuracy in the data.

This instrument is claimed to be able to do a complete analysis on an emulsion in the same 6 minutes.

Fuel, Emulsifier, AN, SN, Water could be determined in a single run - huge savings in the lab and more accurate data.

Apparently the instrument can accurately determine the oil content of grain and do complete analysis of mayonnaise (an emulsion).

We would need to confirm this, but just the emulsion work alone would be a huge step up.

We are trying to get the company to come out and do a demo and I will let you know how that goes. It may be we would just get the unit with a 30 day return plan.

Please let us know your thoughts and if we need to submit a CAP EX.

Thanks!!

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

----- Forwarded by Dennis Schulz/RDN/Austin on 03/08/2013 10:38 AM -----

From: Bob Hivick/RDN/Mfg/Austin
To: Dennis Schulz/RDN/Austin@Austin
Date: 03/07/2013 01:45 PM
Subject: Fw: Austin Powder Company Financial Proposal

Lease agreement on NIR. Not as cheap as I hoped it would be.

----- Forwarded by Bob Hivick/RDN/Mfg/Austin on 03/07/2013 01:43 PM -----

Marissa Reinhardt



<mreinhardt@captivelease.com>
03/07/2013 01:04 PM

To <bob.hivick@austinpowder.com>
cc Fred Simpson <simpson.f@buchi.com>
Subject Austin Powder Company Financial Proposal

Good morning Bob:

On behalf of Fred Simpson and Vendor Lease Management Group, attached please find our formal financial proposal for the Buchi NS00-001 NIRFlex Solids Package.

At Vendor Lease Management Group we offer Lease to Own Financing.

The \$1.00 purchase option is simply a purchase option with a term of 2 or 3 years and at the end of the agreed upon payments and term, you purchase the equipment for \$1.00

I will follow up with you in the next 24-48 hours to address any questions/concerns you may have regarding our financing program.

Regards,

Marissa Reinhardt | Program Manager
Vendor Lease Management Group
1719 Route 10 East, Suite 306
Parsippany, NJ 07054

tel. (973) 292-0025 x 312
fax. (973) 292-0019
email. mreinhardt@captivelease.com



Austin Powder, Hivick, NIRFlex N-500.pdf Buchi - Austin Powder Company 341003338.pdf VLMG Credit App.doc

NIR Equipment for Stabilizer Analysis.

Dennis Schulz to terrywright
Cc: Bob Hivick, Margit Chevalier, Keith Mills

04/12/2013 11:35 AM

Terry,

Things are moving.

As you may know issue is where to make the product - a new building will be needed.

Red Diamond is confident that can be accomplished relatively smoothly.

We hope so. The project has not stopped.

APC is looking at a Buchi NIRFlex N-500 FT-NIR instrument to do stabilizer analysis.

The method is much quicker and more accurate than the other methods and is the preferred method.

This is the method and equipment the Army uses.

What APC needs is someone to push the DOD to provide the calibration curves for M6 propellant for use on the Buchi NIRFlex N-500 FT-NIR.

We are unsure who has to sign off. Bob remembers the commander at Picatinny was the individual who authorized the release of the data.

If you can help with this it would be greatly appreciated - and will ultimately make the project go more smoothly.

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933



Fw: Re: M6 Propellant Slurry
Dennis Schulz to: terrywright

05/22/2013 08:37 AM

Denny

Dennis Schulz
Austin Powder
Office: 740.596.5286
Mobile: 740.649.3933

-----Forwarded by Dennis Schulz/RDN/Austin on 05/22/2013 07:35AM -----

=====
To: David Smith <davidalansmith@bellsouth.net>
From: Keith Mills/RDN/Austin@Austin
Date: 05/21/2013 10:28AM
Cc: Dennis Schulz/RDN/Austin@Austin, Dave True/Cle/Austin@Austin
Subject: Re: M6 Propellant Slurry
=====

Dave,

Here is the current status on producing M6 & emulsion packaged product at Red Diamond. We have developed and tested a manufacturing process that has yielded positive results at the emulsion R&D facility. Since that point we have been looking at various locations to set up the mass production process in a quick and timely manner. Unfortunately we have looked and ruled out three locations at Red Diamond due to either safety concerns, building limitations, or infrastructure inadequacies. We have now settled on developing a stand alone structure that will be located in the area of our emulsion based products. With that being said, we have been reviewing costs related to transportation from Minden to Red Diamond to the end customer in Pennsylvania. We are estimating that cost to be around the \$0.15 to 0.16/lb range. The target total product cost is \$0.22/lb delivered to the customer. With the additional investment costs being incurred related to the building, equipment, and Red Diamond labor costs the overall project at Red Diamond is not looking as attractive as originally planned. At one point there were discussions between APC and Explo about this product possibly being produced at Minden. The freight cost from Minden to the end customer in Pennsylvania really does not change regardless of where the blended product is made (Red Diamond or Minden). We are at the point of asking if Explo would still be interested in producing this product if the total costs can be achieved against the above target? Please review and advise if Explo can support this project.

If APC would proceed we need to complete the following items to get into mass production:

Currently working with our architect on preliminary building image.

Finalize detailed process engineering.
Develop P&ID's and draft work instructions.
Perform design Process Hazards Analysis.

Finalize building design and budget
Review permitting requirements, construction and environmental impacts. We also need to review impact to our burn permit limits with the addition of this process and the PETN project.
Develop overall project budget and scope for approvals from APC-Cleveland.
Order process equipment
Construct building
Install equipment
Perform pre-start up PHA
Run production trials
Start mass production

Items 1 through 6 are being conducted simultaneously. These items could be complete by the end of September. As always, the unknown is timing required for permit approvals. Once permits and project budgets are approved we anticipate six months to complete items 7 through 12. So in reality we are probably looking at April 2014 for a projected mass production start up timing.

Sorry for the lengthy explanation but the project realities are becoming more clear as we work through the details. Please review and advise Explo's desire and ability to proceed with production at Minden if we can get to targeted costs. I look forward to talking with you about your thoughts.

Thanks,
Keith

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond & #9674; 430 Powder Plant Road & #9674; McArthur, OH
45651-0317
Office: 740.596.5286 ext 7412 & #9674; Cell: 614.569.1783 & #9674; Keith.Mills@austinpowder.com

From: David Smith <davidalansmith@bellsouth.net>
To: <keith.mills@austinpowder.com>
Date: 05/20/2013 04:09 PM
Subject: M6 Propellant Slurry

Keith: Know that you are moving forward with your M6 packaged propellant facility, could you give us an update

For our Army reports where you are and potential timeframes for startup.

Thanks,

Dave

Dave Smith letter
Dennis Schulz to Keith Mills
Cc: Dave True

06/17/2013 02:55 PM

Let me know if there are changes needed.



M6 Propellant Product.pdf

AUSTIN POWDER COMPANY



Subject: M6 Propellant Product

10 June 2013

From: Dennis Schulz
Emulsion Development Manager
Austin Powder Company

cc: Dave True
Keith Mills
Dave Smith

Austin Powder Company is interested in contracting Explo Systems, Inc. to manufacture a "private label" product containing M6 Propellant.

Austin Powder Company has a market for a product that contains the M6 propellant. Initial estimates indicate a market for 5MM to 10MM pounds annually of a product containing approximately 40% M6 propellant. This translates to between 1.2MM and 2.5MM pounds of M6 propellant. It is expected the market size will grow as the product gains acceptance.

Initially the product would consist of 40% M6 propellant (US DOT classification: 1.3C, UN0161) and 60% of an (US DOT classification: Oxidizer, 5.1, UN3375). The final product would have an US DOT classification of Blasting Agent, 1.5D, UN0332. To achieve this 1.5D classification, the product must pass a series of tests designed to provide data on sensitivity, high temperature stability and on the outcome of a large scale burn. This testing is underway at a DOT approved testing facility and so far all the tests have indicated a safe, stable product. It seems that once the propellant is surrounded by the insensitive emulsion, the propellant loses sensitivity, allowing for the blended product to meet the lower classification rating.

Additionally, Austin Powder Company has developed a simple, efficient and extremely safe manufacturing method. The advantage of this method is the handling of the M6 propellant is kept to an absolute minimum. The product would be packaged in a woven polypropylene outer bag with an inner polyethylene bag. The packaging will conform to 49CFR 173.62, Packaging instruction 116. Austin Powder Company is prepared to provide the details of this method to Explo Systems once a contract is in place.

While there is much to be done, an excellent opportunity exists for both Austin Powder Company and Explo Systems, Inc.

Please contact me with any questions.

*Austin Powder Company • 430 Powder Plant Rd. • P.O. Box 317 • McArthur, OH 45651
Phone 740 596-5286 • Fax 740 596-9856*

Fw: M6 & Emulsion Product Letter and Process Flow Diagram
Keith Mills to: Dennis Schulz

06/26/2013 08:10 AM

Good morning Denny,

Could you please take a look at David Smith's comments and request.

Thanks

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com
----- Forwarded by Keith Mills/RDN/Austin on 06/26/2013 08:08 AM -----

From: Keith Mills/RDN/Austin
To: David Smith <davidalansmith@bellsouth.net>
Date: 06/25/2013 03:36 PM
Subject: RE: M6 & Emulsion Product Letter and Process Flow Diagram

David,

Just opened your email. I have been tied up with international visitors all day. The letter was written by Denny. I only have a PDF version. Denny is not here this afternoon. I'll chat with him in the morning.

Thanks

Keith Mills
Director of Manufacturing

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

David Smith

Keith: In your letter about the market for M6 you...

06/25/2013 09:39:05 AM

From: David Smith <davidalansmith@bellsouth.net>
To: <Keith.Mills@austinpowder.com>
Date: 06/25/2013 09:39 AM
Subject: RE: M6 & Emulsion Product Letter and Process Flow Diagram

Keith: In your letter about the market for M6 you stated 40% propellant and that the market was 5,000,000 to 10,000,000 lbs per year

But the propellant usage was 1.2 to 2.5 million pounds. Should that be 2,000,000 to 4,000,000 lbs. of propellant. If so can get a revised letter?

Would be available to discuss if you like.

We will be submitting this plan to State of Louisiana later today.

Thanks,
Dave

-----Original Message-----

From: Keith.Mills@austinpowder.com [mailto:Keith.Mills@austinpowder.com]
Sent: Thursday, June 20, 2013 9:39 AM
To: David Smith
Cc: Dennis.Schulz@austinpowder.com; Dave.True@austinpowder.com
Subject: M6 & Emulsion Product Letter and Process Flow Diagram

David,

Glad to hear your discussions with the officials went well yesterday. As we discussed this morning, please find attached the letter and process flow diagram.

Thanks

(See attached file: M6 Propellant Project.pdf)(See attached file: M6 & Emulsion Process Flow.pdf)

Keith Mills
Director of Manufacturing
Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH
45651-0317
Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

AUSTIN POWDER COMPANY



Subject: M6 Propellant Product

10 June 2013

From: Dennis Schulz
Emulsion Development Manager
Austin Powder Company

cc: Dave True
Keith Mills
Dave Smith

Austin Powder Company is strongly interested in contracting Explo Systems, Inc. to manufacture a "private label" product containing M6 Propellant.

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Initially the product would consist of 40% M6 propellant (US DOT classification: 1.3C, UN0161) and 60% of an (US DOT classification: Oxidizer, 5.1, UN3375). The final product would have an US DOT classification of Blasting Agent, 1.5D, UN0332. To achieve this 1.5D classification, the product must pass a series of tests designed to provide data on sensitivity, high temperature stability and on the outcome of a large scale burn. This testing is underway at a DOT approved testing facility and so far all the tests have indicated a safe, stable product. It seems that once the propellant is surrounded by the insensitive emulsion, the propellant loses sensitivity, allowing for the blended product to meet the lower classification rating.

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While there is much to be done, an excellent opportunity exists for both Austin Powder Company and Explo Systems, Inc.

*Austin Powder Company • 430 Powder Plant Rd. • P.O. Box 317 • McArthur, OH 45651
Phone 740 596-5286 • Fax 740 596-9856*

Nick Rupert/RDN/Mfg/Austin
11/26/2012 03:24 PM

To Terry Wright <terrywright@explosystems.com>
cc
bcc
Subject Storage of Powder at East Camden

Terry,

As per our phone conversation as of today. The Austin Powder Company has agreed to store 1,000,000 pounds of Propellant at our East Camden, AR magazine site. I will send you all the info we spoke about by 11:00am on Tuesday!

Nick

Nick Rupert/RDN/Mfg/Austin
11/27/2012 09:49 AM

To Terry Wright <terrywright@explosystems.com>
cc
bcc
Subject Storage

Terry,

See attached, if agreed, sign and return!



12332 Storage Agreement.doc

Nick



AUSTIN POWDER COMPANY

Storage Agreement

CORPORATE PURCHASING (740) 596-5286
 CLEVELAND OFFICE (216) 464-2400

ORDER DATE 11/27/12	TERMS See Below	F.O.B. East Camden, AR	DUE DATES SEE BELOW
EXPLO SYSTEMS, LLC 1600 JAVA ROAD MINDEN, LA 71055 (318) 382-8700 318-470-6641 TERRY WRIGHT-CELL 859-842-0980 FAX 318-382-8756 Office		AUSTIN POWDER COMPANY 7 LC - 10 BLANDY ROAD EAST CAMDEN, AR 71701 870-574-0580	
SHIP VIA		TAX EXEMPT YES	

ITEM	QUANTITY	U/M	DESCRIPTION	UNIT PRICE	U/M
1			<p>This storage agreement between the Austin Powder Company and Explo System is for a 90 day period, to commence on the first delivery of Propellant to our East Camden, AR site. Storage cost will include the following:</p> <p>Rental on seven (7) magazines for 90 days (storage of 1,000,000 pounds) \$8,106.00</p> <p>Cost to unload and reload Propellant from 25 loads (4 man-hours to unload & 4 man-hours to reload trailer) inbound loads are not to exceed 3 per day and must be coordinated with our plant manager. \$5,200.00</p> <p>Cost to maintain Bi-Weekly inventor as per APC - SOP \$1,248.00</p> <p>NOTE</p> <p>EACH BOX WILL BE MARKED TO COMPLY WITH ALL CURRENT US DOT REQUIREMENTS FOR TRANSPORT AND STORAGE IN THE USA (i.e. 1.1D label, EX number, proper shipping name, NEQ per box, Lot # and DSC).</p> <p style="text-align: right;">TOTAL COST: \$14,554.00</p> <p>Payment Terms: Explo will be invoiced on a monthly basis at \$4,851.33, payable in 30 days.</p> <p>Terms and conditions are agreed to by:</p> <p style="text-align: right;">Nick Rupert APC _____ date</p> <p style="text-align: right;"><i>Terry Wright</i> Terry Wright Explo Systems <u>11/29/12</u> date</p>		LBS

AUSTIN POWDER COMPANY P.O. BOX 317 MCARTHUR, OH 45651	AUSTIN POWDER COMPANY PER _____ NICK RUPERT, MANAGER OF PURCHASING
---	--

Nick Rupert/RDN/Mfg/Austin
07/16/2013 12:14 PM

To terrywright@explosystems.com
cc
bcc
Subject Fw: Explo Letter of Stability

Terry,

Please see the attached. We received this letter in confidants from James Nixon, please do not contact him!

Nick

----- Forwarded by Nick Rupert/RDN/Mfg/Austin on 07/16/2013 12:10 PM -----

Keith Mills/RDN/Austin

07/16/2013 12:02 PM

To Nick Rupert/RDN/Mfg/Austin@Austin
cc

Subject Fw: Explo Letter of Stability

Keith Mills**Director of Manufacturing**

Austin Powder Company - Red Diamond ♦ 430 Powder Plant Road ♦ McArthur, OH 45651-0317

Office: 740.596.5286 ext 7412 ♦ Cell: 614.569.1783 ♦ Keith.Mills@austinpowder.com

----- Forwarded by Keith Mills/RDN/Austin on 07/16/2013 12:01 PM -----

From: James Nixon <jnixon@highlandinc.net>
To: <Keith.Mills@austinpowder.com>
Date: 07/01/2013 03:58 PM
Subject: Explo Letter of Stability

Afternoon Keith:

Highland's East Camden Highland Railroad (EACH) has a storage car location at the Camp Minden facility. The last Explo explosion took out several of their customers railcars. In light of what is happening with Explo the EACH Railroad President Bruce Coffey has been concerned about another explosion. Camp Minden has issued a letter regarding the M6 Propellant and its stability. The Army Safety Team has advised inherent stability issues regarding the M6 propellant. I don't know who the Army Safety Team is but thought you may want a copy of the letter.

When you have reviewed this letter please call me to discuss (870) 574-3600, ext. 135.

Regards,



James Nixon Letter of Instability of Propellant07012013.pdf



STATE OF LOUISIANA
MILITARY DEPARTMENT

Camp Minden
100 Louisiana Boulevard
Minden, Louisiana 71055-7908

NGLA-SMD-CM

28 June 2013

Mr. Bruce Coffey
East Camden Railroad
P. O. Box 3180
East Camden, AR 71701

Dear Mr Coffey

This correspondence is provided as follow up to our meeting of 23 May 2013 where we discussed the EXPLO Public Safety issues and the results of a Department of Army Safety team site visit. As you may recall we discussed the following items during the May meeting:

- a. The Public Safety issue relating to improper storage of M6 Propellant has been resolved and all propellant is now in storage igloos.
- b. The Army Safety team advised that M6 propellant has an inherent stability issue that can result in auto-ignition while in storage.

As noted above, we still have a potential safety hazard relating to the M6 propellant. However, it is important to note that the propellant stability was checked by EXPLO when it was received and the Louisiana State Police checked the stability prior to moving it from S-line to storage magazines and found no significant stability issues. The State Military Department has advised EXPLO that their priority of propellant shipment should be from those magazines in close proximity to other tenant activities.

Rest assured that we are doing everything possible to insure the safety of all personnel who live, work, and train at or near Camp Minden and will keep you and your staff informed as the EXPLO situation changes. If you have any questions regarding this issue please contact the undersigned who can be reached at 318-382-4183.

Ronnie D. Stuckey
RONNIE D. STUCKEY
COL (Ret), LMD
Installation Commander

Nick Rupert/RDN/Mfg/Austin
07/30/2013 10:38 AM

To Craig Bauman/Cle/Austin@Austin
cc
bcc
Subject Fw: M-6 @ EC

FYI

----- Forwarded by Nick Rupert/RDN/Mfg/Austin on 07/30/2013 10:36 AM -----



Chad Cochran/RDN/Austin
07/30/2013 08:15 AM

To Nick Rupert/RDN/Mfg/Austin@Austin
cc
Subject M-6 @ EC

Month	# of Magazines	Cost
November	2	\$890.86
December	6	\$2,672.57
January	9	\$4,008.86
Feburary	9	\$4,008.86
March	17	\$7,572.29
April	22	\$9,799.43
May	22	\$9,799.43
June	21	\$9,354.00
July	21	\$9,354.00
		<u>\$57,460.29</u>

\$ 57,460.29 - Good through July 31, 2013

Rent - 1 Magazine for 30 Days	\$386.00
APC cost to maintain Bi-weekly inventory	\$59.43
	<u>\$445.43</u>

Chad Cochran | Austin Powder Company | 430 Powder Plant Rd | McArthur, OH 45651
☎: (Office) 740.596.5286 ext: 7419 | 📠: (Fax) 740.596.5396 | ✉: chad.cochran@austinpowder.com

Nick Rupert/RDN/Mfg/Austin
07/18/2013 02:34 PM

To David Smith <davidalansmith@bellsouth.net>
cc Keith Mills/RDN/Austin@Austin, Craig
Bauman/Cle/Austin@Austin,
chad.cochran@austinpowder.com
bcc
Subject Fw: TNT Spreewerk Lubben Germany from Explo Systems

Dave,

Here is are the lab results on the WET TNT we received. The avg. water content is 14.34%. We'll need to do some price adjusting on these two loads! Call when you get a chance.

Nick

----- Forwarded by Nick Rupert/RDN/Mfg/Austin on 07/18/2013 02:30 PM -----

Mark Fox/RDN/Mfg/Austin
07/18/2013 01:08 PM

To Nick Rupert/RDN/Mfg/Austin@Austin, Keith
Mills/RDN/Austin@Austin, Dave
True/Cle/Austin@Exchange, Bob
Belock/RDN/Mfg/Austin@Austin
cc
Subject TNT Spreewerk Lubben Germany from Explo Systems

Red Diamond has received the following TNT that is extremely wet. The high moisture percentage will require extra time and work for removal of the excess water in use this material in or booster production process. Pictures of the TNT are also attached. No Spreewerk Lubben or Explo Systems specifications for the TNT have been were received. The DNT content is also not know for this material.

EXPLOSIVE: Trinitrotoluene (TNT) UN0209 73,864 Lbs. 1,728 boxes (2 Trailer Loads)

COMPANY NAME: Spreewerk Lubben GmbH, Germany

Imported by: EXPLO SYSTEMS Inc. Minden, LA

Moisture Sample Analysis of TNT (Powder) samples taken from six (6) boxes from six (6) different pallets off of two (2) received trailers of TNT (73,864 Lbs. / 1,728 boxes) from Spreewerk Lubben GmbH, Germany and imported by EXPLO SYSTEMS Inc. Minden, LA received at Red Diamond on 7/16/13. The TNT is powder with some of the powder sticking together in chunks.

ANALYSIS	Moisture %
Sample #	
1	14.49
2	9.63
3	13.50
4	13.43
5	13.59
6	21.45
Average	14.34

     
DSCN6510.JPG DSCN6498.JPG DSCN6499.JPG DSCN6522.JPG DSCN6504.JPG DSCN6506.JPG

EXPLO - JULY SHIPMENT

Material	M/T	POUNDS	DISCRIPTION ON MATERIAL
TORPEX	23	50692	CHUNKS, 51% TNT - 18% RDX - 30% ALUM
HEXOGEN	100.8	222163.2	SMALL CHUNKS, 70% RDX - 20% WAX - 10% ALUM
COMP-B	53.5	117914	1 KILO CHUNKS - 55% RDX - 45% TNT
TNT	38	83752	FLAKED
TNT	300	661200	SMALL CHUNKS
		0	
		0	
		0	
		0	

515.3 1135721.2 AS PER DAVE SMITH, THE BOAT IS LEAVING
ON TUESDAY, JUNE 25, FROM SWEDEN!
ETA FOR CANADA IS JULY 12 - 15

Nick Rupert/RDN/Mfg/Austin
12/19/2012 11:08 AM

To Thomas Ethridge/Mfg/Austin@Austin
cc Craig Bauman/Cle/Austin@Austin, Keith
Mills/RDN/Austin@Austin, Larry
McCorkle/RDN/Mfg/Austin@Austin
bcc terrywright@explosystems.com
Subject Re: Load 15

All,

Just got off the phone with Terry Wright about this. We made him aware that we will not accept any material in this condition! He says that they will "hand pick" all barrels that they ship to us and make sure they are good! Also, he will send us Explo's clean up procedure and the PPE required for clean up along with ten empty drums!

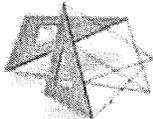
Nick

Thomas Ethridge Here is photos of Load 15. 140Lbs spilled on flo... 12/19/2012 09:01:30 AM
Thomas Ethridge/Mfg/Austin
12/19/2012 09:01 AM
To Larry McCorkle/RDN/Mfg/Austin, Keith
Mills/RDN/Austin@Austin, Nick Rupert/RDN/Mfg/Austin
cc Craig Bauman/Cle/Austin@Austin
Subject Load 15

Here is photos of Load 15. 140Lbs spilled on floor and several containers busted.

Thomas Ethridge, Plant Manager
Austin Powder Company
East Camden, Arkansas
870-574-0580 (Voice)
870-574-2060 (Fax)

----- Forwarded by Thomas Ethridge/Mfg/Austin on 12/19/2012 07:57 AM -----



EastCamdenAR/Mfg/Austin
12/19/2012 07:49 AM

To Thomas Ethridge/Mfg/Austin@Austin
cc
Subject Fw: Emailing: SANY0038.JPG, SANY0034.JPG,
SANY0035.JPG, SANY0036.JPG, SANY0037.JPG



- SANY0038.JPG

 - SANY0034.JPG

 - SANY0035.JPG

 - SANY0036.JPG

 - SANY0037.JPG

HPLC PROPELLANT STABILITY REPORT						
Lot Number: IND87L070886				D533 / M6 propellant		
Date of analysis:				Date: 4 Sep 2012		
Other Information M6 Propellant		Sample Data #1		0.50 g	100 ml	Solvent ACN
Standards (ERG-006)				Sample #		
Stabilizer	Conc ppm	Ret Time	Intg Area	Intg Area	Conc %	
4,4-DNDPA	50.0	0.880	48.8	857.1	1.347	
2,4-DNDPA	50.0	3.416	914.3	0	0.000	
2,2-DNDPA	50.0	5.22	777.3	23257	0.000	
2,4-DNDPA	50.0	7.622	980.5	0	0.000	
4NDPA	50.0	9.134	1586.8	108.8	0.007	
2NDPA	50.0	10.417	2826.3	126.9	0.004	
DPA	200.0	11.797	5671.5	556.2	0.038	
N-NitrosoDPA	75.0	12.757	1337.5	0	0.000	
				1.397		
Avg. % Stabilizer for Lot				1.397		
0.30% or more is Stability Code A 0.20% - 0.29% is Stability Code C Less than 0.20% is Stability Code D						
Analyst Mike Kile				Avg. Tot. Stabilizers 1.40 %		
Analyst Signature				Stable YES Unstable		
Lab. Supervisor Signature				Comments CATEGORY: A		
				Actions to be Taken		

HPLC PROPELLANT STABILITY REPORT					
Lot Number: IND85G070592			D533 / M6 propellant		
Date of analysis:			Date: 11 JULY 2012		
Other Information M6 Propellant		Sample Data #1 0.50 g		Solvent 100 ml ACN	
Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg. Area 1	Intg. Area	Conc. %
4.4 ONDPA	50.0	0.803	32.3	546.9	1.693
2.4 ONDPA	50.0	3.397	945.1	0	0.000
2.2 ONDPA	50.0	5.155	1995.1	23089	0.000
2.4 ONDPA	50.0	7.525	946.2	24.1	0.003
4NDPA	50.0	9.04	1580.4	159.2	0.010
2NDPA	50.0	10.278	2854	180.7	0.006
DPA	200.0	11.761	3473.7	133.8	0.016
N-NitrosoDPA	75.0	12.606	1672.4	0	0.000
				1.721	
Avg. % Stabilizer for Lot				1.721	
0.30% or more is Stability Code A 0.20% - 0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst Takisha Dickerson			Avg. Tot. Stabilizers 1.72 %		
Analyst Signature			Stable YES Unstable		
Lab. Supervisor Signature			Comments CATEGORY: A		
			Actions to be Taken		

HPLC PROPELLANT STABILITY REPORT						
Lot Number: IND88J070969				D533 / M6 propellant		
Date of analysis:				Date: 24 OCT 2012		
Other Information M6 Propellant		Sample Data #1		0.50 g	100 ml	Solvent ACN
Standards (ERG-008)				Sample #		
Stabilizer	Conc. ppm	Ret. Time	Intg. Area 1	Intg. Area	Conc. %	
4,4'-DNDA	50.0	0.784	183	776.6	0.476	
2,4'-DNDA	50.0	3.299	808.4	0	0.000	
2,2'-DNDA	50.0	4.947	2591.5	24054	0.000	
2,4'-DNDA	50.0	7.024	871.2	0	0.000	
ANDPA	50.0	8.466	1408.7	50.3	0.004	
2NDPA	50.0	9.578	2554.8	81.2	0.003	
DPA	200.0	11.01	4783.9	960.1	0.081	
N-NitrosoDPA	75.0	11.732	1511.1	286	0.000	
				0.564		
Avg. % Stabilizer for Lot				0.564		
0.30% or more is Stability Code A 0.20% - 0.29% is Stability Code C Less than 0.20% is Stability Code D						
Analyst MIKE KILE				Avg. Tot. Stabilizers 0.56 %		
Analyst Signature				Stable YES Unstable		
Lab. Supervisor Signature				Comments CATEGORY: A		
				Actions to be Taken		

HPLC PROPELLANT STABILITY REPORT					
Lot Number: IND81E070022			D533 / M6 propellant		
Date of analysis:			Date: 29 JUNE 2012		
Other Information M6 Propellant		Sample Data #1 0.50 g 100 ml		Solvent ACN	
Standards (ERG-006)				Sample #	
Stabilizer	Conc. ppm	Ret Time	Intg Area 1	Intg. Area	Conc. %
4,4'-DNDPA	50.0	0.88	48.7	108.6	0.223
2,4'-DNDPA	50.0	3.265	1031.8	28	0.003
2,2'-DNDPA	50.0	4.888	3957	30330	0.003
2,4'-DNDPA	50.0	6.927	1035.8	80.3	0.005
4NDPA	50.0	8.235	1690.1	250.9	0.015
2NDPA	50.0	9.279	3654.3	300.6	0.010
DPA	200.0	10.838	5843.7	588.9	0.043
N-NitrosDPA	75.0	11.092	1726.8	0	0.000
				0.295	
Avg. % Stabilizer for Lot				0.295	
0.30% or more is Stability Code A 0.20% - 0.29% is Stability Code C Less than 0.20% is Stability Code D					
Analyst Kisha Dickerson			Avg. Tot. Stabilizers 0.30 %		
Analyst Signature			Stable YES Unstable		
Lab. Supervisor Signature			Comments CATEGORY: A		
			Actions to be Taken		

**EXPLOSIVE RAW MATERIALS
PURCHASED FROM EXPLO SYSTEMS**

07341 TNT				
PURCHASE ORDER NO.	GRN	DATE	STOCK ROOM	AMOUNT
P123977	237847	9/27/13	EC	32,400
P123977	237848	9/27/13	EC	32,400
P123977	237816	9/26/13	EC	32,400
P123977	237817	9/26/13	EC	32,400
P123977	237819	9/26/13	EC	32,400
P123977	237845	9/26/13	EC	32,400
P123977	237722	9/25/13	EC	32,400
P123977	237765	9/25/13	EC	32,400
P123977	237766	9/25/13	EC	32,400
P123977	237807	9/25/13	EC	32,400
P123977	237623	9/24/13	EC	32,400
P123977	237667	9/24/13	EC	32,400
P123977	237683	9/24/13	EC	32,400
P123977	237691	9/24/13	EC	32,400
P123977	237612	9/23/13	EC	32,400
P123977	237616	9/23/13	EC	32,400
P123977	237618	9/23/13	EC	32,400
P123977	237606	9/23/13	RD	32,401
P123977	237615	9/23/13	RD	32,401
P123977	237617	9/23/13	RD	32,401
P123977	237619	9/23/13	RD	32,401
			TOTAL	680,404

**EXPLOSIVE RAW MATERIAL
PURCHASED FROM EXPLOS SYSTEMS**

PRODUCT #05781 TNT Gov't Surplus				
PURCHASE ORDER NO.	GRN	DATE	STOCK ROOM	AMOUNT
P121055	232152	5/16/13	EC	39,683.0
P121055	232090	5/15/13	EC	39,683.0
P121055	232105	5/15/13	EC	39,683.0
P121055	231919	5/10/13	EC	35,234.0
P121055	231785	5/8/13	EC	4,409.0
P121055	231782	5/7/13	EC	39,683.0
P121055	231784	5/7/13	EC	39,683.0
P121055	231783	5/6/13	EC	39,683.0
11021	202868	5/18/11	EC	1,800.0
P121055	237491	9/18/13	RD	39,683.0
P121055	235801	8/13/13	RD	39,628.8
P121055	236036	8/13/13	RD	54.0
P121055	235749	8/12/13	RD	39,682.8
P121055	234678	7/17/13	RD	36,931.0
P121055	234515	7/15/13	RD	36,931.0
P121055	231876	5/9/13	RD	39,682.8
P121055	231805	5/8/13	RD	39,682.8
P121055	231725	5/7/13	RD	39,682.8
P121055	231726	5/7/13	RD	39,682.8
P121055	231744	5/7/13	RD	39,682.8
			TOTAL	670,865.6

**EXPLOSIVE RAW MATERIAL
PURCHASED FROM EXPLO SYSTEMS**

11289 TNT - (Czech Republic)				
PURCHASE ORDER NO.	GRN	DATE	STOCK ROOM	AMOUNT
P121055	236808	9/5/13	EC	39,683
P121055	236751	9/4/13	EC	31,416
P121055	236753	9/4/13	EC	39,683
P121055	235879	8/14/13	EC	5,456
P121055	235072	7/25/13	EC	39,683
P121055	235073	7/25/13	EC	39,683
P121055	236802	7/25/13	EC	6,402
P121055	234744	7/18/13	EC	39,683
P121055	234745	7/18/13	EC	34,722
P121055	234613	7/16/13	EC	39,683
P121055	234614	7/16/13	EC	39,683
P121055	234615	7/16/13	EC	39,683
P121055	234564	7/15/13	EC	39,683
P121055	234565	7/15/13	EC	39,683
P121055	234620	7/15/13	EC	39,683
P121055	234621	7/15/13	EC	39,683
			TOTAL	554,192

**EXPLOSIVE RAW MATERIAL
PURCHASED FROM EXPLO SYSTEMS**

12965 Hexotonal (Torpex)				
PURCHASE ORDER NO.	GRN	DATE	STOCK ROOM	AMOUNT
P121055	236702	9/3/13	EC	35,715
P121055	235872	8/14/13	EC	15,079
P121055	232107	5/15/13	EC	16,094
P121055	231989	5/13/13	EC	39,429
P121055	231831	5/9/13	EC	39,429
P121055	231762	5/7/13	EC	39,429
P121055	231765	5/7/13	EC	39,429
P121055	231765	5/7/13	EC	39,429
P121055	231756	5/6/13	EC	39,429
P121055	231759	5/6/13	EC	39,429
P121055	231761	5/6/13	EC	39,429
11021	204695	6/28/11	EC	36,000
11021	202131	5/5/11	EC	36,000
11021	201686	4/27/11	EC	36,000
11021	201657	4/25/11	EC	36,000
11021	201658	4/25/11	EC	36,000
11021	200956	4/4/11	EC	36,000
11021	207884	9/2/11	RD	36,000
11021	207593	8/29/11	RD	36,000
11021	207191	8/22/11	RD	28,800
11021	206819	8/15/11	RD	36,000
11021	206485	8/8/11	RD	36,000
11021	206179	8/1/11	RD	36,000
11021	205804	7/25/11	RD	39,600
11021	205616	7/20/11	RD	18,000
11021	205255	7/13/11	RD	36,000
11021	205120	7/11/11	RD	36,000
11021	204592	6/27/11	RD	36,000
11021	204478	6/23/11	RD	36,000
11021	204109	6/16/11	RD	36,000
11021	203853	6/13/11	RD	36,000
11021	203639	5/26/11	RD	23,400
11021	202946	5/23/11	RD	36,000
11021	202674	5/17/11	RD	36,000
11021	202333	5/11/11	RD	36,000
11021	202088	5/4/11	RD	36,000
11021	201922	5/2/11	RD	36,000
11021	201244	4/15/11	RD	36,000
11021	201112	4/12/11	RD	36,000
11021	200955	4/11/11	RD	36,000
11021	200703	4/5/11	RD	36,000
11021	200532	3/31/11	RD	36,000
11021	200281	3/25/11	RD	36,000
11021	200058	3/21/11	RD	36,000
11021	199751	3/14/11	RD	36,000
11021	199380	3/3/11	RD	36,000
11021	199163	2/28/11	RD	36,000
11021	198999	2/23/11	RD	36,000
11021	199000	2/23/11	RD	36,000
11021	198730	2/16/11	RD	36,000
11021	198564	2/11/11	RD	36,000
11021	198423	2/7/11	RD	36,000
TOTAL				1,824,120

**EXPLOSIVE RAW MATERIALS
PURCHASED FROM EXPLO SYSTEMS**

11534 Hexotonal (Torpex) - Spreewerk.				
PURCHASE ORDER NO.	GRN	DATE	STOCK ROOM	AMOUNT
P051999	110450	11/30/05	RI	37,479
P051999	110450	11/30/05	RI	37,478
P051999	110450	11/30/05	RI	37,478
P051999	110375	11/28/05	RI	37,478
P051999	110094	11/22/05	RI	37,478
P051999	101267	6/24/05	EC	39,506
P051999	101268	6/24/05	EC	39,506
P051999	100970	6/20/05	EC	39,506
P051999	100971	6/20/05	EC	39,506
			TOTAL	345,417

**EXPLOSIVE RAW MATERIAL
PURCHASED FROM EXPLO SYSTEMS**

PRODUCT #00865 COMPOSITION B (Gov't)				
PURCHASE ORDER NO.	GRN	DATE	STOCK ROOM	AMOUNT
P121055	237154	9/12/13	RD	36,667
P121055	237070	9/10/13	RD	36,667
P121055	235873	8/14/13	EC	15,617
P121055	235074	7/25/13	EC	29,100
P109016	210046	10/6/11	EC	6,394
11225	208946	9/23/11	EC	23,206
			TOTAL	147,651

**EXPLOSIVE RAW MATERIAL PURCHASED
FROM EXPLO SYSTEMS**

PRODUCT #06112 COMPSOITIONS A-5				
PURCHASE ORDER NO.	GRN	DATE	STOCK ROOM	AMOUNT
P121055	236755	9/3/13	EC	31,746
P121055	236523	8/29/13	EC	31,746
P121055	236445	8/28/13	EC	31,746
P121055	234866	7/22/13	EC	24,000
P121055	234867	7/22/13	EC	31,746
P121055	234868	7/22/13	EC	31,746
P121055	234906	7/15/13	EC	31,746
P121055	234907	7/15/13	EC	31,746
P108136	226386	12/3/12	EC	11,389
P108136	212622	1/3/12	EC	463,000-
P108136	212845	12/19/11	EC	36,879
P108136	212848	12/19/11	EC	36,879
P108136	212849	12/19/11	EC	36,879
P108136	212849	12/19/11	EC	36,879
P108136	212934	12/16/11	EC	36,879
P108136	212623	12/12/11	EC	36,879
P108136	212624	12/12/11	EC	15,728
P108136	212625	12/12/11	EC	36,879
P108136	212625	12/12/11	EC	36,879
11021	202868	5/18/11	EC	1,900
			TOTAL	570,271

**EXPLOSIVE RAW MATERIALS
PURCHASED FROM EXPLO SYSTEMS**

06113 Comp.H-6 (Gov't)				
PURCHASE ORDER NO.	GRN	DATE	STOCK ROOM	AMOUNT
11021	207975	9/2/11	EC	32,400
11021	202868	5/18/11	EC	32,400
TOTAL				64,800

**EXPLOSIVE RAW MATERIAL
PURCHASED FROM EXPLO SYSTEMS**

11662 Comp.H-6 (Germany)				
PURCHASE ORDER NO.	GRN	DATE	STOCK ROOM	AMOUNT
P057582	114101	1/20/06	EC	37,009
P057582	114101	1/20/06	EC	16,563
P057582	114101	1/20/06	EC	11,111
			TOTAL	64,683

**EXPLOSIVE RAW MATERIAL
PURCHAED FROM EXOLO SYSTEMS**

#07260 Tritonal				
PURCHASE ORDER NO.	GRN	DATE	STOCK ROOM	AMOUNT
P057583	119376	5/9/06	EC	36,000
P057583	117935	4/17/06	EC	36,000
P057583	117695	4/12/06	EC	36,000
P057583	117706	4/12/06	EC	36,000
P057583	112764	1/13/06	EC	1,000
			TOTAL	145,000

**EXPLOSIVE RAW MATERIAL
PURCHASED FROM EXPLO SYSTEMS**

08053 HEXOLITE (GERMANY)				
PURCHASE ORDER NO.	GRN	DATE	STOCK ROOM	AMOUNT
P057582	114101	1/20/06	EC	2,380

MIS. ITEMS PURCHASED FROM EXPLO SYSTEMS

10721 Hydromite NC 5 1/2 x 40 WPP				
PURCHASE ORDER NO.	GRN	DATE	STOCK ROOM	AMOUNT
P026456	51842	8/16/02	RD	14,680
10722 Hydromite NC 6 1/2 x 40				
P026456	51842	8/16/02	RD	14,680
10771 Hydro N.C. Plus 4 1/2 x 25				
P027886	54592	10/15/02	RD	12,000
10772 Hydro N.C. Plus 5 1/2 x 40				
P027886	54592	10/15/02	RD	12,000
10773 Power Blend 4 1/2 x 25				
P031922	62215	4/17/03	L2	4,875
10774 Power Blend 5 1/2 x 40				
P034852	67887	8/20/03	K4	39,960
P033187	64626	6/11/03	K4	44,000
P031367	61786	4/9/03	K4	42,000
P029712	58413	1/20/03	K4	42,080
10982 Octol 75/25 (Gov't)				
P109016	210046	10/6/2011	EC	262
13132 Ammonium Perchlorate				
P110995	213690	12/12/11	EC	441
13251 M6 Propellant				
P112095	215840	3/1/12	EC	840
13392 Tetryl				
P115504	222492	8/15/12	RD	10

STRAIGHT BILL OF LADING

NOT NEGOTIABLE

RECEIVED, subject to the classification and tariffs in effect on the date of the issue of this Original Bill of Lading. The property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown) consigned, and destined as indicated below...

Shipper: Explo Systems, Inc. 1600 Java Road Minden, LA 71055. Shipper's No. 2933. Shipping Date 7-9-13. Purchase Order No. Location No. 6214. Freight Charges: Collect Prepaid.

Consigned to BROWFIELD 2410 Destination KELMINE State OK Exp. Date 6/1/14. County 475458 E 77000 Route VIKING DR 74301 Charge Account of 1-405-832-1205 Customer P.O. No. Rel. No.

Table with columns: SHIPPED No. of PKGS, SHIPPED No. of UNITS, PROPER SHIPPING NAME AND HAZARD CLASS, RETURNED No. of PKGS, RETURNED No. of UNITS, EMERGENCY RESPONSE PROCEDURE GUIDE NO., EXEMPTION DOT-E, H M, Placards Applied to Railcar or Motor Vehicle. Includes handwritten entries like UN0161, Powder, Smokeless, 1.3C, PG II and EXPLOSIVES 1.3.

This is to certify that the above-named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation, according to the applicable regulations of the Department of Transportation.

Signature [Handwritten Signature] Invoice No. [Handwritten]

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT CALL CHEMTREC - DAY OR NIGHT IN THE USA CALL 800-424-9300 IN CANADA (ERP #2-0040) 800-561-3636 ELSEWHERE CALL (703) 527-3887

Permanent Address of Shipper: Explo Systems, Inc. 1600 Java Road Minden, Louisiana 71055. I have been offered placards identifying the shipment as Specified in 49CFR Subpart F of Part 172. I have received the above goods in apparent good order and condition. Received By [Signature] Date 7-9-13. AUTHORIZED RECEIVER.



AP 8289

LOAD/UNLOAD FORM

CUSTOMER: BEA TRUCK LINE: 12/R TRUCK#: 6214

DATE RECEIVED/LOADED: 7-9-13 COMP 35 - 2892

DATE	PRODUCT DESCRIPTION	FROM	TO	TRL#	LOT#	NUMBER OF		TOTAL WEIGHTS	
						PLTS	DRUMS	NET	GROSS
7-9-13	M-6	66614	BEA	6810057	MD66F070667	111		3	
	64140				MD65E070572	11		2	
					MD65F-070274	1		1	
					MD65E-070622	1		1	
					MD65E-070281	1		1	
					MD65F-070567	777		5	
					MD63F070278	777	1	6	
					MD65M-070108	111		3	
					MD67D070450	11		2	
					MD69D-070039	777	1	6	
					MD65E-070617	777	1111	9	
					MD65L-070072	11		2	
					MD65F-070070	1		1	
								42	
					35220				

SIGNATURE [Signature] 7/9/13

PAPERWORK PREPARED BY:

Original Print Date: 10/30/2012

CONTAINS HAZARDOUS MATERIALS

STRAIGHT BILL OF LADING

NOT NEGOTIABLE

RECEIVED, subject to the classification and tariffs in effect on the date of the issue of this Original Bill of Lading. The property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown) consigned, and destined as indicated below, to the carrier (the word carrier being understood throughout this contract meaning any person or corporation in possession of the property under the contract) agrees to carry it to the place of delivery of said destination. It on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service lobe performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading Set forth (1) in Uniform Freight Classification in effect on the date hereof, this is a rail or rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment. Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accept for himself and his assigns.

Shipper: Explo Systems, Inc.
1600 Java Road
Minden, LA 71055

Shipper's No. 2926

Shipping Date 5-16-13

Purchase Order No.

At
By R. R. U. K.

Freight Charges: Collect Prepaid

Location No. 6-LL-44

(Mail or Street Address of Consignee - For purposes of notification only)

Consigned to BARRETT'S EG CO
Destination 12114 MIAMI
County 475458 E 770 RD
Route VIKIWA OK 74301

Fed Lic. 5-OK-09720-42-00458
Exp. Date 6/1/14
State Lic.
Exp. Date
Customer No.

Charge Account of 1-405-823-1205

Customer P.O. No.

Rel. No.

Table with columns: SHIPPED No. of PKGS, SHIPPED No. of UNITS, PROPER SHIPPING NAME AND HAZARD CLASS, RETURNED No. of PKGS, RETURNED No. of UNITS, EMERGENCY RESPONSE PROCEDURE GUIDE NO., EXEMPTION DOT-E, H M, Placards Applied to Railcar or Motor Vehicle. Row 1: 252 in, 252, UN0161, Powder, Smokeless, 1.3C, PG II, #112, EXPLOSIVES 1.3. Includes handwritten truck/trailer numbers and weights.

This is to certify that the above-named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation, according to the applicable regulations of the Department of Transportation.

Signature [Handwritten]

Invoice No.

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT CALL CHEMTREC - DAY OR NIGHT
IN THE USA CALL 800-424-9300 IN CANADA (ERP #2-0040) 800-561-3636 ELSEWHERE CALL (703) 527-3887

Permanent Address of Shipper:
Explo Systems, Inc.
1600 Java Road
Minden, Louisiana 71055

I have been offered placards identifying the shipment as Specified in 49CFR Subpart F of Part 172. I have received the above goods in apparent good order and condition.

Received By [Signature] Date 5-16-13
CONSIGNEE CARRIER

DOT Hazardous Material Handling Number
Federal Explosives License No. 5-LA-119-20-1A-00057
Shipper)

By
AUTHORIZED RECEIVER

CONTAINS HAZARDOUS MATERIALS

WRIGHT BILL OF LADING

NOT NEGOTIABLE

Load 56

VED, subject to the classification and tariffs in effect on the date of the issue of this Original Bill of Lading. Property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown) consigned, and destined as indicated below. Carrier (the word carrier being understood throughout this contract meaning any person or corporation in possession of the property under the contract) agrees to carry the property to the place of delivery of said destination. It on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each of all or any of the property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading Set forth (1) in Uniform Freight Classification in effect on the date hereof, as a rail or rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment. Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation of this property, and the said terms and conditions are hereby agreed to by the shipper and accept for himself and his assigns.

Shipper: Explo Systems, Inc. 1600 Java Road Minden, LA 71055

Shipper's No. 2913

Shipping Date 4-9-13

Purchase Order No.

Location No. 2977/2473/2455

Freight Charges: Collect Prepaid XXX

RRUK

(Mail or Street Address of Consignee - For purposes of notification only)

Consigned to Austin Powder Co. 7-LL-10 Blinnway RD East Camden LA

Fed Lic. 5-AR-103-20-5E-00137 Exp. Date 5/1/15 State Lic. Exp. Date Customer No.

Telephone Account of 1-870-574-0580

Customer P.O. No. Rel. No.

Table with columns: ID, SHIPPED No. of UNITS, PROPER SHIPPING NAME AND HAZARD CLASS, RETURNED No. of PKGS, RETURNED No. of UNITS, EMERGENCY RESPONSE PROCEDURE GUIDE NO., EXEMPTION CODE, H M, Placards Applied to Railcar or Motor Vehicle. Includes handwritten entries for '47PT', 'UN0161, Powder, Smokeless, 1.3C, PG II', '#112', 'EXPLOSIVES 1.3', 'Monica Kelly 4/10/13', 'Truck No. 7306', 'Trailer No. 6816057', 'Total 252 1/4 PD Packages @ 140LB ea', 'Gross Weight # 39,000', 'Net Explosive Weight 35.280'. Includes a 'RECEIVED' stamp from Austin Powder Company dated APR 10 2013.

Shipper certifies that the above-named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation, and are in compliance with the applicable regulations of the Department of Transportation.

Signature of Shipper

Invoice No. CLX 644589

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT CALL CHEMTREC - DAY OR NIGHT IN THE USA CALL 800-424-9300 IN CANADA (ERP.#2-0040) 800-561-3636 ELSEWHERE CALL (703) 527-3887

Address of Shipper: Explo Systems, Inc. 1600 Java Road Minden, LA 71055

I have been offered placards identifying the shipment as Specified in 49CFR Subpart F of Part 172. I have received the above goods in apparent good order and condition.

Received By [Signature] Date 4-9-13

CONSIGNEE CARRIER

By [Signature] AUTHORIZED RECEIVER

Hazardous Material Handling Number Federal Explosives License No. 5-LA-119-20-1A-00057

CONTAINS HAZARDOUS MATERIALS

STRAIGHT BILL OF LADING

NOT NEGOTIABLE

RECEIVED, subject to the classification and tariffs in effect on the date of the issue of this Original Bill of Lading. The property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown) consigned, and destined as indicated below, which said carrier (the word carrier being understood throughout this contract meaning any person or corporation in possession of the property under the contract) agrees to carry to the place of delivery of said destination. It on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading Set forth (1) in Uniform Freight Classification in effect on the date hereof, if this is a rail or rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment. Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accept for himself and his assigns.

Shipper: **Explo Systems, Inc.**
 1600 Java Road
 Minden, LA 71055

Shipper's No. **2925**

Shipping Date **5-16-13**

At _____ Purchase Order No. _____

By **RIZUK** Freight Charges: Collect _____ Prepaid **XXX** Location No. **6-2644**

(Mail or Street Address of Consignee - For purposes of notification only)

Consigned to **BRAVE FIRE & CO** Fed Lic. **5-OK-097-20-4F-00458** Exp. Date **6/1/14**

Destination **LEVIN MICH** State _____ State Lic. _____ Exp. Date _____

County **475458 E 270 RD** County _____ Customer No. _____

Route **VIRGINIA, OK 74301** Charge Account of **1-405-823-1205** Customer P.O. No. _____ Rel. No. _____

SHIPPED No. of PKGS	SHIPPED No. of UNITS	PROPER SHIPPING NAME AND HAZARD CLASS	RETURNED No. of PKGS	RETURNED No. of UNITS	EMERGENCY RESPONSE PROCEDURE GUIDE NO.	EXEMPTION -DOT-E	H M	Placards Applied to Railcar or Motor Vehicle
251/14	42/11	UN0161, Powder, Smokeless, 1.3C, PG II			#112	20130603	X	EXPLOSIVES 1.3
		- SEE DR LIST -						
								Truck No. 6149
								Trailer No. 1810047
								Mileage
								Total 2224
								Packages
								Gross
								Weight # 40,200
								Net Explosive Weight
								35,280

This is to certify that the above-named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation, according to the applicable regulations of the Department of Transportation.

Signature _____ Invoice No. _____

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT CALL CHEMTREC - DAY OR NIGHT
 IN THE USA CALL 800-424-9300 IN CANADA (ERP #2-0040) 800-561-3636 ELSEWHERE CALL (703) 527-3887 **661064589**

Permanent Address of Shipper:
Explo Systems, Inc.
 1600 Java Road
 Minden, Louisiana 71055
 318 8700

I have been offered placards identifying the shipment as specified in 49CFR Subpart F of Part 172. I have received the above goods in apparent good order and condition.

Received By _____ Date **5-16-13**
 CONSIGNEE CARRIER

DOT Hazardous Material Handling Number _____
 Local/Federal Explosives License No. **5-LA-119-20-1A-00057**
 Shipper

By _____ Date _____
 AUTHORIZED RECEIVER

CONTAINS HAZARDOUS MATERIALS



LOAD #

LOAD/UNLOAD FORM

CUSTOMER: Metekuh Eg TRUCK LINE: TRUK TRUCK#: 6149

DATE RECEIVED/LOADED: 5-16-13 Loaded By Explo

DATE	PRODUCT DESCRIPTION	FROM	TO	TRL#	LOT#	NUMBER OF		TOTAL WEIGHTS	
						PLTS	DRUMS	NET	GROSS
5-16-13	M-6	6144	BER	180047	1MS16-07001	11	2		
	140X6				1MA16-07015	111	8		
					1MD5L-07052	111	3		
					1MA1F-07004	1	1		
					1MD610-07019	111	5		
					1MD815-070067	111	4		
					1MD54L-070454	11	2		
					1MA15-070067	111	3		
					1MD15F-070587	1	1		
					1MS2A-07010	111	6		
					1MS1L-070074	11	2		
					1MS1L-070013	1	1		
					1MS2N-070164	11	2		
					1MS5F-070588	11	2		
							35.20		
							112.11		

SIGNATURE Timber Cove
Form #54

PAPERWORK PREPARED BY:

Original Print Date: 10/30/2012

STRAIGHT BILL OF LADING

NOT NEGOTIABLE

Load 57

RECEIVED, subject to the classification and tariffs in effect on the date of the issue of this Original Bill of Lading. The property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown) consigned, and destined as indicated below, which said carrier (the word carrier being understood throughout this contract meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery of said destination. It on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service lobe performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading Set forth (1) in Uniform Freight Classification in effect on the date hereof, if this is a rail or rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment.

Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accept for himself and his assigns.

Shipper: **Explo Systems, Inc.**
 1600 Java Road
 Minden, LA 71055

Shipper's No. **2916**

Shipping Date **4-10-13**

At _____ Purchase Order No. _____

By **BRUK** Freight Charges: Collect _____ Prepaid **XXV** Location No. **2310**

(Major Street Address of Consignee - For purposes of notification only)

Consigned to **AUSTIN POWDER CO** Fed Lic. **5112-10320-5E-00139** Exp. Date **5/1/15**

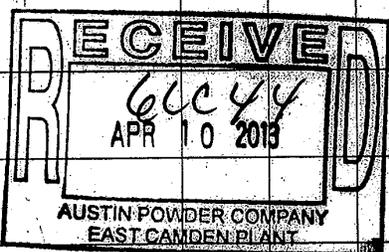
Destination **7-10-10 Blinn Dr** State Lic. _____ Exp. Date _____

County **EAST CAMDEN LA** State _____ Customer No. _____

Route _____ Customer P.O. No. _____ Rel. No. _____

Charge Account of **1-870-574 0580**

SHIPPED No. of PKGS.	SHIPPED No. of UNITS	PROPER SHIPPING NAME AND HAZARD CLASS	RETURNED No. of PKGS	RETURNED No. of UNITS	EMERGENCY RESPONSE PROCEDURE GUIDE NO.	EXEMPTION DOT-E	H M	Placards Applied to Railcar or Motor Vehicle
252/14	42PT	UN0161, Powder, Smokeless, 1.3C, PG II			#112	2010040603	<input checked="" type="checkbox"/>	EXPLOSIVES 1.3
		<i>Monica Kelly</i>						Truck No. 7306
		<i>Monica Kelly 4/10/13</i>						Trailer No. 7810099
								Mileage
								Total 252 NPA @ 140LB EA Packages
								Gross Weight # 39000
								Net Explosive Weight 35280



This is to certify that the above-named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Signature *[Signature]* Invoice No. _____

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT CALL CHEMTREC -- DAY OR NIGHT IN THE USA CALL 800-424-9300 IN CANADA (ERP #2-0040) 800-561-3636 ELSEWHERE CALL (703) 527-3887 **610644589**

Permanent Address of Shipper: **Explo Systems, Inc.**
1600 Java Road
Minden, Louisiana 71055
(318) 382-8700

I have been offered placards identifying the shipment as specified in 49CFR Subpart F of Part 172. I have received the above goods in apparent good order and condition.

Per _____ Received By *[Signature]* Date **4-10-13**
 CONSIGNEE CARRIER

DOT Hazardous Material Handling Number _____ By _____ Date _____
Local Federal Explosives License No. 5-LA-119-20-1A-00057 AUTHORIZED RECEIVER
(Shipper)

CONTAINS HAZARDOUS MATERIALS

072

STRAIGHT BILL OF LADING

NOT NEGOTIABLE

RECEIVED, subject to the classification and tariffs in effect on the date of the issue of this Original Bill of Lading. The property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown) consigned, and destined as indicated below, which said carrier (the word carrier being understood throughout this contract meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery of said destination. It on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading Set forth (1) in Uniform Freight Classification in effect on the date hereof, if this is a rail or rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment.

Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accept for himself and his assigns.

Shipper: Expro Systems, Inc. 1600 Java Road Minden, LA 71055
Shipper's No. 2918
Shipping Date 4-5-13
Purchase Order No.
By RRVK Freight Charges: Collect Prepaid Location No. K-5

Consigned to Expro Systems, Inc. Destination 1600 Java Rd State LA County MINNISON, LA 71055
Fed Lic. 5-LA-119-20-4A-00057 Exp. Date 1/1/14
Charge Account of 1-314-584-0776 Customer P.O. No. Rel. No.

Table with columns: SHIPPED No. of PKGS, SHIPPED No. of UNITS, PROPER SHIPPING NAME AND HAZARD CLASS, RETURNED No. of PKGS, RETURNED No. of UNITS, EMERGENCY RESPONSE PROCEDURE GUIDE NO, EXEMPTION, H M, Placards Applied to Railcar or Motor Vehicle. Row 1: 18/14, 3PT, UN0161, Powder, Smokeless, 1.3C, PG II, #112, 200040603, X, EXPLOSIVES 1.3

This is to certify that the above-named materials are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation, according to the applicable regulations of the Department of Transportation.

Signature: [Handwritten Signature] Invoice No. [Handwritten]

FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT CALL CHEMTREC - DAY OR NIGHT IN THE USA CALL 800-424-9300 IN CANADA (ERP #2-0040) 800-561-3636 ELSEWHERE CALL (703) 527-3887

Permanent Address of Shipper: Expro Systems, Inc. 1600 Java Road Minden, Louisiana 71055 (318) 382-8700
I have been offered placards identifying the shipment as specified in 49CFR Subpart F of Part 172. I have received the above goods in apparent good order and condition.

Per: [Blank] Received By: [Blank] Date: [Blank]
By: [Blank] AUTHORIZED RECEIVER Date: [Blank]

DOT Hazardous Material Handling Number
Local Federal Explosives License No. 5-LA-119-20-1A-00057 (Shipper)

CONTAINS HAZARDOUS MATERIALS

100/100 019258 EXP_000892