

## NVFEL Fuel Analysis Report

28636

## Tier 2 gasoline

Batch#

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

Owner: USEPA Phone: (734) 214-4881

2565 Plymouth Road

Ann Arbor MI 48105-2425 Washtenaw County

US

Inspector: Nancy Tschirhart Inspection Date : 10/23/2013

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

Samples Type: Test Fuel

VOC

Inspection information logged in by NST on 2/24/2021.

Season:

Tier 2 gasoline-1-11-2021 FTAG: 28636 Comments: Matt's 5769

Test Code	Test Method	Results	Units	Fuel_ Code:	1	Analyst	Analysis Date
4809	N-PROPYLBENZENE	0.51	Volume Percent			MP	5/12/2021
4819	1,2-DIETHYLBENZENE	0.00	Volume Percent			MP	5/12/2021
4817	ALKYL INDANS	0.58	Volume Percent			MP	5/12/2021
4816	INDAN	0.21	Volume Percent			MP	5/12/2021
4815	1,2,3-TRIMETHYLBENZENE	0.59	Volume Percent			MP	5/12/2021
4814	1,2,4-TRIMETHYLBENZENE	3.22	Volume Percent			MP	5/12/2021
4813	1-METHYL2-ETHYLBENZENE	0.71	Volume Percent			MP	5/12/2021
4812	1,3,5-TRIMETHYLBENZENE	0.95	Volume Percent			MP	5/12/2021
4821	1,2,3,5-TETRAMETHYLBENZENE	0.46	Volume Percent			MP	5/12/2021
4810	3-ETHYLTOLUENE	1.71	Volume Percent			MP	5/12/2021
4820	1,2,4,5-TETRAMETHYLBENZENE	0.33	Volume Percent			MP	5/12/2021
4808	ISOPROPYLBENZENE	0.12	Volume Percent			MP	5/12/2021
4807	O-XYLENE	0.14	Volume Percent			MP	5/12/2021
4806	M/P-XYLENE	0.01	Volume Percent			MP	5/12/2021
4805	ETHYLBENZENE	0.00	Volume Percent			MP	5/12/2021
4804	TOLUENE	17.81	Volume Percent			MP	5/12/2021
4803	BENZENE	0.00	Volume Percent			MP	5/12/2021
5808	Total Oxygenate Weight Percent by D5599	0.00	Weight Percent			SCG	3/1/2021
4811	4-ETHYLTOLUENE	0.85	Volume Percent			MP	5/12/2021
4823	2-METHYLNAPHTHALENE	0.00	Volume Percent			MP	5/12/2021
4824	1-METHYLNAPHTHALENE	0.00	Volume Percent			MP	5/12/2021
4825	1,3-DIETHYLBENZENE	0.13	Volume Percent			MP	5/12/2021
4826	C10 BENZENES	0.30	Volume Percent			MP	5/12/2021
4827	C11 BENZENES	0.63	Volume Percent			MP	5/12/2021
4828	C12 BENZENES	0.00	Volume Percent			MP	5/12/2021
4818	1,4-DIETHYLBENZENE & N-BUT	0.28	Volume Percent			MP	5/12/2021
4822	NAPHTHALENE	0.08	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
534	Oxygen in Ethanol by D5599	0.00	Oxygen Weight Percent			SCG	3/1/2021

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572	Oxygen in TAME by D5599	0.00	Oxygen Weight Percent	SCG	3/1/2021
421	Sulfur in Gasoline D2622	27.9	Parts Per Million	MJP	3/18/2021
62	Vapor Pressure by D5191 (Modified)	9.25	PS I	ETS	9/23/2021
65	Percent Evaporated at 200 Degrees F D86	38.5	Volume Percent	NL	3/9/2021
66	Percent Evaporated at 300 Degrees F D86	87.6	Volume Percent	NL	3/9/2021
48	Aromatics in Gasoline MSD D5769	30.45	Volume Percent	MP	5/4/2021
49	Olefins in by FIA D1319	0.5	Volume Percent	RCG	4/21/2021
532	Ethanol in Fuel by D5599	0.00	Volume Percent	SCG	3/1/2021
55	MTBE in Fuel by D5599	0.00	Volume Percent	SCG	3/1/2021
593	Total Oxygenates Volume Percent from D5599	0.00	Volume Percent	SCG	3/1/2021
57	TAME in Fuel by D5599	0.00	Volume Percent	SCG	3/1/2021
59	Total Oxygen Weight Percent by D5599	0.00	Oxygen Weight Percent	SCG	3/1/2021
56	ETBE in Fuel by D5599	0.00	Volume Percent	SCG	3/1/2021
46	Aromatics by FIA D1319	28.3	Volume Percent	RCG	4/21/2021
630	Toluene in gasoline by MSD D5769	19.45	Volume Percent	MP	5/4/2021
63	Benzene in Gasoline by GC/MSD D5769	0.00	Volume Percent	MP	5/4/2021
69	Specific Gravity @ 60 deg F D4052	0.74145	60/60F	ETS	2/25/2021
692	Degrees API D4052	59.34	Degrees API	ETS	2/25/2021
691	Density @ 60 deg F D4052	0.74071	g/cm-03 @ 60 deg F	ETS	2/25/2021
101	Initial Boiling Point D86	86.2	Degrees F	NL	3/9/2021
110	10 Percent D86	122.5	Degrees F	NL	3/9/2021
150	50 Percent D86	222.3	Degrees F	NL	3/9/2021
190	90 Percent D86	313.9	Degrees F	NL	3/9/2021
200	End Point D86	363.9	Degrees F	NL	3/9/2021
201	Residue D86	1.1	mL	NL	3/9/2021
202	Total Recovery D86	97.5	mL	NL	3/9/2021
203	Loss D86	1.4	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	8/30/2021
991	Phosphorus in Gasoline by D3231	0.0000	Grams per Gallon	Paragon	8/30/2021
221	Motor Octane	88.5	Motor Octane Number	Paragon	8/27/2021
220	Research Octane	96.9	Research Octane Number	Paragon	8/27/2021
219	Antiknock	92.70	(RON+MON)/2	CPU	8/27/2021

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218	Sensitivity	8.4 RON-MON	CPU	8/27/2021
492	Olefins by D6550	0.1 Weight Percent	LES	3/1/2021
4829	Total Aromatics (vol. %)	29.63 Volume Percent	MP	5/12/2021
4830	C8	0.15 Volume Percent	MP	5/12/2021
4831	C9	8.87 Volume Percent	MP	5/12/2021
4832	C10Plus	2.79 Volume Percent	MP	5/12/2021
4833	MSAA	11.10 Volume Percent	MP	5/12/2021

Type of Fuel

Cert Gasoline 9psi Premium

FTAG

28636

Date Received

2/27/2020

Date  
Processed

9/22/2021

Property	Unit	Value	Specification		Reference procedure
			Minimum	Maximum	
Dry Vapor Pressure Equivalent (DVPE)	psi	9.2	8.7	9.2	ASTM D5191
Distillation Intial Boiling Point	°F	86	75	95	ASTM D86
10% evaporated	°F	123	120	135	
50% evaporated	°F	222	200	230	
90% evaporated	°F	314	300	325	
95% evaporated	°F	#DIV/0!			
Evaporated final boiling point	°F	364	0	415	
Residue	milliliter	1.1	0	2	
Total Aromatic Hydrocarbons	Vol%	28.3	0	35	ASTM D1319
Olefins	Vol%	0.5	0	10	
Total Aromatic Hydrocarbons	Vol%	#DIV/0!	0	0	ASTM D1319
Olefins	Vol%	#DIV/0!	0	0	calculated
Total Aromatic Hydrocarbons	Vol%	#DIV/0!	0	0	ASTM D5769
Olefins	wt %	#DIV/0!	0	0	ASTM D6550
Ethanol confirmatory	Vol%	0.00	0	0	ASTM D5599
Sulfur	wt %	0.00279	0.0015	0.0045	ASTM D2622, D5453 or D7039
Lead	g/gallon	<0.0100	0	0.013	ASTM D3237
Phosphorus	g/gallon	<0.0002	0	0.0013	ASTM D3231
Motor Octane		88.5	0	0	ASTM D2700
Research Octane		96.9	96	0	ASTM D2699
Antiknock Index (R + M)/2		92.7	0	0	calculated
Sensitivity (R-M)		8.4	7.5	0	calculated
Specific Gravity, 60°F		0.7415	0	0	ASTM D4052
API	API	59.34	0	0	ASTM D4052
Density, 60°F	g/mL	0.7407	0	0	ASTM D4052
Carbon	%	86.50	0	0	D3343
Hydrogen	%	13.50	0	0	
Sulfur	%	0.0028	0	0	calculated
Qp		18481	0	0	D3338
Net Heating Value	BTU/lb	18481	0	0	
CWF		0.8650	0	0	calculated
CMF		1	0	0	calculated
HMF $\alpha$ , H-to-C ratio		1.86	0	0	calculated
OMF $\beta$ , O-to-C ratio		0.000	0	0	calculated
SWF		2.8E-05	0	0	calculated
SMF		1.2E-05	0	0	calculated

FTAG ID	Fuel Name	Sulfur (ppm)	Specific Gravity	CWF	Net Heating Value (BTU/lb)	$\alpha$ , H-to-C ratio	$\beta$ , O-to-C ratio	Ethanol (vol %)
28636	Cert Gasoline 9psi Premium	27.9	0.7415	0.8650	18481	1.86	0.000	0.00