

NVFEL Fuel Analysis Report

28637

Tier 3

Batch#

Facility Name: US EPA NVFEL Testing Fuel Group Facility Type: In House

Owner: USEPA Phone: (734) 214-4448

2565 Plymouth Road

Ann Arbor MI 48105-2425 Washtenaw County

US

Inspector: Hilda Sola-Soto Inspection Date : 2/25/2020

Time In: 00:00 Time Out: 00:00

Samples Type: Test Fuel

VOC

Inspection information logged in by ES on 2/25/2021.

Season:

Tier 3-Cert Reg 02/25/21 FTAG: 28637 Comments: Lot 1516600

Test Code	Test Method	Results	Units	Fuel_ 74 Code:	Analyst	Analysis Date
4810	3-ETHYLTOLUENE	1.16	Volume Percent		MP	5/12/2021
4816	INDAN	0.17	Volume Percent		MP	5/12/2021
4815	1,2,3-TRIMETHYLBENZENE	0.41	Volume Percent		MP	5/12/2021
5900	Oxidation Stability by D525	1440.0	minutes		Paragon	4/29/2021
4814	1,2,4-TRIMETHYLBENZENE	2.02	Volume Percent		MP	5/12/2021
4813	1-METHYL2-ETHYLBENZENE	0.47	Volume Percent		MP	5/12/2021
4817	ALKYL INDANS	0.81	Volume Percent		MP	5/12/2021
4811	4-ETHYLTOLUENE	0.57	Volume Percent		MP	5/12/2021
4805	ETHYLBENZENE	0.98	Volume Percent		MP	5/12/2021
4809	N-PROPYLBENZENE	0.38	Volume Percent		MP	5/12/2021
4808	ISOPROPYLBENZENE	0.13	Volume Percent		MP	5/12/2021
4807	O-XYLENE	0.99	Volume Percent		MP	5/12/2021
4806	M/P-XYLENE	3.60	Volume Percent		MP	5/12/2021
4804	TOLUENE	5.58	Volume Percent		MP	5/12/2021
5808	Total Oxygenate Weight Percent by D5599	10.18	Weight Percent		SCG	3/1/2021
4812	1,3,5-TRIMETHYLBENZENE	0.59	Volume Percent		MP	5/12/2021
4822	NAPHTHALENE	0.22	Volume Percent		MP	5/12/2021
4827	C11 BENZENES	1.22	Volume Percent		MP	5/12/2021
4826	C10 BENZENES	0.46	Volume Percent		MP	5/12/2021
4828	C12 BENZENES	0.00	Volume Percent		MP	5/12/2021
4824	1-METHYLNAPHTHALENE	0.23	Volume Percent		MP	5/12/2021
4823	2-METHYLNAPHTHALENE	0.15	Volume Percent		MP	5/12/2021
4825	1,3-DIETHYLBENZENE	0.14	Volume Percent		MP	5/12/2021
4818	1,4-DIETHYLBENZENE & N-BUT	0.43	Volume Percent		MP	5/12/2021
4821	1,2,3,5-TETRAMETHYLBENZENE	0.61	Volume Percent		MP	5/12/2021
4819	1,2-DIETHYLBENZENE	0.01	Volume Percent		MP	5/12/2021
4820	1,2,4,5-TETRAMETHYLBENZENE	0.46	Volume Percent		MP	5/12/2021
4803	BENZENE	0.62	Volume Percent		MP	5/12/2021
552	Oxygen in MTBE by D5599	0.00	Oxygen Weight Percent		SCG	3/1/2021
562	Oxygen in ETBE by D5599	0.00	Oxygen Weight Percent		SCG	3/1/2021

NVFEL Fuel Analysis Report

28637

534	Oxygen in Ethanol by D5599	3.54	Oxygen Weight Percent	SCG	3/1/2021
572	Oxygen in TAME by D5599	0.00	Oxygen Weight Percent	SCG	3/1/2021
62	Vapor Pressure by D5191 (Modified)	8.99	PS I	ETS	2/25/2021
62	Vapor Pressure by D5191 (Modified)	8.97	PS I	ETS	2/25/2021
65	Percent Evaporated at 200 Degrees F D86	49.9	Volume Percent	NL	3/9/2021
66	Percent Evaporated at 300 Degrees F D86	84.9	Volume Percent	NL	3/9/2021
48	Aromatics in Gasoline MSD D5769	21.83	Volume Percent	MP	5/4/2021
593	Total Oxygenates Volume Percent from D5599	9.60	Volume Percent	SCG	3/1/2021
59	Total Oxygen Weight Percent by D5599	3.54	Oxygen Weight Percent	SCG	3/1/2021
57	TAME in Fuel by D5599	0.00	Volume Percent	SCG	3/1/2021
532	Ethanol in Fuel by D5599	9.60	Volume Percent	SCG	3/1/2021
55	MTBE in Fuel by D5599	0.00	Volume Percent	SCG	3/1/2021
56	ETBE in Fuel by D5599	0.00	Volume Percent	SCG	3/1/2021
630	Toluene in gasoline by MSD D5769	5.72	Volume Percent	MP	5/4/2021
63	Benzene in Gasoline by GC/MSD D5769	0.61	Volume Percent	MP	5/4/2021
69	Specific Gravity @ 60 deg F D4052	0.74973	60/60F	ETS	2/25/2021
692	Degrees API D4052	57.23	Degrees API	ETS	2/25/2021
691	Density @ 60 deg F D4052	0.74899	g/cm-03 @ 60 deg F	ETS	2/25/2021
101	Initial Boiling Point D86	95.7	Degrees F	NL	3/9/2021
110	10 Percent D86	127.4	Degrees F	NL	3/9/2021
150	50 Percent D86	200.7	Degrees F	NL	3/9/2021
190	90 Percent D86	315.0	Degrees F	NL	3/9/2021
200	End Point D86	406.0	Degrees F	NL	3/9/2021
201	Residue D86	1.0	mL	NL	3/9/2021
202	Total Recovery D86	97.8	mL	NL	3/9/2021
203	Loss D86	1.2	mL	NL	3/9/2021
543	Methanol in Fuel by D5599	0.00	Volume Percent	SCG	3/1/2021
584	Iso-Propanol in Fuel by D5599	0.00	Volume Percent	SCG	3/1/2021
585	t-Butanol in Fuel by D5599	0.00	Volume Percent	SCG	3/1/2021
586	n-Propanol in Fuel by D5599	0.00	Volume Percent	SCG	3/1/2021
587	sec-Butanol in Fuel by D5599	0.00	Volume Percent	SCG	3/1/2021
588	DIPE in Fuel by D5599	0.00	Volume Percent	SCG	3/1/2021
589	Iso-Butanol in Fuel by D5599	0.00	Volume Percent	SCG	3/1/2021
5801	t-Amyl Alcohol in Fuel by D5599	0.00	Volume Percent	SCG	3/1/2021
5802	n-Butanol in Fuel by D5599	0.00	Volume Percent	SCG	3/1/2021
30	Lead in Gasoline by D3237	0.00	Gram Pb per Gallon	Paragon	5/5/2021
227	Gum Content Washed	0.0	mg/100ml	Paragon	4/29/2021
228	Gum Content Unwashed	0.0	mg/100ml	Paragon	4/29/2021
991	Phosphorus in Gasoline by D3231	0.0000	Grams per Gallon	Paragon	5/5/2021
221	Motor Octane	83.7	Motor Octane Number	Paragon	4/29/2021
218	Sensitivity	8.3	RON-MON	CPU	4/29/2021

NVFEL Fuel Analysis Report**28637**

219	Antiknock	87.85 (RON+MON)/2	CPU	4/29/2021
220	Research Octane	92.0 Research Octane Number	Paragon	4/29/2021
225	Copper Corrosion D130	1a Designation	Paragon	4/29/2021
230	Net Heating Value D240	17894.00 BTU/lb	Paragon	5/4/2021
231	Carbon Content D5291	82.53 Weight Percent	Paragon	5/5/2021
232	Hydrogen Content D5291	13.93 Weight Percent	Paragon	5/5/2021
492	Olefins by D6550	7.8 Weight Percent	LES	3/1/2021
428	Sulfur in Gasoline by D5453	8.30 Parts Per Million	MP	3/24/2021
4829	Total Aromatics (vol. %)	22.40 Volume Percent	MP	5/12/2021
4830	C8	5.57 Volume Percent	MP	5/12/2021
4831	C9	5.90 Volume Percent	MP	5/12/2021
4832	C10Plus	4.74 Volume Percent	MP	5/12/2021
4833	MSAA	14.12 Volume Percent	MP	5/12/2021

Type of Fuel

Tier 3 Cert Gasoline 9 psi E10
Regular

FTAG

28637

Date Received

2/10/2021

Date
Processed

6/14/2021

Property	Unit	Value	Specification		Reference procedure
			Minimum	Maximum	
Dry Vapor Pressure Equivalent (DVPE)	psi	9	8.7	9.2	ASTM D5191
Distillation Initial Boiling Point	°F	96	0	0	ASTM D86
10% evaporated	°F	127	120	140	
50% evaporated	°F	201	190	210	
90% evaporated	°F	315	315	335	
Evaporated final boiling point	°F	406	380	420	
Residue	milliliter	1	0	2	ASTM D5769
Total Aromatic Hydrocarbons	volume %	22	21	25	
C6 Aromatics (benzene)	volume %	0.6	0.5	0.7	
C7 Aromatics (toluene)	volume %	5.6	5.2	6.4	
C8 Aromatics	volume %	5.6	5.2	6.4	
C9 Aromatics	volume %	5.9	5.2	6.4	
C10 + Aromatics	volume %	4.7	4.4	5.6	
Multi-substituted Aromatics	volume %	#DIV/0!	0	0	ASTM D6550
Olefins	wt %	8	4	10	
Ethanol confirmatory	volume %	9.6	9.4	10.2	
MTBE	volume %	0.0	0	0	
Total Content of Oxygenates other than Ethanol	volume %	0	0	0.1	ASTM D5599
Total Oxygen	wt %	3.54			
Sulfur	mg/kg	8.3	8	11	
Lead	g/liter	<0.0027	0	0.0026	ASTM D3237
Phosphorus	g/liter	<0.00005	0	0.0013	ASTM D3231
Copper Corrosion		1a	0	1	ASTM D130
Solvent-Washed Gum Content	mg/100 milliliter	<0.5	0	3	ASTM D381
Oxidation Stability	minutes	>1440	1000	0	ASTM D525
Motor Octane		83.7	0	0	ASTM D2700
Research Octane		92.0	0	0	ASTM D2699
Antiknock Index (R + M)/2		87.8	87	88.4	calculated
Sensitivity (R-M)		8.3	7.5	0	calculated
Carbon	%	82.53	0	0	ASTM D5291
Hydrogen	%	13.93	0	0	ASTM D5291
Net Heating Value	BTU/lb	17894	0	0	ASTM D240
Specific Gravity, 60°F		0.74973	0	0	ASTM D4052
API	API	57.23	0	0	ASTM D4052
Density, 60°F	g/mL	0.74899	0	0	ASTM D4052
CWF		0.8253			calculated
CMF		1			calculated
HMF α, H-to-C ratio		2.01			calculated
OMF β, O-to-C ratio		0.032			calculated
SMF		3.77E-06			calculated

0

FTAG ID	Fuel Name	Sulfur (ppm)	Specific Gravity	CWF	Net Heating Value (BTU/lb)	α, H-to-C ratio	β, O-to-C ratio	Ethanol (vol %)
28637	Tier 3 Cert Gasoline 9 psi E10 Regular	8.3	0.7497	0.8253	17894	2.01	0.032	9.6

Copy and paste into Fuel properties table