



Magellan Pipeline Product Specifications

Version 133

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MAGELLAN PIPELINE PRODUCT ACCEPTANCE TERMS

The most current version of the methods referenced in these specifications will prevail at all times. Alternate test methods listed in ASTM or MPL product specification standards may be used. In instances of dispute, tests will be conducted using the referee methods identified in the applicable standard.

Sampling and Analysis

LPG products must be sampled in accordance with D1265. All other products must be sampled utilizing D4057, D4177, and follow the provisions as outline in 40 CFR 1090.1335

Compliance with Magellan pipeline specifications will be determined by the shipper's Certificate of Analysis (COA) produced in accordance with the sampling and testing provisions outlined in 40 CFR 1090.1300 (Subpart N). COAs shall be homogeneous as defined by 40 CFR 1090.1137 and demonstration of per gallon standards will use the worst-case test result for reporting purposes. If a batch COA cannot meet the homogeneity requirements as defined by 40 CFR 1090.1137 COAs shall use the worst-case test results from the upper, middle, and lower samples for all reported test results. All COAs shall meet applicable specifications unless a batch specific waiver is requested and approved through Prospector or written approval.

Exceptions to the homogeneity requirements defined in 40 CFR 1090.1137 are granted for Jet Fuel (Q-grade) and blend stocks (W, W2, T, E, and ZB-grades). COAs shall be determined by the analysis of a composite sample produced in accordance with D5854. A valid Jet Fuel COA represented by a composite sample must also have a demonstration of homogeneity by the upper, middle, and lower samples not deviating more than 1.0° API from the gravity of the composite, nor contain product below the flash point minimum.

Tests performed by the carrier are for carrier's information and do not relieve the shipper of the responsibility to comply with the specifications. Acceptance of fungible products prior to receipt of the Certificate of Analysis does not constitute a waiver of the product specification requirements, nor relieve the shipper of the responsibility for providing a Certificate of Analysis.

The carrier reserves the right to sample the product and/or tank water below any product offered for shipment.

Reporting	<p>It is the responsibility of the shipper to enter a Certificate of Analysis representative of each shipment into Magellan's Prospector database for approval.</p> <p>All shipments must comply with the PTD requirements of 40 CFR 1090.1100 (Subpart L) and maintain the designation as listed in part 40 CFR1090.1005 prior to receipt by the carrier.</p>
Test Precision	<p>Delivery test results may be obtained by the carrier upon receipt and evaluated following D3244 and E29 to determine conformance with Magellan specifications.</p> <p>The carrier reserves the right to reject any products into their fungible system when a sample obtained from any tank level or line sample at origins is found to deviate from the Shipper's Certificate of Analysis. Products not meeting fungible specifications may be downgraded and/or sequestered and the Shipper will be notified.</p>
Corrosivity	<p>Shipments of proprietary grades must not be corrosive, with a minimum NACE test result of B+.</p>
Workmanship	<p>Products must be clear and bright, free of water, impurities, or any adulterant. Individual batches cannot differ markedly in appearance and/or odor from the stored fungible inventory.</p> <p>Any undissolved water received with incoming product may be deducted from the shipment volume ticketed. Magellan may request the Shipper to remove the water received, and/or invoice the Shipper for water disposal and other costs incurred.</p>
Prohibitions	<p>Heavy metals are not allowed to be present.</p> <p>Gasoline grades may not contain oxygenates, such as ethers and alcohols. The use of any non-hydrocarbon blending component is prohibited.</p> <p>Biodiesel is not allowed to be present in fuels at origin.</p> <p>Dye's are not allowed to be present in fuels at origin.</p>

MAGELLAN PIPELINE ADDITIVE SPECIFICATIONS

Magellan will permit the types and concentrations of additives detailed below; all other types and concentrations or additives are prohibited.

Additive products containing Dodecenyl Succinic Anhydride or Dodecenyl Succinic Acid (DDSA) will not be reviewed for approval and are strictly prohibited.

Gasoline Additive Specifications

The following additive specifications apply to all grades except aviation products, LPG's, and Natural Gasoline, for the grades noted in each section.
(H, I, J8, L, Q, and W Grade)

Gum Inhibitors and Metal Deactivators

Gasoline shipments may, but are not required to, contain any of the following gum inhibitors and/or metal deactivators:

N, N'di-secondary butyl ortho-phenylenediamine
 N, N'di-secondary butyl para-phenylenediamine
 N, N'disalicylidene-1,2 propanediamine
 N, N'di(1-ethyl-3-methylpentyl)-para-phenylenediamine
 N, N'di-isopropyl-para-phenylenediamine
 N, n'bis-(1, 4-demethylpentyl)-p-phenylenediamine n-Butyl -
 para-aminophenol
 2-6-di-tert-butylphenol
 2,4,6-tri-tert-butylphenol
 Ortho-tert-butylphenol

UOP 12P	UOP 12S	UOP 17P
UOP 3455	UOP 5S	Innospec AO-31
Innospec AO-36	Innospec AO-37	Ethyl 733
Ethanox 4776	Ethanox 4720	Ethanox 4740
Tolad 3905	Tolad 3910	Specaid 8Q202
Nalco 88BU-118	Unichem 7529	Pitt-Consol M-56
Tolad 4695		Specaid 8Q206

Gasoline, Fuel Oil, and Diesel Fuel Additives

Corrosion Inhibitors

Products requiring compliance with NACE standard TM0172 may contain any of the following corrosion inhibitors:

Nalco 5403	Nalco EC5626A	Baypros 853
Nalco Visco 3554	Nalco 5405	UOP Unicor PL
Apollo PRI-19	Lubrizol 541	Unichem 7504
UOP Unicor	Innospec DCI-4A	Unichem 7501
Innospec DCI-6A	UOP Unicor J	Baker Hughes T249
HiTech 580	Hitec E-534	Baker Hughes T9715
Nalco EC5407A	Spec-Aid 8Q110ULS	Baker Hughes T9719
Spec-Aid 8Q22	Spec-Aid 8Q5127	

Fuel Oil and Diesel Fuel Additives

Stability

Fuel oil and/or diesel fuel shipments may contain one or more of the following stability additives as required to achieve compliance with the stability characteristics outlined in the applicable grade specification.

Innospec FOA-3	Chemtec 7220	Specaid 8Q72
UOP Polyflo-121	Spec-Aid 8Q403ULS	Nalco 5303
UOP Polyflo-122	Baker Hughes T9076	Nalco 5301
UOP Polyflo-128	Unichem 7530	UOP Polyflo-195
Baker Hughes T9022-M	Spec-Aid 8Q401	

Cold Flow Additives

Fuel oil and/or diesel fuel shipments requiring additives to achieve compliance with low temperature properties may, but are not required to contain one or more of the following pour point depressant additives:

Hitec 4541	Innospec PDD-7450	Tolad 3005-R
Innospec 2152	Spec-Aid 8Q5201	Tolad 3030
Betz Q5201	Paradyne 25	Betz 8Q12
Hitec 4518	Unichem 8094	Hitec 4566
Exxon ECA 7305	Nalco 5375	Spec-Aid 8Q14ULS
UOP Polyflo 6000	Spec-Aid 8Q72ULS	Baker Hughes T3034
		Baker Hughes T3034-D

Dyes

XR Grade Low Sulfur Fuel Oil is dyed at the Magellan rack.

Seasonal Gasoline Volatility Classes
(Shipments from Origin)

Reid Vapor Pressure, D51911/

March 1 - September 15 DVPE using EPA formula^{2/}
September 16 – February 28 DVPE using D5191 formula

Distillation, ASTM D 86 ^{3/}	Class AA	Class A	Class B	Class C	Class D	Class E
10% Evaporated °F, max	158	158	149	140	131	122
50% Evaporated °F, min	150	150	150	150	150	150
50% Evaporated °F, max	250	250	245	240	235	230
90% Evaporated °F, max	374	374	374	365	365	365
Final Boiling Point °F, max ^{4/}	425	425	425	425	425	425
Residue, vol % max	2	2	2	2	2	2
Driveability Index, D4814, max ^{2/3/}	1250	1250	1240	1230	1220	1200

Pre Ethanol Blend

Vapor to Liquid Ratio=20:1, °F ^{5/} D5188, min	<u>Class 1</u>	<u>Class 2</u>	<u>Class 3</u>	<u>Class 4</u>	<u>Class 5</u>
	140	133	122	116	105

Vapor to Liquid Ratio=20:1, °F ^{5/} Area V only D5188, min	<u>Class 1</u>	<u>Class 2</u>	<u>Class 3</u>	<u>Class 4</u>	<u>Class 5</u>
	140	133	122	122	108

Post Ethanol Blend

Vapor to Liquid Ratio=20:1, °F ^{3/5/} D5188, min	<u>Class 1</u>	<u>Class 2</u>	<u>Class 3</u>	<u>Class 4</u>	<u>Class 5</u>
	129	122	116	107	102

Vapor to Liquid Ratio=20:1, °F ^{3/5/} Area V only D5188, min	<u>Class 1</u>	<u>Class 2</u>	<u>Class 3</u>	<u>Class 4</u>	<u>Class 5</u>
	129	122	116	116	105

- 1/ All gasoline deliveries will not exceed applicable Federal and State requirements.
- 2/ The calculation required for the EPA compliance period is published in part 1090.1355.
- 3/ Specifications shall be met after blending with 9 % to 10 % denatured fuel ethanol.
- 4/ The final boiling point of all gasoline deliveries at terminals will be at or below 437 °F as determined by ASTM D86
- 5/ D5188 is the referee test method. The alternative equations in D4814 may also be used.



Schedule of Origin Volatility Requirements

<u>A GRADE</u>		Jan. 1-15	Jan. 16-31	Feb. 1-15	Feb. 16-29	Mar. 1-15	Mar. 16-31	Apr. 1-30	May 1-31	June 1-30	July 1-31	Aug. 1-31	Sept. 1-15	Sept. 16-30	Oct. 1-31	Nov. 1-30	Dec. 1-31
Colorado	DVPE)	15.00	15.00	13.50	13.50	11.50	11.50	9.00	9.00	9.00	9.00	9.00	9.00	10.00	11.50	13.50	15.00
	(Class)	E-5	E-5	D-5	D-5	C-3	C-3	A-3	A-3	A-2	A-2	A-2	A-2	B-2	C-3	D-4	E-5
Kansas	(DVPE)	13.50	13.50	10.00	10.00	8.50	8.50	8.50	9.00	9.00	9.00	9.00	9.00	10.00	11.50	13.50	15.00
	(Class)	D-5	D-5	B-5	B-5	A-4	A-4	A-3	A-3	A-2	A-2	A-2	A-2	B-2	C-3	D-4	E-5
Illinois	(DVPE)	13.50	13.50	13.50	13.50	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	11.50	13.50	15.00	15.00
	(Class)	D-5	D-5	D-5	D-5	A-4	A-4	A-4	A-4	A-3	A-3	A-3	A-3	C-3	D-4	E-5	E-5
Minnesota	(DVPE)	13.50	13.50	10.00	10.00	8.50	8.50	8.50	9.00	9.00	9.00	9.00	9.00	11.50	13.50	15.00	15.00
	(Class)	D-5	D-5	B-5	B-5	A-5	A-5	A-4	A-4	A-3	A-3	A-3	A-3	C-3	D-4	E-5	E-5
N. Dakota	(DVPE)	13.50	13.50	10.00	10.00	8.50	8.50	8.50	9.00	9.00	9.00	9.00	9.00	11.50	13.50	15.00	15.00
	(Class)	D-5	D-5	B-5	B-5	A-5	A-5	A-4	A-4	A-3	A-2	A-2	A-3	C-3	D-4	E-5	E-5
Oklahoma	(DVPE)	13.50	13.50	10.00	10.00	8.50	8.50	8.50	9.00	9.00	9.00	9.00	9.00	10.00	11.50	13.50	15.00
	(Class)	D-4	D-4	B-4	B-4	A-4	A-4	A-3	A-3	A-2	A-2	A-2	A-2	B-2	C-3	D-4	E-5

NOTE: Gulf Coast origin changeover dates will precede this schedule by approximately 10 days, depending upon the applicable Explorer Pipeline cycle. Shipments via Explorer Pipeline must meet the specification applicable to the anticipated West Tulsa delivery date. Gulf Coast shippers will be advised of these dates through seasonal letters.

Revision Date: July 1, 2017



Schedule of Origin Volatility Requirements

A GRADE (continued)

		Jan. 1-15	Jan. 16-31	Feb. 1-15	Feb. 16-29	Mar. 1-15	Mar. 16-31	Apr. 1-30	May 1-31	June 1-30	July 1-31	Aug. 1-31	Sept. 1-15	Sept. 16-30	Oct. 1-31	Nov. 1-30	Dec. 1-31
Texas	(DVPE)	13.50	11.50	10.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	10.00	11.50	13.50	13.50
	(Class)	D-4	C-4	B-4	A-4	A-4	A-4	A-3	A-3	A-2	A-2	A-2	A-2	A-2	C-3	D-4	D-4
El Paso	(DVPE)	13.50	13.50	10.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	10.00	11.50	13.50	13.50
	(Class)	D-4	D-4	B-4	A-4	A-4	A-4	A-3	A-3	A-2	A-2	A-2	A-2	A-2	C-3	D-4	D-4
Wisconsin	(DVPE)	13.50	13.50	10.00	10.00	8.50	8.50	8.50	9.00	9.00	9.00	9.00	9.00	11.50	13.50	15.00	15.00
	(Class)	D-5	D-5	B-5	B-5	A-5	A-5	A-4	A-4	A-3	A-3	A-3	A-3	C-3	D-4	E-5	E-5
Wyoming	(DVPE)	15.00	15.00	13.50	13.50	11.50	11.50	9.00	9.00	9.00	9.00	9.00	9.00	10.00	11.50	13.50	15.00
	(Class)	E-5	E-5	D-5	D-5	C-3	C-3	A-3	A-3	A-2	A-2	A-2	A-2	B-2	C-3	D-4	E-5

NOTE: Gulf Coast origin changeover dates will precede this schedule by approximately 10 days, depending upon the applicable Explorer Pipeline cycle. Shipments via Explorer Pipeline must meet the specification applicable to the anticipated West Tulsa delivery date. Gulf Coast shippers will be advised of these dates through seasonal letters.

Revision Date: July 1, 2017



Schedule of Origin Volatility Requirements

A1X GRADE

		Jan. 1-15	Jan. 16-31	Feb. 1-15	Feb. 16-29	Mar. 1-15	Mar. 16-31	Apr. 1-30	May 1-31	June 1-30	July 1-31	Aug. 1-31	Sept. 1-15	Sept. 16-30	Oct. 1-31	Nov. 1-30	Dec. 1-31
Texas																	
	(DVPE)	11.50	11.50	10.00	10.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	10.00	10.00	11.50	11.50
	(Class)	C-3	C-3	B-2	B-2	A-1	A-1	A-1	A-1	A-1	A-1	A-1	B-2	B-2	B-2	C-3	C-3
El Paso																	
	(DVPE)	11.50	11.50	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	11.50	11.50
	(Class)	C-3	C-3	B-2	B-2	B-2	B-2	B-2	B-2	B-2	B-2	B-2	B-2	B-2	B-2	C-3	C-3

Schedule of Origin Volatility Requirements

<u>A5 GRADE</u>		Jan. 1-15	Jan. 16-31	Feb. 1-15	Feb. 16-29	Mar. 1-15	Mar. 16-31	Apr. 1-30	May 1-31	June 1-30	July 1-31	Aug. 1-31	Sept. 1-15	Sept. 16-30	Oct. 1-31	Nov. 1-30	Dec. 1-31
Colorado	(DVPE)	15.00	15.00	13.50	13.50	11.50	11.50	9.00	9.00	9.00	9.00	9.00	9.00	10.00	11.50	13.50	15.00
	(Class)	E-5	E-5	D-5	D-5	C-3	C-3	A-3	A-3	A-2	A-2	A-2	A-2	B-2	C-3	D-4	E-5
Kansas	(DVPE)	15.00	15.00	13.50	13.50	11.50	11.50	9.00	9.00	9.00	9.00	9.00	9.00	10.00	11.50	13.50	15.00
	(Class)	E-5	E-5	D-5	D-5	C-3	C-3	A-3	A-3	A-2	A-2	A-2	A-2	B-2	C-3	D-4	E-5
Oklahoma	(DVPE)	15.00	15.00	13.50	13.50	11.50	11.50	9.00	9.00	9.00	9.00	9.00	9.00	10.00	11.50	13.50	15.00
	(Class)	E-5	E-5	D-5	D-5	C-3	C-3	A-3	A-3	A-2	A-2	A-2	A-2	B-2	C-3	D-4	E-5
Texas	(DVPE)	13.50	13.50	10.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	10.00	11.50	13.50	13.50
	(Class)	D-4	C-4	B-4	A-4	A-4	A-4	A-3	A-3	A-2	A-2	A-2	A-2	A-2	C-3	D-4	D-4
El Paso	(DVPE)	13.50	13.50	10.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	10.00	11.50	13.50	13.50
	(Class)	D-4	C-4	B-4	A-4	A-4	A-4	A-3	A-3	A-2	A-2	A-2	A-2	A-2	C-3	D-4	D-4
Wyoming	(DVPE)	15.00	15.00	13.50	13.50	11.50	11.50	9.00	9.00	9.00	9.00	9.00	9.00	10.00	11.50	13.50	15.00
	(Class)	E-5	E-5	D-5	D-5	C-3	C-3	A-3	A-3	A-2	A-2	A-2	A-2	B-2	C-3	D-4	E-5

NOTE: Gulf Coast origin changeover dates will precede this schedule by approximately 10 days, depending upon the applicable Explorer Pipeline cycle. Shipments via Explorer Pipeline must meet the specification applicable to the anticipated West Tulsa delivery date. Gulf Coast shippers will be advised of these dates through seasonal letters.



Schedule of Origin Volatility Requirements

AMS GRADE

		Jan. 1-15	Jan. 16-31	Feb. 1-15	Feb. 16-29	Mar. 1-15	Mar. 16-31	Apr. 1-15	Apr. 16-30	May 1-31	June 1-30	July 1-31	Aug. 1-31	Sept. 1-15	Sept. 16-30	Oct. 1-31	Nov. 1-30	Dec. 1-31
Colorado	(DVPE)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.80	7.80	7.80	7.80	7.80	7.80	N/A	N/A	N/A	N/A
	(Class)								A-3	A-3	A-2	A-2	A-2	A-2				
Kansas	(DVPE)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.80	7.80	7.80	7.80	7.80	7.80	N/A	N/A	N/A	N/A
	(Class)								A-3	A-3	A-2	A-2	A-2	A-2				
Oklahoma	(DVPE)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.80	7.80	7.80	7.80	7.80	7.80	N/A	N/A	N/A	N/A
	(Class)								A-3	A-3	A-2	A-2	A-2	A-2				
Texas	(DVPE)	N/A	N/A	N/A	N/A	N/A	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	N/A	N/A	N/A	N/A
	(Class)						AA-1	AA-1	AA-1	AA-1	AA-1	AA-1	AA-1	AA-1				
El Paso	(DVPE)	N/A	N/A	N/A	N/A	N/A	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	N/A	N/A	N/A	N/A
	(Class)						AA-1	AA-1	AA-1	AA-1	AA-1	AA-1	AA-1	AA-1				
Wyoming	(DVPE)	N/A	N/A	N/A	N/A	N/A	N/A	7.80	7.80	7.80	7.80	7.80	7.80	7.80	N/A	N/A	N/A	N/A
	(Class)							A-3	A-3	A-3	A-2	A-2	A-2	A-2				

NOTE: Gulf Coast origin changeover dates will precede this schedule by approximately 10 days, depending upon the applicable Explorer Pipeline cycle. Shipments via Explorer Pipeline must meet the specification applicable to the anticipated West Tulsa delivery date. Gulf Coast shippers will be advised of these dates through seasonal letters.

Revision Date: July 1, 2017

Schedule of Origin Volatility Requirements

AR GRADE

	Jan. 1-15	Jan. 16-31	Feb. 1-20	Feb. 21-29	Mar. 1-20	Mar. 21-31	Apr. 1-30	May 1-31	June 1-30	July 1-31	Aug. 1-31	Sept. 1-15	Sept. 16-30	Oct. 1-31	Nov. 1-30	Dec. 1-31
Texas																
(DVPE)	13.50	13.50	13.50	11.50	9.00	6.20/7.4*	6.20/7.4*	6.20/7.4*	6.20/7.4*	6.20/7.4*	6.20/7.4*	6.20/7.4*	10.00	11.50	13.50	13.50
(Class)	D-4	D-4	D-4	C-3	A-3	A-3	A-3	A-3	A-2	A-2	A-2	A-2	B-2	C-3	D-4	D-4
Hearne																
(DVPE)	13.50	13.50	13.50	11.50	9.00	6.20/7.4*	6.20/7.4*	6.20/7.4*	6.20/7.4*	6.20/7.4*	6.20/7.4*	10.00	11.50	13.50	13.50	
(Class)	D-4	D-4	D-4	C-3	A-3	A-3	A-3	A-2	A-2	A-2	A-2	B-2	C-3	D-4	D-4	

NR GRADE

	Jan. 1-20	Jan. 21-31	Feb. 1-10	Feb. 11-19	Feb. 20-29	Mar. 1-10	Mar. 11-30	Apr. 1-30	May 1-31	June 1-30	July 1-31	Aug. 1-31	Sept. 1-15	Sept. 16-30	Oct. 1-31	Nov. 1-20	Nov. 21-31	Dec. 1-31
Oklahoma																		
(DVPE)	15.00	13.50	13.50	11.50	9.00	9.00	6.20/7.4*	6.20/7.4*	6.20/7.4*	6.20/7.4*	6.20/7.4*	6.20/7.4*	6.20/7.4*	11.50	13.50	13.50	15.00	15.00
(Class)	E-5	D-4	D-4	C-3	A-3	A-3	A-3	A-3	A-3	A-2	A-2	A-2	A-2	C-3	D-4	D-4	E-5	E-5
Texas																		
(DVPE)	13.50	13.50	13.50	13.50	13.50	6.20/7.4*	6.20/7.4*	6.20/7.4*	6.20/7.4*	6.20/7.4*	6.20/7.4*	6.20/7.4*	10.00	11.50	13.50	13.50		
(Class)	D-4	D-4	D-4	D-4	D-4	A-3	A-3	A-3	A-2	A-2	A-2	A-2	B-2	C-3	D-4	D-4		
Hearne																		
(DVPE)	13.50	13.50	13.50	13.50	6.20/7.4*	6.20/7.4*	6.20/7.4*	6.20/7.4*	6.20/7.4*	6.20/7.4*	6.20/7.4*	10.00	11.50	13.50	13.50			
(Class)	D-4	D-4	D-4	D-4	A-3	A-3	A-3	A-2	A-2	A-2	A-2	B-2	C-3	D-4	D-4			

*Post 10 percent ethanol hand blend value.

NOTE: Gulf Coast origin changeover dates will precede this schedule by approximately 10 days, depending upon the applicable Explorer Pipeline cycle. Shipments via Explorer Pipeline must meet the specification applicable to the anticipated West Tulsa delivery date. Gulf Coast shippers will be advised of these dates through seasonal letters



Schedule of Origin Volatility Requirements

AZ(6,9) GRADE

		Jan. 1-15	Jan. 16-31	Feb. 1-20	Feb. 21-29	Mar. 1-20	Mar. 21-31	Apr. 1-30	May 1-31	June 1-30	July 1-31	Aug. 1-31	Sept. 1-15	Sept. 16-30	Oct. 1-31	Nov. 1-30	Dec. 1-31
Texas	(DVPE)	8.00	8.00	8.00	8.00	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	8.00	8.00	8.00
						7.00*	7.00*	7.00*	7.00*	7.00*	7.00*	7.00*	7.00*	7.00*			
	Grade	AZ6	AZ6	AZ6	AZ6	AZ9	AZ9	AZ9	AZ9	AZ9	AZ9	AZ9	AZ9	AZ9	AZ6	AZ6	AZ6
El Paso	(DVPE)	8.00	8.00	8.00	8.00	8.00	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	8.00	8.00	8.00
							7.00*	7.00*	7.00*	7.00*	7.00*	7.00*	7.00*	7.00*			
	Grade	AZ6	AZ6	AZ6	AZ6	AZ6	AZ9	AZ9	AZ9	AZ9	AZ9	AZ9	AZ9	AZ9	AZ6	AZ6	AZ6

NZ(6,9) GRADE

		Jan. 1-15	Jan. 16-31	Feb. 1-20	Feb. 21-29	Mar. 1-20	Mar. 21-31	Apr. 1-30	May 1-31	June 1-30	July 1-31	Aug. 1-31	Sept. 1-15	Sept. 16-30	Oct. 1-31	Nov. 1-30	Dec. 1-31
Texas	(DVPE)	8.00	8.00	8.00	8.00	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	8.00	8.00	8.00
						7.00*	7.00*	7.00*	7.00*	7.00*	7.00*	7.00*	7.00*	7.00*			
	Grade	NZ6	NZ6	NZ6	NZ6	NZ9	NZ9	NZ9	NZ9	NZ9	NZ9	NZ9	NZ9	NZ9	NZ6	NZ6	NZ6
El Paso	(DVPE)	8.00	8.00	8.00	8.00	8.00	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	8.00	8.00	8.00
							7.00*	7.00*	7.00*	7.00*	7.00*	7.00*	7.00*	7.00*			
	Grade	NZ6	NZ6	NZ6	NZ6	NZ6	NZ9	NZ9	NZ9	NZ9	NZ9	NZ9	NZ9	NZ9	NZ6	NZ6	NZ6

*Value is max RVP on hand blend when blended with 10 percent denatured fuel ethanol.

NOTE: Gulf Coast origin changeover dates will precede this schedule by approximately 10 days, depending upon the applicable Explorer Pipeline cycle. Shipments via Explorer Pipeline must meet the specification applicable to the anticipated West Tulsa delivery date. Gulf Coast shippers will be advised of these dates through seasonal letters

Revision Date: July 1, 2017

Schedule of Origin Volatility Requirements

NEP GRADE

		Jan.	Jan.	Feb.	Feb.	Mar.	Mar.	Apr.	May	June	July	Aug.	Sept.	Sept.	Oct.	Oct.	Nov.	Dec.
		1-15	16-31	1-15	16-29	1-15	16-31	1-30	1-31	1-30	1-31	1-31	1-15	16-30	1-15	16-31	1-30	1-31
Texas																		
	(DVPE)	11.50	11.50	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	11.50	11.50	11.50
	(Class)	C-3	C-3	B-2	B-2	B-2	B-2	B-2	B-2	B-2	B-2	B-2	B-2	B-2	B-2	C-3	C-3	C-3
El Paso																		
	(DVPE)	11.50	11.50	11.50	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	11.50	11.50
	(Class)	C-3	C-3	C-3	B-2	B-2	B-2	B-2	B-2	B-2	B-2	B-2	B-2	B-2	B-2	B-2	C-3	C-3

Schedule of Origin Volatility Requirements

V GRADE

		Jan.	Jan.	Feb.	Feb.	Mar.	Mar.	Apr.	May	June	July	Aug.	Sept.	Sept.	Oct.	Nov.	Dec.
		1-15	16-31	1-15	16-29	1-15	16-31	1-30	1-31	1-30	1-31	1-31	1-15	16-30	1-31	1-30	1-31
Kansas	(DVPE)	15.00	13.50	13.50	13.50	8.50	8.50	8.50	9.00	9.00	9.00	9.00	9.00	10.00	11.50	13.50	15.00
	(Class)	E-5	D-5	D-5	D-5	A-4	A-4	A-3	A-3	A-2	A-2	A-2	A-2	B-2	C-3	D-4	E-5
Illinois	(DVPE)	15.00	13.50	13.50	13.50	13.50	9.00	9.00	9.00	9.00	9.00	9.00	9.00	11.50	13.50	13.50	15.00
	(Class)	E-5	D-5	D-5	D-5	D-5	A-4	A-4	A-4	A-3	A-3	A-3	A-3	C-3	D-4	D-4	E-5
Minnesota	(DVPE)	15.00	15.00	13.50	13.50	8.50	8.50	8.50	9.00	9.00	9.00	9.00	9.00	11.50	13.50	15.00	15.00
	(Class)	E-5	E-5	D-5	D-5	A-4	A-4	A-4	A-4	A-3	A-3	A-3	A-3	C-3	D-4	E-5	E-5
N. Dakota	(DVPE)	15.00	15.00	13.50	13.50	8.50	8.50	8.50	9.00	9.00	9.00	9.00	9.00	11.50	13.50	15.00	15.00
	(Class)	E-5	E-5	D-5	D-5	A-4	A-4	A-4	A-4	A-3	A-3	A-3	A-3	C-3	D-4	E-5	E-5
Oklahoma	(DVPE)	13.50	13.50	13.50	13.50	8.50	8.50	8.50	9.00	9.00	9.00	9.00	9.00	10.00	11.50	13.50	15.00
	(Class)	D-5	D-5	D-4	D-4	A-4	A-4	A-3	A-3	A-2	A-2	A-2	A-2	B-2	C-3	D-4	E-5
Texas	(DVPE)	13.50	13.50	13.50	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	10.00	11.50	13.50	13.50
	(Class)	D-4	D-4	D-4	A-4	A-4	A-4	A-3	A-3	A-2	A-2	A-2	A-2	B-2	C-3	D-4	D-4
El Paso	(DVPE)	13.50	13.50	11.50	10.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	10.00	11.50	13.50	13.50
	(Class)	D-4	D-4	C-3	B-3	A-3	A-3	A-2	A-2	A-2	A-2	A-2	A-2	B-2	C-3	D-4	D-4
Wisconsin	(DVPE)	15.00	15.00	13.50	13.50	8.50	8.50	8.50	9.00	9.00	9.00	9.00	9.00	11.50	13.50	15.00	15.00
	(Class)	E-5	E-5	D-5	D-5	A-4	A-4	A-4	A-4	A-3	A-3	A-3	A-3	C-3	D-4	E-5	E-5

NOTE: Gulf Coast origin changeover dates will precede this schedule by approximately 10 days, depending upon the applicable Explorer Pipeline cycle. Shipments via Explorer Pipeline must meet the specification applicable to the anticipated West Tulsa delivery date. Gulf Coast shippers will be advised of these dates through seasonal letters.

Schedule of Origin Volatility Requirements

V1 GRADE

		Jan. 1-15	Jan. 16-31	Feb. 1-15	Feb. 16-29	Mar. 1-15	Mar. 16-31	Apr. 1-30	May 1-31	June 1-30	July 1-31	Aug. 1-31	Sept. 1-15	Sept. 16-30	Oct. 1-31	Nov. 1-30	Dec. 1-31
Colorado	(DVPE)	15.00	15.00	15.00	13.50	11.50	11.50	9.00	9.00	9.00	9.00	9.00	9.00	10.00	11.50	13.50	15.00
	(Class)	E-5	E-5	E-5	D-5	C-3	C-3	A-3	A-3	A-2	A-2	A-2	A-2	B-2	C-3	D-4	E-5
Kansas	(DVPE)	15.00	15.00	13.50	13.50	11.50	11.50	8.50	9.00	9.00	9.00	9.00	9.00	10.00	11.50	13.50	15.00
	(Class)	E-5	E-5	D-5	D-5	C-3	C-3	A-3	A-3	A-2	A-2	A-2	A-2	B-2	C-3	D-4	E-5
Oklahoma	(DVPE)	15.00	15.00	13.50	13.50	11.50	11.50	8.50	9.00	9.00	9.00	9.00	9.00	10.00	11.50	13.50	15.00
	(Class)	E-5	E-5	D-5	D-5	C-3	C-3	A-3	A-3	A-2	A-2	A-2	A-2	B-2	C-3	D-4	E-5
Wyoming	(DVPE)	15.00	15.00	15.00	13.50	11.50	11.50	9.00	9.00	9.00	9.00	9.00	9.00	10.00	11.50	13.50	15.00
	(Class)	E-5	E-5	E-5	D-5	C-3	C-3	A-3	A-3	A-2	A-2	A-2	A-2	B-2	C-3	D-4	E-5

V2 GRADE

		Jan. 1-15	Jan. 16-31	Feb. 1-15	Feb. 16-29	Mar. 1-15	Mar. 16-31	Apr. 1-30	May 1-31	June 1-30	July 1-31	Aug. 1-31	Sept. 1-15	Sept. 16-30	Oct. 1-31	Nov. 1-30	Dec. 1-31
Wyoming	(DVPE)	15.00	15.00	15.00	15.00	13.50	11.50	9.00	9.00	9.00	9.00	9.00	9.00	10.00	11.50	13.50	15.00
	(Class)	E-5	E-5	E-5	E-5	D-4	C-3	A-3	A-3	A-2	A-2	A-2	A-2	B-2	C-3	D-4	E-5

NOTE: Gulf Coast origin changeover dates will precede this schedule by approximately 10 days, depending upon the applicable Explorer Pipeline cycle. Shipments via Explorer Pipeline must meet the specification applicable to the anticipated West Tulsa delivery date. Gulf Coast shippers will be advised of these dates through seasonal letters.

Schedule of Origin Volatility Requirements

V3 GRADE

		Jan. 1-15	Jan. 16-31	Feb. 1-15	Feb. 16-29	Mar. 1-15	Mar. 16-31	Apr. 1-30	May 1-31	June 1-30	July 1-31	Aug. 1-31	Sept. 1-15	Sept. 16-30	Oct. 1-31	Nov. 1-30	Dec. 1-31
El Paso	(DVPE)	13.50	13.50	11.50	11.50	10.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	10.00	11.50	11.50	13.50
	(Class)	D-4	D-4	C-3	C-3	B-3	A-3	A-2	A-2	A-2	A-2	A-2	A-2	B-2	C-3	C-3	D-4

V3S GRADE

		Jan. 1-15	Jan. 16-31	Feb. 1-15	Feb. 16-29	Mar. 1-15	Mar. 16-31	Apr. 1-30	May 1-31	June 1-30	July 1-31	Aug. 1-31	Sept. 1-15	Sept. 16-30	Oct. 1-31	Nov. 1-30	Dec. 1-31
El Paso	(DVPE)	N/A	N/A	N/A	N/A	N/A	5.70	5.70	5.70	5.70	5.70	5.70	5.70	N/A	N/A	N/A	N/A
	(Class)						AA-1	AA-1	AA-1	AA-1	AA-1	AA-1	AA-1				

NOTE: Gulf Coast origin changeover dates will precede this schedule by approximately 10 days, depending upon the applicable Explorer Pipeline cycle. Shipments via Explorer Pipeline must meet the specification applicable to the anticipated West Tulsa delivery date. Gulf Coast shippers will be advised of these dates through seasonal letters.

Schedule of Origin Volatility Requirements

V8 GRADE

		Jan. 1-15	Jan. 16-31	Feb. 1-15	Feb. 16-29	Mar. 1-31	Apr. 1-15	Apr. 16-30	May 1-31	June 1-30	July 1-31	Aug. 1-31	Sept. 1-15	Sept. 16-30	Oct. 1-31	Nov. 1-30	Dec. 1-31
Kansas	(DVPE)	N/A	15.00	15.00	15.00	13.50	11.50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	(Class)		E-5	E-5	E-5	D-4	C-3										
Minnesota	(DVPE)	N/A	N/A	15.00	15.00	13.50	11.50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	(Class)			E-5	E-5	D-4	C-3										
Oklahoma	(DVPE)	15.00	15.00	13.50	13.50	13.50	11.50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	(Class)	E-5	E-5	D-4	D-4	D-4	C-3										
Wisconsin	(DVPE)	N/A	N/A	15.00	15.00	13.50	11.50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	(Class)			E-5	E-5	D-4	C-3										

V66 GRADE

		Jan. 1-15	Jan. 16-31	Feb. 1-15	Feb. 16-29	Mar. 1-15	Mar. 16-31	Apr. 1-30	May 1-31	June 1-30	July 1-31	Aug. 1-31	Sept. 1-15	Sept. 16-30	Oct. 1-31	Nov. 1-30	Dec. 1-31
	(DVPE)	N/A	N/A	N/A	N/A	N/A	N/A	6.60	6.60	6.60	6.60	6.60	6.60	6.60	N/A	N/A	N/A
	(Class)							A-3	A-3	A-2	A-2	A-2	A-2	A-2			

NOTE: Gulf Coast origin changeover dates will precede this schedule by approximately 10 days, depending upon the applicable Explorer Pipeline cycle. Shipments via Explorer Pipeline must meet the specification applicable to the anticipated West Tulsa delivery date. Gulf Coast shippers will be advised of these dates through seasonal letters.

Schedule of Origin Volatility Requirements

VTX GRADE

	Jan.	Jan.	Feb.	Feb.	Mar.	Mar.	Apr.	May	June	July	Aug.	Sept.	Sept.	Oct.	Nov.	Dec.
	1-15	16-31	1-15	16-29	1-15	16-31	1-30	1-31	1-30	1-31	1-31	1-15	16-30	1-31	1-30	1-31
(DVPE)	13.50	13.50	13.50	11.50	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	10.00	11.50	13.50	13.50
(Class)	D-5	D-5	D-4	C-4	A-4	A-4	A-3	A-3	A-2	A-2	A-2	A-2	B-2	C-3	D-4	D-5

NOTE: Gulf Coast origin changeover dates will precede this schedule by approximately 10 days, depending upon the applicable Explorer Pipeline cycle. Shipments via Explorer Pipeline must meet the specification applicable to the anticipated West Tulsa delivery date. Gulf Coast shippers will be advised of these dates through seasonal letters.

Revision Date: January 1, 2021

Schedule of Origin Volatility Requirements

VMS GRADE

		Jan. 1-15	Jan. 16-31	Feb. 1-15	Feb. 16-29	Mar. 1-15	Mar. 16-31	Apr. 1-15	Apr. 16-30	May 1-31	June 1-30	July 1-31	Aug. 1-31	Sept. 1-15	Sept. 16-30	Oct. 1-31	Nov. 1-30	Dec. 1-31
Colorado	(DVPE)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.80	7.80	7.80	7.80	7.80	7.80	N/A	N/A	N/A	N/A
	(Class)								A-3	A-3	A-2	A-2	A-2	A-2				
Kansas	(DVPE)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.80	7.80	7.80	7.80	7.80	7.80	N/A	N/A	N/A	N/A
	(Class)								A-3	A-3	A-2	A-2	A-2	A-2				
Oklahoma	(DVPE)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.80	7.80	7.80	7.80	7.80	7.80	N/A	N/A	N/A	N/A
	(Class)								A-3	A-3	A-2	A-2	A-2	A-2				
Wyoming	(DVPE)	N/A	N/A	N/A	N/A	N/A	N/A	7.80	7.80	7.80	7.80	7.80	7.80	7.80	N/A	N/A	N/A	N/A
	(Class)							A-3	A-3	A-3	A-2	A-2	A-2	A-2				

NOTE: Gulf Coast origin changeover dates will precede this schedule by approximately 10 days, depending upon the applicable Explorer Pipeline cycle. Shipments via Explorer Pipeline must meet the specification applicable to the anticipated West Tulsa delivery date. Gulf Coast shippers will be advised of these dates through seasonal letters.



Grade: A Grade 91.0 Premium Unleaded Gasoline Specifications

(This Conventional Before Oxygenate Blending (CBOB) gasoline is intended for blending with 10% Denatured Fuel Ethanol (DFE) by volume)

Product Property	Method	Minimum	Maximum	Deliveries ^{1/}
Gravity, ° API	D287		Report	
Color			Undyed	
Volatility ^{2/}				
RVP ^{6/8/}	D5191			
Distillation ^{9/}	D86			
Benzene, vol % ^{9/}	D3606		4.9	
Mercaptan Sulfur, wt % ^{3/}	D3227		0.003	
Copper Corrosion	D130		1	
Silver Corrosion	D7667, 7671		1	
Gum, Existent, mg/100 ml	D381		4	5
Oxidation Stability, minutes	D525	240		
Phosphorus, g/gal	D3231		0.003	0.005
Lead, g/gal	D3237		0.010	0.05
Octane				
RON	D2699		Report	
MON	D2700		Report	
(R+M)/2		91.0		
Sulfur, ppm ^{8/}	D2622		80	
Oxygenates, vol% ^{7/}	D4815, D5599		0.05	
Haze Rating ^{4/}	D4176		2	3
NACE Corrosion	TM0172, D7548	B+		
Odor ^{5/}			Nonoffensive	

A Grade 91.0 Premium Unleaded Gasoline Specifications (continued)

Foot Notes:

- 1/ Delivered products meet all applicable requirements at time and place of delivery.
- 2/ Refer to Magellan's Seasonal Gasoline Volatility Classes and Schedule of Origin Volatility requirements.
- 3/ Mercaptan Sulfur determination is waived if the result of the Doctor Test ASTM D4952 is negative.
- 4/ Compliance with ASTM D4176 will be determined using Procedure 2 at the following temperatures, adjusted seasonally:

February 16 – September 30	55 °F max
October 1– February 15	45 °F max
- 5/ Any gasoline exhibiting an offensive odor and/or containing more than 0.30 wt % dicyclopentadiene will not be accepted for shipment.
- 6/ RVP limits on ethanol blended gasoline are controlled by various federal and state regulations and waivers, which are generally greater than the limits for base gasoline.
- 7/ Values below the detectible limit of an approved method may be reported as a zero value.
- 8/ Values will be reported on the 0 and 10 percent oxygenated gasoline.
- 9/ Value will be reported on the 10 percent oxygenate blend.

Notes:

- All parameters must be met without blending of denatured fuel ethanol unless noted.
- In accordance with 40 CFR 1090.1010(a), gasoline will be accepted when designated as E0 or E10 for oxygenate with ethanol as described by 40 CFR 1090.1110(c)(2). In accordance with 40 CFR 1090.1110(a), gasoline will be designated upon receipt as Winter CBOB or Summer CBOB (7.8 psi, 9.0 psi, or SIP-controlled) based on the RVP of the base gasoline.
- All gasoline distributed will be designated as E10 as described by 40 CFR 1090.1110(c)(2).
- Any product with a 7.8 psi or 9.0 psi CBOB does not meet the requirements for summer reformulated gasoline.
- This product is non-additized gasoline.

A1X Grade 91.0 Premium Unleaded Export Gasoline Specifications

(This fuel is for export from the United States only)

Product Property ^{1/}	Test Method	Origin		
		Minimum	Maximum	
Gravity, ° API	D287	Report		
Color		Undyed		
RVP ^{2/}				
Distillation	D86	<u>Class A</u>	<u>Class B</u>	<u>Class C</u>
10% Evaporated °F, max		158	149	140
50% Evaporated °F, min		170	170	170
50% Evaporated °F, max		250	245	240
90% Evaporated °F, max		374	374	365
Final Boiling Point °F, max		430	430	430
Residue, vol% max		2	2	2
Drivability Index, max		1250	1240	1230
Vapor Liquid Ratio	D5188	<u>Class 1</u>	<u>Class 2</u>	<u>Class 3</u>
		129	122	116
Benzene, vol %	D3606			2
Aromatics, vol %	D5769, D5580			32.0
Olefins, vol %	D1319, D6550			12.5
Mercaptan Sulfur, wt % ^{3/}	D3227			0.003
Copper Corrosion	D130			1
Silver Corrosion	D7667,7671			1
Gum, Existent, mg/100 ml	D381			4
Oxidation Stability, minutes	D525		240	
Phosphorus, g/gal	D3231			0.003
Lead, g/gal	D3237			0.01
Octane				
RON	D2699		94	
MON	D2700		Report	
Report (R+M)/2			91	
Sulfur, ppm	D2622			80
Oxygenates, vol %	D4815, D5599			0.05
Haze Rating ^{4/}	D4176			2
NACE Corrosion	TM0172, D7548		B+	
Odor ^{5/}			Nonoffensive	

A1X Grade 91.0 Premium Unleaded Export Gasoline Specifications (continued)**Foot Notes:**

- 1/ Delivered products meet all applicable requirements at time and place of delivery.
- 2/ Refer to Seasonal Gasoline Volatility Schedule.
- 3/ Mercaptan Sulfur determination is waived if the result of the Doctor Test ASTM D4952 is negative.
- 4/ Compliance with ASTM D4176 will be determined using Procedure 2 at the following temperatures, adjusted seasonally:

February 16 – September 30	55 °F max
October 1– February 15	45 °F max
- 5/ Any gasoline exhibiting an offensive odor and/or containing more than 0.30 wt % dicyclopentadiene will not be accepted for shipment.
- 6/ Values below the detectible limit of an approved method may be reported as a zero value.

Notes:

- All parameters must be met without blending of denatured fuel ethanol unless noted.
- Fuel shall comply with the exemptions for export fuels as listed in 40 CFR 1090.645.
- This product is non-additized gasoline.

A1X Grade 91.0 Premium Unleaded Export Gasoline Specifications (continued)

Foot Notes:

- 1/ Delivered products meet all applicable requirements at time and place of delivery.
- 2/ Refer to Seasonal Gasoline Volatility Schedule.
- 3/ Mercaptan Sulfur determination is waived if the result of the Doctor Test ASTM D4952 is negative.
- 4/ Compliance with ASTM D4176 will be determined using Procedure 2 at the following temperatures, adjusted seasonally:

February 16 – September 30	55 °F max
October 1– February 15	45 °F max
- 5/ Any gasoline exhibiting an offensive odor and/or containing more than 0.30 wt % dicyclopentadiene will not be accepted for shipment.
- 6/ Values below the detectible limit of an approved method may be reported as a zero value.

Notes:

- All parameters must be met without blending of denatured fuel ethanol unless noted.
- Fuel shall comply with the exemptions for export fuels as listed in 40 CFR 1090.645.

A5. AMS Grade 88.5 Premium Unleaded Gasoline Specifications

(This Conventional Before Oxygenate Blending (CBOB) gasoline is intended for blending with 10% Denatured Fuel Ethanol (DFE) by volume)

Product Property	Method	Minimum	Maximum	Deliveries ^{1/}
Gravity, ° API	D287		Report	
Color			Undyed	
Volatility ^{2/}				
RVP ^{6/8/}	D5191			
Distillation ^{9/}	D86			
Benzene, vol % ^{9/}	D3606		4.9	
Mercaptan Sulfur, wt % ^{3/}	D3227		0.003	
Copper Corrosion	D130		1	
Silver Corrosion	D7667,7671		1	
Gum, Existent, mg/100 ml	D381		4	5
Oxidation Stability, minutes	D525	240		
Phosphorus, g/gal	D3231		0.003	0.005
Lead, g/gal	D3237		0.010	0.05
Octane				
RON	D2699		Report	
MON	D2700		Report	
(R+M)/2		88.5		
Sulfur, ppm ^{8/}	D2622		80	
Oxygenates, vol % ^{7/}	D4815, 5599		0.05	
Haze Rating ^{4/}	D4176		2	3
NACE Corrosion	TM0172, D7548	B+		
Odor ^{5/}			Nonoffensive	

A5. AMS Grade 88.5 Premium Unleaded Gasoline Specifications (continued)**Foot Notes:**

- 1/ Delivered products meet all applicable requirements at time and place of delivery.
- 2/ Refer to Magellan's Seasonal Gasoline Volatility Classes and Schedule of Origin Volatility requirements.
- 3/ Mercaptan Sulfur determination is waived if the result of the Doctor Test ASTM D4952 is negative.
- 4/ Compliance with ASTM D4176 will be determined using Procedure 2 at the following temperatures, adjusted seasonally:

February 16 – September 30	55 °F max
October 1– February 15	45 °F max
- 5/ Any gasoline exhibiting an offensive odor and/or containing more than 0.30 wt % dicyclopentadiene will not be accepted for shipment.
- 6/ RVP limits on ethanol blended gasoline are controlled by various federal and state regulations and waivers, which are generally greater than the limits for base gasoline.
- 7/ Values below the detectible limit of an approved method may be reported as a zero value.
- 8/ Values will be reported on the 0 and 10 percent oxygenated gasoline.
- 9/ Value will be reported on the 10 percent oxygenate blend.

Notes:

- All parameters must be met without blending of denatured fuel ethanol unless noted.
- In accordance with 40 CFR 1190.1010(a), gasoline will be accepted when designated as E0 or E10 for oxygenate with ethanol as described by 40 CFR 1090.1110(c)(2). In accordance with 40 CFR 1090.1110(a), gasoline will be designated upon receipt as Winter CBOB or Summer CBOB (7.8 psi, 9.0 psi, or SIP-controlled) based on the RVP of the base gasoline.
- All gasoline distributed will be designated as E10 as described by 40 CFR 1090.1110(c)(2).
- Any A5 product with a 7.8 or 9.0 psi CBOB does not meet the requirements for summer reformulated gasoline
- This product is non-additized gasoline.

AR Grade 93.0 Premium RBOB Gasoline

(This Reformulated Before Oxygenate Blending (RBOB) gasoline is intended for blending with 10% Denatured Fuel Ethanol (DFE) by volume)

Product Property	Method	Minimum	Maximum	Delivery ^{1/}
Gravity, ° API	D287		Report	
Color			Undyed	
Volatility ^{2/}				
RVP ^{6/8/}	D5191			
Distillation ^{9/}	D86			
Benzene, vol % ^{9/}	D3606		4.9	
Mercaptan Sulfur, wt % ^{3/}	D3227		0.003	
Copper Corrosion	D130		1	
Silver Corrosion	D7667, 7671		1	
Gum, Existent, mg/100 ml	D381		4	5
Oxidation Stability, minutes	D525	240		
Phosphorus, g/gal	D3231		0.003	0.005
Lead, g/gal	D3237		0.010	0.05
Octane ^{9/}				
RON	D2699		Report	
MON	D2700	82.0		
(R+M)/2		93.0		
Sulfur, ppm ^{8/}	D2622		80	
Oxygenates, vol% ^{7/}	D4815, D5599		0.05	
Haze Rating ^{4/}	D4176		2	3
NACE Corrosion	TM0172, D7548	B+		
Odor ^{5/}			Nonoffensive	

AR Grade 93.0 Premium RBOB Gasoline (continued)

Foot Notes:

- 1/ Delivered products meet all applicable requirements at time and place of delivery.
- 2/ Refer to Magellan's Seasonal Gasoline Volatility Classes and Schedule of Origin Volatility requirements.
- 3/ Mercaptan Sulfur determination is waived if the result of the Doctor Test ASTM D4952 is negative.
- 4/ Compliance with ASTM D4176 will be determined using Procedure 2 at the following temperatures, adjusted seasonally:

February 16 – September 30	55 °F max
October 1– February 15	45 °F max
- 5/ Any gasoline exhibiting an offensive odor and/or containing more than 0.30 wt % dicyclopentadiene will not be accepted for shipment.
- 6/ RVP limits on ethanol blended gasoline are controlled by various federal and state regulations and waivers, which are generally greater than the limits for base gasoline.
- 7/ Values below the detectible limit of an approved method may be reported as a zero value.
- 8/ Values will be reported on the 0 and 10 percent oxygenated gasoline.
- 9/ Value will be reported on the 10 percent oxygenate blend.

Notes:

- All parameters must be met without blending of denatured fuel ethanol unless noted.
- In accordance with 40 CFR 1090.1010(a) gasoline will be accepted when designated as E0 or E10 for oxygenate with ethanol as described by 40 CFR 1090.1110(c)2. In accordance with 40 CFR 1010(a) gasoline will be designated upon receipt as Winter RBOB, or Summer RBOB based on the RVP of the gasoline.
- All gasoline distributed will be designated as E10 as described by 40 CFR 1090.1110(c)(2).
- Product shall meet the Reformulated Gasoline (RFG) standard of 1090.220.
- Summer RBOB - This product meets the requirements for summer reformulated or conventional gasoline.
- This product is non-additized gasoline

AZ6 Grade Arizona Winter Cleaner Burning Gasoline (AZRBOB)

(This AZRBOB gasoline is intended for blending with 10% Denatured Fuel Ethanol (DFE) by volume)

Product Property	Method	Minimum	Maximum
Gravity °API @ 60°F	D 287		Report
Octane (after 10% E Fuel ethanol per ASTM D4806)			
RON	D 2699		Report
MON	D 2700		Report
(R+M)/2		91.0	
Oxygen Content, wt% ^{1/}	D 4815		0.05
RVP, psi (E0 not blended)	D 5191		8.00
RVP, psi (E10 blend)	D 5191		9.00
Distillation, °F	D86		
50%			237
90%			335
End Point			430
Benzene, vol%	D 3606		4.9
Aromatics, vol%	D 5769, D5580		30.0
Olefins, vol%	D 1319, D6650		10.0
Corrosion (Cu)3 hrs @ 122°F(50°C)	D 130		1
Corrosion (Ag) 3 hrs @122°F (50°C)	D 7667,7671		1
Mercaptan sulfur, wt.% ^{2/}	D 3227		0.002
Existent Gum, mg/100 ml	D 381		4
Oxidation stability, minutes	D 525	240	
Phosphorous, gms/gal	D 3231		0.003
Lead, gms/gal	D 5059		0.01
Sulfur, ppm	D 5453, D2622		80
NACE	TM0172, D7548	B+	
Haze ^{3/}	D 4176		2
CARB Predictive Model			Pass
Color			Undyed
Odor	Olfactory		Non-Offensive

AZ6 Grade Arizona Winter Cleaner Burning Gasoline (AZRBOB) (continued)

Foot Notes:

- 1/ Total oxygen levels shall not exceed de minimums levels. The use of non-hydrocarbon blending components such as MTBE is prohibited.
- 2/ Mercaptan Sulfur determination is waived if the result of the Doctor Test ASTM D4952 is negative.
- 3/ Product must be tested at 55°F or tank temperature whichever is lower.

Notes:

- Product must be certified according to current Arizona AZRBOB regulations from a state of Arizona registered supplier.
- All properties other than those noted will be reported on the ethanol 10% hand blend.
- In addition to the above a LPP Product Transfer Document for AZRBOB must be filled out and provided to Magellan Pipe Line Quality Control.
- All gasoline must meet latest revision of ASTM D4814.
- Corrosion inhibitors, gum inhibitors and metal deactivators must be approved by Magellan Pipeline
- No additives or corrosion inhibitors containing phosphorus may be used in this gasoline.
- The shipment of fuels containing Port Fuel Injector (PFI) and intake valve detergent additives is prohibited. This is a base gasoline, not for sale to the ultimate consumer
- Any gasoline exhibiting an offensive and/or containing more than 0.50wt % dicyclopentadiene will not be accepted for shipment.
- AZRBOB does not comply with the standards for Arizona CBG without the addition of oxygenate.
- This AZRBOB is intended for blending with 10% volume ethanol and may not be combined with AZRBOB's requiring oxygenate blending with any other type or amount of oxygenate.

AZ6 Grade Arizona Winter Cleaner Burning Gasoline (AZRBOB) (continued)

- Non-additized detergent gasoline, not for sale to the ultimate consumer. AZRBOB does not comply with the standards for Arizona CBG without the addition of fuel ethanol. To be blended with 10 vol % ethanol. This AZRBOB may not be combined with any other AZRBOB that does not have the same requirements for fuel ethanol blended. Base gasoline - must be blended to a minimum 91 road octane (AKI) before sale to the ultimate consumer. Magellan makes no representation as to the ethanol blend state fuel volatility compliance, may require additional downstream blending.

AZ9 Grade Arizona Summer Cleaner Burning Gasoline (AZRBOB)

(This AZRBOB gasoline is intended for blending with 10% Denatured Fuel Ethanol (DFE) by volume)

Product Property	Method	Minimum	Maximum
Gravity °API @ 60°F	D 287		Report
Octane (after 10% E Fuel ethanol per ASTM D4806)			
RON	D 2699		Report
MON	D 2700		Report
(R+M)/2		91.0	
Oxygen Content (wt%) ^{1/}	D 4815		0.05
RVP, psi (E0 not blended)	D 5191		5.70
RVP, psi (E10 blend)	D 5191		7.00
Distillation, °F	D86		
E200		25%	65%
E300		65%	100%
End Point			430
Benzene, vol%	D 3606		4.9
Aromatics, vol%	D 5769/ D5580		55
Olefins, vol%	D 1319, D6650		25
Corrosion (Cu)3 hrs @ 122°F(50°C)	D 130		1
Corrosion (Ag) 3 hrs @122°F (50°C)	D 7667,7671		1
Mercaptan sulfur, wt.% ^{2/}	D 3227		0.002
Existent Gum, mg/100 ml	D 381		4
Oxidation stability, minutes	D 525	240	
Phosphorous, gms/gal	D 3231		0.003
Lead, gms/gal	D 5059		0.01
Sulfur, ppm	D 5453, D2622		80
NACE	TM0172, D7548	B+	
Haze ^{3/}	D 4176		2
VOC Emission Performance Reduction, %		-27.5	
Color		Undyed	
Odor	Olfactory	Non-Offensive	

AZ9 Grade Arizona Summer Cleaner Burning Gasoline (AZRBOB) (continued)

Foot Notes:

- 1/ Total oxygen levels shall not exceed de minimums levels. The use of non-hydrocarbon blending components such as MTBE is prohibited.
- 2/ Mercaptan Sulfur determination is waived if the result of the Doctor Test ASTM D4952 is negative.
- 3/ Product must be tested at 55°F or tank temperature whichever is lower.

Notes:

- Product must be certified according to current Arizona AZRBOB regulations from a state of Arizona registered supplier.
- All properties other than those noted will be reported on the ethanol 10% hand blend.
- In addition to the above a LPP Product Transfer Document for AZRBOB must be filled out and provided to Magellan Pipe Line Quality Control.
- All gasoline must meet latest revision of ASTM D 4814.
- Corrosion inhibitors, gum inhibitors and metal deactivators must be approved by Magellan Pipeline
- No additives or corrosion inhibitors containing phosphorus may be used in this gasoline.
- The shipment of fuels containing Port Fuel Injector (PFI) and intake valve detergent additives is prohibited. This is a base gasoline, not for sale to the ultimate consumer
- Any gasoline exhibiting an offensive and/or containing more than 0.50wt % dicyclopentadiene will not be accepted for shipment.
- AZRBOB does not comply with the standards for Arizona CBG without the addition of oxygenate.
- This AZRBOB is intended for blending with 10% volume ethanol and may not be combined with AZRBOB's requiring oxygenate blending with any other type or amount of oxygenate.

AZ9 Grade Arizona Summer Cleaner Burning Gasoline (AZRBOB) (continued)

- This product does not meet the requirements for summer reformulated gasoline. Non-additized detergent gasoline, not for sale to the ultimate consumer. AZRBOB does not comply with the standards for Arizona CBG without the addition of fuel ethanol. To be blended with 10 vol % ethanol. This AZRBOB may not be combined with any other AZRBOB that does not have the same requirements for fuel ethanol blended. Base gasoline - must be blended to a minimum 91 road octane (AKI) before sale to the ultimate consumer. Magellan makes no representation as to the ethanol blend state fuel volatility compliance, may require additional downstream blending.

D Grade High Cetane #2 Ultra Low Sulfur Diesel Fuel Specifications

Product Property	Method	Minimum	Maximum	Deliveries ^{1/}
Gravity, °API	D287	Report		
Color	D1500		2.0	2.5
Distillation ^{5/}	D86, D2887			
IBP, °F		340		
50% Recovered, °F		460		
90% Recovered, °F		540	640	
Copper Corrosion	D130		1	
Cetane				
Cetane Number	D613	48		
Or				
Cetane Index, A or B	D4737	48		
Cetane Index ^{2/}	D976	40		
Flash Point, °F	D93	140		140
Stability				
Thermal, % reflectance (W or Y)	D6468 (W)	75		
	D6468 (Y)	82		
Aging Period (Minutes)	D6468	90		
Carbon Residue on 10% Bottoms, wt %	D524		0.20	
Cloud Point, °F ^{3/}	D2500			
Pour Point, °F ^{3/}	D97			
Viscosity, cSt at 104 °F	D445	1.9	4.1	
Ash, wt %	D482		0.01	
Haze Rating ^{4/}	D4176		2	3
NACE Corrosion	TM0172, D7548	B+		
Sulfur, ppm	D2622		11	

D Grade High Cetane #2 Ultra Low Sulfur Diesel Fuel Specifications (continued)

Foot Notes:

- 1/ Delivered products meet all applicable requirements at time and place of delivery
- 2/ ASTM D976 result is required for ultra-low sulfur diesel fuel to demonstrate aromatics compliance per 40 CFR 1090.305.

3/ <u>Month</u>	<u>Pour Point °F, max</u>	<u>Cloud Point °F, max</u>
January	0	+14
February	0	+14
March	0	+14
April	+10	+20
May	+10	+20
June	+10	+20
July	+10	+20
August	0	+14
September	0	+14
October	0	+14
November	0	+14
December	0	+14

- 4/ Compliance with ASTM D4176 will be determined using Procedure 2 at 77 °F or tank temperature at the time of sampling, whichever is lower.
- 5/ ASTM D2887 Simulated Distillation results must be reported after D86 correlation.

Notes:

- D-grade complies with the ULSD standards of 40 CFR 1090.305
- D-grade is designated as ULSD in accordance with 40 CFR 1090.1015

Additional Requirements:

Biodiesel: The presence of biodiesel is prohibited.

Dyes: D-grade shipments may not be dyed.

E Grade Denatured Fuel Ethanol Specifications

Specification Points	Method	Minimum	Maximum
Apparent Proof or Density @ 60°F	Hydrometer, D4052		Report
Water, vol%, Maximum	E203, E1064, D7923		1.0
Ethanol, vol%	D5501	93.5	
Methanol, vol%	D5501		0.5
Sulfur, ppm (wt/wt)	D5453		10.
Solvent Washed Gum,	D381		
	mg/100mL (Air Jet Method)		5
Potential Sulfate, mass ppm	D7319		4
Chloride, mg/L	D7319		5
Copper, mg/L	D1688		
	Method A, Modified per D-4806		0.08
Acidity (as acetic acid), Mass %	D7795		0.007
pHe	D6423	6.5	9.0
Workmanship ^{3/}	MMP		
Denaturant Content vol% ^{2/}	D4806		2

Footnotes:

- 1/ Delivered products meet all applicable requirements at time and place of delivery.
- 2/ Only approved denaturants as listed in part 1090.275 with a max denaturant concentration of 3.0 volume percent are approved as described in part 1090.275 and D4806. The denaturant range must be within the guidelines provided for in the latest IRS Notice 2009.06, which is 1.96% to no more than 2.5.
- 3/ Workmanship at the time of acceptance, and the finished fuel shall be visually free from undissolved water, sediment, or suspended matter and shall be clear and bright.
- 4/ All fuel shall comply with 40 CFR Subpart M - Renewable Fuel Standard.

Notes:

Corrosion Inhibitor Additive, one of the following is required:					
Minimum treat rate	Vendor	Additive	Minimum treat rate	Vendor	Additive
6 lbs/1000 bbls	Ashland	Amergy ECI-6	5 lbs/1000 bbls.	Nalco Water	EC5624A Plus
20 lbs/1000 bbls.	Betz	ACN 13	20 lbs/1000 bbls.	Petrolite	Tolad 3222
20 lbs/1000 bbls.	G. E. Betz	Endcor GCC9711	13 lbs/1000 bbls.	Petrolite	Tolad 3224
3 lbs/1000 bbls.	G.E. Power & Water	8Q123ULS	10 lbs/1000 bbls.	US Water Services	CorrPro 656X
5 lbs/1000 bbls.	Innospec	DCI-11 Plus/ ClearTrak	13 lbs/1000 bbls.	US Water Services	CorrPro 656 or 656T
3 lbs/1000 bbls.	Midcontinental	MCC5011PHE	5 lbs/1000 bbls.	US Water Services	CorrPro N or NT

H Grade Normal Butane Specifications

Product Property	Test Method	Origin Test Results		Deliveries ^{1/}
		Minimum	Maximum	
Composition, POD or Chromatography analysis	D2163			
Liquid vol %				
Normal Butane		95		
Isobutane			3	
Pentanes			3	
Propane			3	
Specific Gravity	D1657	0.580	0.588	
Vapor Pressure at 100 °F, psi	D1267		43	
Weathering,	D1837			
95% Evaporated Temp, °F (Corrected)			36	
Residues,	D2158			
Non-Volatile Residue at 100°F, ml			0.05	
Oil, No oil stain observation, ml			0.3	
Sulfur, ppm	D3246		30	
Copper Corrosion Dryness, Inspection	D1838		1	
Free Water Content			0	

Additives: H grade normal butane shipments must be unstenched and contain no additives.

1/ Delivered products meet all applicable requirements at time and place of delivery.

H Grade Normal Butane Specifications

Product Property	Method	Minimum	Maximum	Deliveries ^{1/}
Composition, POD or Chromatography analysis	D2163			
Liquid vol %				
Normal Butane		95		
Isobutane			3	
Pentanes			3	
Propane			3	
Specific Gravity	D1657	0.580	0.588	
Vapor Pressure at 100 °F, psi	D1267		43	
Weathering,	D1837			
95% Evaporated Temp, °F (Corrected)			36	
Residues,	D2158			
Non-Volatile Residue at 100°F, ml			0.05	
Oil, No oil stain observation, ml			0.3	
Sulfur, ppm	D3246		30	
Copper Corrosion	D1838		1	
Dryness, Inspection				
Free Water Content			0	

Foot Notes:

1/ Delivered products meet all applicable requirements at time and place of delivery.

Notes:

- H grade normal butane shipments must be unstenched and contain no additives.

I Grade Iso-Butane Specifications

Product Property	Method	Minimum	Maximum	Deliveries ^{1/}
Composition, POD or Chromatography analysis	D2163			
Liquid vol %				
Isobutane		95		
Propane			3.0	
Normal Butane			5.0	
Pentanes			0.5	
Specific Gravity	D1657	0.560	0.570	
Vapor Pressure at 100 °F, psi	D1267		62	
Weathering,	D1837			
95% Evaporated Temp, °F (Corrected)			31	
Residues,	D2158		0.05	
Non-Volatile Residue at 100 °F, ml				
Oil, No oil stain observation, ml			0.3	
Sulfur,	D1266			
grains per hundred cubic feet			15	
Copper Corrosion	D1838		1	
Dryness, Inspection				
Free Water Content			0	

Foot Notes:

1/ Delivered products meet all applicable requirements at time and place of delivery.

Notes:

- H grade normal butane shipments must be unstenched and contain no additives.

L Grade Propane Specifications

Product Property	Method	Minimum	Maximum	Deliveries ^{1/}
Composition				
Chromatography analysis	D2163			
Liquid vol %				
Propane		90		
Propylene			5.0	
Butanes and C4+			2.5	
Pentanes and C5+		None		
Specific gravity	D1657	0.500	0.510	
Vapor pressure at 100 °F, psi	D1267	175	208	
Weathering, 95% evaporated	D1837		-37	
Temp, °F (corrected)				
Residues,				
Nonvolatile residue at 100 °F, ml	D2158		0.05	
Oil, no oil stain observation, ml		0.3		
Sulfur,	D2784		10	
grains per hundred cubic feet				
Copper Corrosion	D1838		1	
Dryness, Valve Freeze, seconds	D2713	60		

Foot Notes:

1/ Delivered products meet all applicable requirements at time and place of delivery.

Notes:

L Grade shipments must be unstenched and contain no additives. Unless otherwise notified in writing by shipper, L Grade propane deliveries will be odorized at the rate of 1.5 pounds Ethyl Mercaptan/10,000 gallons.

NEP Grade 87.0 Regular Unleaded Export Gasoline Specifications

(This fuel is for export from the United States only)

Product Property	Method	Minimum	Maximum	Deliveries ^{1/}
Gravity, °API	D287		Report	
Color			Undyed	
RVP ^{2/}				
Distillation	D86	<u>Class A</u>	<u>Class B</u>	<u>Class C</u>
10% Evaporated °F, max		158	149	140
50% Evaporated °F, min		170	170	170
50% Evaporated °F, max		250	245	240
90% Evaporated °F, max		374	374	365
Final Boiling Point °F, max		430	430	430
Residue, vol% max		2	2	2
Drivability Index, max		1250	1240	1230
		<u>Class 1</u>	<u>Class 2</u>	<u>Class 3</u>
Vapor Liquid Ratio °F, min	D5188	129	122	116
Benzene, vol %	D3606		2.0	
Mercaptan Sulfur, wt % ^{3/}	D3227		0.002	
Copper Corrosion	D130		1	
Silver Corrosion	D7667,7671		1	
Gum, Existent, mg/100 ml	D381		4	5
Oxidation Stability, minutes	D525	240		
Phosphorus, g/gal	D3231		0.003	0.005
Lead, g/gal	D3237		0.010	0.05
Octane				
RON	D2699		Report	
MON	D2700	82.0		
Report (R+M)/2		87.0		
Sulfur, ppm	D2622		80	
Oxygenates, vol %	D4815, D5599		0.05	
Haze Rating ^{4/}	D4176		2	3
NACE Corrosion	TM0172, D7548	B+		
Odor ^{5/}			Nonoffensive	

NEP Grade 87.0 Regular Unleaded Export Gasoline Specifications (continued)

Foot Notes:

- 1/ Delivered products meet all applicable requirements at time and place of delivery.
- 2/ Refer to Seasonal Gasoline Volatility Schedule.
- 3/ Mercaptan Sulfur determination is waived if the result of the Doctor Test ASTM D4952 is negative.
- 4/ Compliance with ASTM D4176 will be determined using Procedure 2 at the following temperatures, adjusted seasonally:

February 16 – September 30	55 °F max
October 1– February 15	45 °F max
- 5/ Any gasoline exhibiting an offensive odor and/or containing more than 0.30 wt % dicyclopentadiene will not be accepted for shipment.
- 6/ Values below the detectible limit of an approved method may be reported as a zero value.

Notes:

- All parameters must be met without blending of denatured fuel ethanol unless noted.
- Fuel shall comply with the exemptions for export fuels as listed in 40 CFR 1090.645.
- This product is non-additized gasoline.

NR Grade 87.0 Regular RBOB Unleaded Gasoline

(This Reformulated Before Oxygenate Blending (RBOB) gasoline is intended for blending with 10% Denatured Fuel Ethanol (DFE) by volume)

Product Property	Method	Minimum	Maximum	Delivery ^{1/}
Gravity, ° API	D287		Report	
Color			Undyed	
Volatility ^{2/}				
RVP ^{6/8/}	D5191			
Distillation ^{9/}	D86			
Benzene, vol % ^{9/}	D3606		4.9	
Mercaptan Sulfur, wt % ^{3/}	D3227		0.003	
Copper Corrosion	D130		1	
Silver Corrosion	D7667, 7671		1	
Gum, Existent, mg/100 ml	D381		4	5
Oxidation Stability, minutes	D525	240		
Phosphorus, g/gal	D3231		0.003	0.005
Lead, g/gal	D3237		0.010	0.05
Octane ^{9/}				
RON	D2699		Report	
MON	D2700	82.0		
(R+M)/2		87.0		
Sulfur, ppm ^{8/}	D2622		80	
Oxygenates, vol% ^{7/}	D4815, D5599		0.05	
Haze Rating ^{4/}	D4176		2	3
NACE Corrosion	TM0172, D7548	B+		
Odor ^{5/}			Nonoffensive	

NR Grade 87.0 Regular RBOB Unleaded Gasoline (continued)

Foot Notes:

- 1/ Delivered products meet all applicable requirements at time and place of delivery.
- 2/ Refer to Magellan’s Seasonal Gasoline Volatility Classes and Schedule of Origin Volatility requirements.
- 3/ Mercaptan Sulfur determination is waived if the result of the Doctor Test ASTM D4952 is negative.
- 4/ Compliance with ASTM D4176 will be determined using Procedure 2 at the following temperatures, adjusted seasonally:

February 16 – September 30	55 °F max
October 1– February 15	45 °F max
- 5/ Any gasoline exhibiting an offensive odor and/or containing more than 0.30 wt % dicyclopentadiene will not be accepted for shipment.
- 6/ RVP limits on ethanol blended gasoline are controlled by various federal and state regulations and waivers, which are generally greater than the limits for base gasoline.
- 7/ Values below the detectible limit of an approved method may be reported as a zero value.
- 8/ Values will be reported on the 0 and 10 percent oxygenated gasoline.
- 9/ Value will be reported on the 10 percent oxygenate blend.

Notes:

- All parameters must be met without blending of denatured fuel ethanol unless noted.
- In accordance with 40 CFR 1090.1010(a) gasoline will be accepted when designated as E0 or E10 for oxygenate with ethanol as described by 40 CFR 1090.1110(c)2. In accordance with 40 CFR 1010(a) gasoline will be designated upon receipt as Winter RBOB, or Summer RBOB based on the RVP of the gasoline.
- All gasoline distributed will be designated as E10 as described by 40 CFR 1090.1110(c)(2).
- Product shall meet the Reformulated Gasoline (RFG) standard of 1090.220.
- Summer RBOB - This product meets the requirements for summer reformulated or conventional gasoline.
- This product is non-additized gasoline.

NZ6 Grade Arizona Winter Cleaner Burning Gasoline (AZRBOB)

(This AZRBOB gasoline is intended for blending with 10% Denatured Fuel Ethanol (DFE) by volume)

Product Property	Method	Minimum	Maximum
Gravity °API @ 60°F	D 287		Report
Octane (after 10% E Fuel ethanol per ASTM D4806)			
RON	D 2699		Report
MON	D 2700		Report
(R+M)/2		87.0	
Oxygen Content, wt% ^{1/}	D 4815		0.05
RVP, psi (E0 not blended)	D 5191		8.00
RVP, psi (E10 blend)	D 5191		9.00
Distillation, °F	D86		
50%			237
90%			335
End Point			430
Benzene, vol%	D 3606		4.9
Aromatics, vol%	D 5769, D5580		30.0
Olefins, vol%	D 1319, D6650		10.0
Corrosion (Cu)3 hrs @ 122°F(50°C)	D 130		1
Corrosion (Ag) 3 hrs @122°F (50°C)	D 7667,7671		1
Mercaptan sulfur, wt.% ^{2/}	D 3227		0.002
Existent Gum, mg/100 ml	D 381		4
Oxidation stability, minutes	D 525	240	
Phosphorous, gms/gal	D 3231		0.003
Lead, gms/gal	D 5059		0.01
Sulfur, ppm	D 5453, D2622		80
NACE	TM0172, D7548	B+	
Haze ^{3/}	D 4176		2
CARB Predictive Model			Pass
Color			Undyed
Odor	Olfactory		Non-Offensive

NZ6 Grade Arizona Winter Cleaner Burning Gasoline (AZRBOB) (continued)

Foot Notes:

- 1/ Total oxygen levels shall not exceed de minimums levels. The use of non-hydrocarbon blending components such as MTBE is prohibited.
- 2/ Mercaptan Sulfur determination is waived if the result of the Doctor Test ASTM D4952 is negative.
- 3/ Product must be tested at 55°F or tank temperature whichever is lower.

Notes:

- Product must be certified according to current Arizona AZRBOB regulations from a state of Arizona registered supplier.
- All properties other than those noted will be reported on the ethanol 10% hand blend.
- In addition to the above a LPP Product Transfer Document for AZRBOB must be filled out and provided to Magellan Pipe Line Quality Control.
- All gasoline must meet latest revision of ASTM D 4814.
- Corrosion inhibitors, gum inhibitors and metal deactivators must be approved by Magellan Pipeline
- No additives or corrosion inhibitors containing phosphorus may be used in this gasoline.
- The shipment of fuels containing Port Fuel Injector (PFI) and intake valve detergent additives is prohibited. This is a base gasoline, not for sale to the ultimate consumer
- Any gasoline exhibiting an offensive and/or containing more than 0.50wt % dicyclopentadiene will not be accepted for shipment.
- AZRBOB does not comply with the standards for Arizona CBG without the addition of oxygenate.
- This AZRBOB is intended for blending with 10% volume ethanol and may not be combined with AZRBOB's requiring oxygenate blending with any other type or amount of oxygenate.

NZ6 Grade Arizona Winter Cleaner Burning Gasoline (AZRBOB) (continued)

- Non-additized detergent gasoline, not for sale to the ultimate consumer. AZRBOB does not comply with the standards for Arizona CBG without the addition of fuel ethanol. To be blended with 10 vol % ethanol. This AZRBOB may not be combined with any other AZRBOB that does not have the same requirements for fuel ethanol blended. Base gasoline - must be blended to a minimum 87 road octane (AKI) before sale to the ultimate consumer. Magellan makes no representation as to the ethanol blend state fuel volatility compliance, may require additional downstream blending.

NZ9 Grade Arizona Summer Cleaner Burning Gasoline (AZRBOB)

(This AZRBOB gasoline is intended for blending with 10% Denatured Fuel Ethanol (DFE) by volume)

Product Property	Method	Minimum	Maximum
Gravity °API @ 60°F	D 287		Report
Octane (after 10% E Fuel ethanol per ASTM D4806)			
RON	D 2699		Report
MON	D 2700		Report
(R+M)/2		87.0	
Oxygen Content, wt % ^{1/}	D 4815		0.05
RVP, psi (E0 not blended)	D 5191		5.70
RVP, psi (E10 blend)	D 5191		7.00
Distillation, °F	D86		
E200		25%	65%
E300		65%	100%
End Point			430
Benzene, vol%	D 3606		4.9
Aromatics, vol%	D 5769/ D5580		55
Olefins, vol%	D 1319, D6650		25
Corrosion (Cu)3 hrs @ 122°F(50°C)	D 130		1
Corrosion (Ag) 3 hrs @122°F (50°C)	D 7667,7671		1
Mercaptan sulfur, wt.% ^{2/}	D 3227		0.002
Existent Gum, mg/100 ml	D 381		4
Oxidation stability, minutes	D 525	240	
Phosphorous, gms/gal	D 3231		0.003
Lead, gms/gal	D 5059		0.01
Sulfur, ppm	D 5453, D2622		80
NACE	TM0172, D7548	B+	
Haze ^{3/}	D 4176		2
VOC Emission Performance Reduction, %		-27.5	
Color		Undyed	
Odor	Olfactory	Non-Offensive	

NZ9 Grade Arizona Summer Cleaner Burning Gasoline (AZRBOB) (continued)

Foot Notes:

- 1/ Total oxygen levels shall not exceed de minimums levels. The use of non-hydrocarbon blending components such as MTBE is prohibited when shipped.
- 2/ Mercaptan Sulfur determination is waived if the result of the Doctor Test ASTM D4952 is negative.
- 3/ Product must be tested at 55°F or tank temperature whichever is lower.

Notes:

- Product must be certified according to current Arizona AZRBOB regulations from a state of Arizona registered supplier.
- All properties other than those noted will be reported on the ethanol 10% hand blend.
- In addition to the above a LPP Product Transfer Document for AZRBOB must be filled out and provided to Magellan Pipe Line Quality Control.
- All gasoline must meet latest revision of ASTM D 4814.
- Corrosion inhibitors, gum inhibitors and metal deactivators must be approved by Magellan Pipeline
- No additives or corrosion inhibitors containing phosphorus may be used in this gasoline.
- The shipment of fuels containing Port Fuel Injector (PFI) and intake valve detergent additives is prohibited. This is a base gasoline, not for sale to the ultimate consumer
- Any gasoline exhibiting an offensive and/or containing more than 0.50wt % dicyclopentadiene will not be accepted for shipment.
- AZRBOB does not comply with the standards for Arizona CBG without the addition of oxygenate.
- This AZRBOB is intended for blending with 10% volume ethanol and may not be combined with AZRBOB's requiring oxygenate blending with any other type or amount of oxygenate.

NZ9 Grade Arizona Summer Cleaner Burning Gasoline (AZRBOB) (continued)

- This product does not meet the requirements for summer reformulated gasoline. Non-additized detergent gasoline, not for sale to the ultimate consumer. AZRBOB does not comply with the standards for Arizona CBG without the addition of fuel ethanol. To be blended with 10 vol % ethanol. This AZRBOB may not be combined with any other AZRBOB that does not have the same requirements for fuel ethanol blended. Base gasoline - must be blended to a minimum 87 road octane (AKI) before sale to the ultimate consumer. Magellan makes no representation as to the ethanol blend state fuel volatility compliance, may require additional downstream blending.

O Grade Commercial Jet Fuel Specifications

Product Property	Method	Minimum	Maximum	Deliveries ^{1/}
Gravity, °API	D287	37.5	50.5	37.0-51.0
Total Acidity, mg KOH/g	D3242		0.10	
Freezing Point, °F	D2386		-40	
Existent Gum, mg/100 ml	D381		5	7
Sulfur, ppm	D2622		3,000	
Mercaptan Sulfur, wt % ^{2/}	D3227		0.003	
Color, Saybolt	D156	+16		+14
Copper Corrosion	D130		1	
Water Separation Index	D3948	85		75
Aromatics, vol %	D1319		25	
Net Heat of Combustion, BTU/lb ^{3/}	D4809	18,400		
Flash Point, °F	D56, D93	108		100
Viscosity at -4 °F, cSt	D445		8	
Electrical Conductivity, pSm	D2624		Report	
Thermal Stability ^{4/ 5/}	D3241			
Filter pressure drop, mm Hg			25	
Heater tube deposit rating			< 3	
Distillation ^{6/}	D86, D2887			
10% Recovered, °F			396	400
50% Recovered, °F			Report	
90% Recovered, °F			Report	
Final Boiling Point, °F			562	572
Residue, vol %			1.5	
Loss, vol %			1.5	
Combustion				
Smoke Point, mm	D1322	25		
Or				
Smoke Point, mm	D1322	18		
And				
Naphthalenes, vol %	D1840		3.0	
Particulate Matter, mg/L	D5452		Report	

O Grade Commercial Jet Fuel Specifications (continued)

Footnotes:

- 1/ Delivered products meet all applicable requirements at time and place of delivery.
- 2/ Mercaptan Sulfur determination is waived if the result of the Doctor Test ASTM D4952 is negative.
- 3/ Equation 2 in D3338 may be used as an alternate method.
- 4/ ASTM D3241 Thermal Stability test must be conducted at 275 °C for 2.5 hours at origin. Peacock or abnormal color deposits result in a failure and are not accepted.
- 5/ ASTM D3241 Thermal Stability test results for deliveries will be generated at a minimum test temperature of 260 °C
- 6/ ASTM D2887 Simulated Distillation results must be reported after D86 correlation.

Notes:

- Antioxidants: Shipments may, but are not required to, contain a maximum of 8.4 pounds per 1,000 barrels (not including weight of solvent) of the following anti-oxidants:
 - N, N-diisopropylparaphenylene diamine.
 - 75% (min) of 2, 6-ditertiary-butyl phenol plus 25% (max) of tertiary and tritertiary butyl phenols.
 - 72% (min) 2, 4-dimethyl-6-tertiary-butyl phenol plus 28% (max) of monomethyl and dimethyl tertiary-butyl phenols.
 - 55% (min) 2, 4-dimethyl-6-tertiary-butyl phenol plus 45% (max) of mixed tertiary and ditertiary butyl phenols.
- Metal Deactivators: Shipments may, but are not required to, contain the following metal deactivators at a maximum of 2.0 mg/L (not including weight of solvent):
 - n, N-disalicylidene-1, 2-propane diamine.
 - No other additives are permitted.
- The carrier shall not be responsible for the concentration of additives in jet fuel deliveries at terminals.
- In accordance with 40 CFR 1090.1015(a) this fuel is designated as Jet fuel and may not be redesignated as ULSD without recertification.

V, V8, V66, VTX Grade 87.0 Regular CBOB Unleaded Gasoline

(This Conventional Before Oxygenate Blending (CBOB) gasoline is intended for blending with 10% Denatured Fuel Ethanol (DFE) by volume)

Product Property	Method	Minimum	Maximum
Gravity, ° API	D287		Report
Color			Undyed
Volatility ^{2/}			
RVP ^{6/8/}	D5191		
Distillation ^{9/}	D86		
Benzene, vol % ^{9/}	D3606		4.9
Mercaptan Sulfur, wt % ^{3/}	D3227		0.003
Copper Corrosion	D130		1
Silver Corrosion	D7667, 7671		1
Gum, Existent, mg/100 ml	D381		4
Oxidation Stability, minutes	D525	240	
Phosphorus, g/gal	D3231		0.003
Lead, g/gal	D3237		0.010
Octane ^{9/}			
RON	D2699		Report
MON	D2700	82.0	
(R+M)/2		87.0	
Sulfur, ppm ^{8/}	D2622		80
Oxygenates, vol% ^{7/}	D4815, D5599		0.05
Haze Rating ^{4/}	D4176		2
NACE Corrosion	TM0172, D7548	B+	
Odor ^{5/}			Nonoffensive

V, V8, V66, VTX Grade 87.0 Regular CBOB Unleaded Gasoline (continued)

Foot Notes:

- 1/ Delivered products meet all applicable requirements at time and place of delivery.
- 2/ Refer to Magellan's Seasonal Gasoline Volatility Classes and Schedule of Origin Volatility requirements.
- 3/ Mercaptan Sulfur determination is waived if the result of the Doctor Test ASTM D4952 is negative.
- 4/ Compliance with ASTM D4176 will be determined using Procedure 2 at the following temperatures, adjusted seasonally:

February 16 – September 30	55 °F max
October 1– February 15	45 °F max
- 5/ Any gasoline exhibiting an offensive odor and/or containing more than 0.30 wt % dicyclopentadiene will not be accepted for shipment.
- 6/ RVP limits on ethanol blended gasoline are controlled by various federal and state regulations and waivers, which are generally greater than the limits for base gasoline.
- 7/ Values below the detectible limit of an approved method may be reported as a zero value.
- 8/ Values will be reported on the 0 and 10 percent oxygenated gasoline.
- 9/ Value will be reported on the 10 percent oxygenate blend.

Notes:

- All parameters must be met without blending of denatured fuel ethanol unless noted.
- In accordance with 40 CFR 1190.1010(a), gasoline will be accepted when designated as E0 or E10 for oxygenate with ethanol as described by 40 CFR 1090.1110(c)(2). In accordance with 40 CFR 1090.1110(a), gasoline will be designated upon receipt as Winter CBOB or Summer CBOB (7.8 psi, 9.0 psi, or SIP-controlled) based on the RVP of the base gasoline.
- All gasoline distributed will be designated as E10 described by 40 CFR 1090.1110(c)(2).
- Any product with a 7.8 psi or 9.0 psi CBOB does not meet the requirements for summer reformulated gasoline.
- This product is non-additized gasoline.

V1. VMS Grade 85.0 Regular CBOB Unleaded Gasoline

(This Conventional Before Oxygenate Blending (CBOB) gasoline is intended for blending with 10% Denatured Fuel Ethanol (DFE) by volume)

Product Property	Method	Minimum	Maximum	Deliveries ^{1/}
Gravity, ° API	D287		Report	
Color			Undyed	
RVP ^{6/8/}	D5191			
Distillation ^{9/}	D86			
Benzene, vol % ^{9/}	D3606		4.9	
Mercaptan Sulfur, wt % ^{3/}	D3227		0.003	
Copper Corrosion	D130		1	
Silver Corrosion	D7667,7671		1	
Gum, Existent, mg/100 ml	D381		4	5
Oxidation Stability, minutes	D525	240		
Phosphorus, g/gal	D3231		0.003	0.005
Lead, g/gal	D3237		0.010	0.05
Octane ^{9/}				
RON	D2699		Report	
MON	D2700		Report	
(R+M)/2		85.0		
Sulfur, ppm ^{8/}	D2622		80	
Oxygenates, vol % ^{7/}	D4815, 5599		0.05	
Haze Rating ^{4/}	D4176		2	3
NACE Corrosion	TM0172, D7548	B+		

V1, VMS Grade 85.0 Regular CBOB Unleaded Gasoline (continued)

Foot Notes:

- 1/ Delivered products meet all applicable requirements at time and place of delivery.
- 2/ Refer to Magellan's Seasonal Gasoline Volatility Classes and Schedule of Origin Volatility requirements.
- 3/ Mercaptan Sulfur determination is waived if the result of the Doctor Test ASTM D4952 is negative.
- 4/ Compliance with ASTM D4176 will be determined using Procedure 2 at the following temperatures, adjusted seasonally:

February 16 – September 30 55 °F max
October 1– February 15 45 °F max

- 5/ Any gasoline exhibiting an offensive odor and/or containing more than 0.30 wt % dicyclopentadiene will not be accepted for shipment.
- 6/ RVP limits on ethanol blended gasoline are controlled by various federal and state regulations and waivers, which are generally greater than the limits for base gasoline.
- 7/ Values below the detectible limit of an approved method may be reported as a zero value.
- 8/ Values will be reported on the 0 and 10 percent oxygenated gasoline.
- 9/ Value will be reported on the 10 percent oxygenate blend.

Notes:

- All parameters must be met without blending of denatured fuel ethanol unless noted.
- In accordance with 40 CFR 1190.1010(a), gasoline will be accepted when designated as E0 or E10 for oxygenate with ethanol as described by 40 CFR 1090.1110(c)(2). In accordance with 40 CFR 1090.1110(a), gasoline will be designated upon receipt as Winter CBOB or Summer CBOB (7.8 psi, 9.0 psi, or SIP-controlled) based on the RVP of the base gasoline.
- All gasoline distributed will be designated as E10 as described by 40 CFR 1090.1110(c)(2).
- Any V1-grade product with a 7.8 psi 9.0 psi CBOB does not meet the requirements for summer reformulated gasoline.
- This product is non-additized gasoline.

V2 Grade 87.0 Regular CBOB Unleaded Gasoline

(This Conventional Before Oxygenate Blending (CBOB) gasoline is intended for blending with 10% Denatured Fuel Ethanol (DFE) by volume)

Product Property	Method	Minimum	Maximum	Deliveries ^{1/}
Gravity, ° API	D287		Report	
Color			Undyed	
Volatility ^{2/}				
RVP ^{6/8/}	D5191			
Distillation ^{9/}	D86			
Benzene, vol % ^{9/}	D3606		4.9	
Mercaptan Sulfur, wt % ^{3/}	D3227		0.003	
Copper Corrosion	D130		1	
Silver Corrosion	D7667, 7671		1	
Gum, Existent, mg/100 ml	D381		4	5
Oxidation Stability, minutes	D525	240		
Phosphorus, g/gal	D3231		0.003	0.005
Lead, g/gal	D3237		0.010	0.05
Octane				
RON	D2699		Report	
MON	D2700	82.0		
(R+M)/2		84.0		
Octane ^{9/}				
RON	D2699		Report	
MON	D2700	82.0		
(R+M)/2		87.0		
Sulfur, ppm ^{8/}	D2622		80	
Oxygenates, vol% ^{7/}	D4815, D5599		0.05	
Haze Rating ^{4/}	D4176		2	3
NACE Corrosion	TM0172, D7548	B+		
Odor ^{5/}			Nonoffensive	

V2 Grade 87.0 Regular CBOB Unleaded Gasoline (continued)

Foot Notes:

- 1/ Delivered products meet all applicable requirements at time and place of delivery.
- 2/ Refer to Magellan's Seasonal Gasoline Volatility Classes and Schedule of Origin Volatility requirements.
- 3/ Mercaptan Sulfur determination is waived if the result of the Doctor Test ASTM D4952 is negative.
- 4/ Compliance with ASTM D4176 will be determined using Procedure 2 at the following temperatures, adjusted seasonally:

February 16 – September 30	55 °F max
October 1– February 15	45 °F max
- 5/ Any gasoline exhibiting an offensive odor and/or containing more than 0.30 wt % dicyclopentadiene will not be accepted for shipment.
- 6/ RVP limits on ethanol blended gasoline are controlled by various federal and state regulations and waivers, which are generally greater than the limits for base gasoline.
- 7/ Values below the detectible limit of an approved method may be reported as a zero value.
- 8/ Values will be reported on the 0 and 10 percent oxygenated gasoline.
- 9/ Value will be reported on the 10 percent oxygenate blend.

Notes:

- All parameters must be met without blending of denatured fuel ethanol unless noted.
- In accordance with 40 CFR 1190.1010(a), gasoline will be accepted when designated as E0 or E10 for oxygenate with ethanol as described by 40 CFR 1090.1110(c)(2). In accordance with 40 CFR 1090.1110(a), gasoline will be designated upon receipt as Winter CBOB or Summer CBOB (7.8 psi, 9.0 psi, or SIP-controlled) based on the RVP of the base gasoline.
- All gasoline distributed will be designated as E10 described by 40 CFR 1090.1110(c)(2).
- Any product with a 7.8 psi or 9.0 psi CBOB does not meet the requirements for summer reformulated gasoline.
- This product is non-additized gasoline.

V3, V3S Grade 86.0 Regular CBOB Unleaded Gasoline

(This Conventional Before Oxygenate Blending (CBOB) gasoline is intended for blending with 10% Denatured Fuel Ethanol (DFE) by volume)

Product Property	Method	Minimum	Maximum	Deliveries ^{1/}
Gravity, ° API	D287		Report	
Color			Undyed	
RVP ^{6/8/}	D5191			
Distillation ^{9/}	D86			
Benzene, vol % ^{9/}	D3606		4.9	
Mercaptan Sulfur, wt % ^{3/}	D3227		0.003	
Copper Corrosion	D130		1	
Silver Corrosion	D7667,7671		1	
Gum, Existent, mg/100 ml	D381		4	5
Oxidation Stability, minutes	D525	240		
Phosphorus, g/gal	D3231		0.003	0.005
Lead, g/gal	D3237		0.010	0.05
Octane ^{9/}				
RON	D2699		Report	
MON	D2700		Report	
(R+M)/2		86.0		
Sulfur, ppm	D2622		80	
Oxygenates, vol % ^{7/}	D4815, 5599		0.05	
Haze Rating ^{4/}	D4176		2	3
NACE Corrosion	TM0172, D7548	B+		

V3, V3S Grade 86.0 Regular CBOB Unleaded Gasoline (continued)

Foot Notes:

- 1/ Delivered products meet all applicable requirements at time and place of delivery.
- 2/ Refer to Magellan's Seasonal Gasoline Volatility Classes and Schedule of Origin Volatility requirements.
- 3/ Mercaptan Sulfur determination is waived if the result of the Doctor Test ASTM D4952 is negative.
- 4/ Compliance with ASTM D4176 will be determined using Procedure 2 at the following temperatures, adjusted seasonally:

February 16 – September 30 55 °F max
October 1– February 15 45 °F max

- 5/ Any gasoline exhibiting an offensive odor and/or containing more than 0.30 wt % dicyclopentadiene will not be accepted for shipment.
- 6/ RVP limits on ethanol blended gasoline are controlled by various federal and state regulations and waivers, which are generally greater than the limits for base gasoline.
- 7/ Values below the detectible limit of an approved method may be reported as a zero value.
- 8/ Values will be reported on the 0 and 10 percent oxygenated gasoline.
- 9/ Value will be reported on the 10 percent oxygenate blend.

Notes:

- All parameters must be met without blending of denatured fuel ethanol unless noted.
- In accordance with 40 CFR 1190.1010(a), gasoline will be accepted when designated as E0 or E10 for oxygenate with ethanol as described by 40 CFR 1090.1110(c)(2). In accordance with 40 CFR 1090.1110(a), gasoline will be designated upon receipt as Winter CBOB or Summer CBOB (7.8 psi, 9.0 psi, or SIP-controlled) based on the RVP of the base gasoline.
- All gasoline distributed will be designated as E10 as described by 40 CFR 1090.1110(c)(2).
- Any product with a 7.8 psi or 9.0 psi CBOB does not meet the requirements for summer reformulated gasoline.
- This product is non-additized gasoline.

W Grade Natural Gasoline Specification

(Intended to be used as gasoline blend stock)

Product Property	Method	Minimum	Maximum
Gravity, °API	D287	75.0	85.0
Specific Gravity	D1657	0.654	0.685
Reid Vapor Pressure, psi	D5191	12.0	15.0
Distillation,	D86		
% Evaporated at 140 °F		25	85
% Evaporated at 275 °F		90	
Final Boiling Point, °F			375
Color	D156	+25	
Benzene, vol %	D5580, D3606		1.5
Doctor	D4952	Negative	
Sulfur, ppm	D2622, D7039		30
Copper Corrosion	D130		1
Haze Rating	D4176		2
NACE Corrosion	TM0172	B+	

Foot Notes:

Notes:

- W Grade shipments may not contain any additives.

W2 Grade Certified Ethanol Denaturant Specifications.
(Intended to be used to make Denatured Fuel Ethanol)

Product Property	Method	Minimum	Maximum	Deliveries ^{1/}
Gravity, °API	D287	75.0	85.0	
Reid Vapor Pressure, psi	D5191	12	14	
Distillation,	D86			
90% Evaporated at Degree °F			365	
Final Boiling Point at Degree °F			437	
Color	D156	+25		
Benzene, vol %	D5580/ D3606		1.10	
Doctor	D4952	Negative		
Sulfur, ppm	D5453/ D2622/ D7039		120	
Copper Corrosion	D130		1	
Haze Rating ^{2/}	D4176		2	3
NACE Corrosion	TM0172	B+		

Foot Notes:

- 1/ Delivered products meet all applicable requirements at time and place of delivery.
- 2/ Compliance with ASTM D4176 will be determined using Procedure 2 at the following temperatures, adjusted seasonally:

February 16 – September 30	55 °F max
October 1 – February 15	45 °P max

Notes:

- W2 Grade shipments may not contain any additives.
- W2 meets the requirements of certified ethanol denaturant as listed in 40 CFR 1090.275
- W2 shall be designated as certified ethanol denaturant as intended for blending with gasoline as specified in 40 CFR 1090.1010(e).

X1X Grade Ultra Low Sulfur Diesel Fuel for Export Specifications

(This fuel is for export from the United States only)

Product Property	Method	Minimum	Maximum
Gravity, °API	D4052, 1298		Report
Distillation ^{3/}	D86, D2887		
Initial Boiling Point			Report
10% Recovered, °F			527
50% Recovered, °F			Report
90% Recovered, °F		540	653
End Point °F			Report
Flash Point, °F	D93		135
Pour Point, °F	D97		
March-October			+32
November-February			+23
Cloud Point, °F ^{4/}	D2500		Report
Cetane			
Cetane Number	D613	45	
Or			
Cetane Index, A or B	D976, D4737	45	
Sulfur, ppm	D2622		12
Copper Corrosion	D130		1
Carbon Residue on 10% Bottoms, wt %	D524		0.35
Water and Sediment, vol%	D2709		0.05
Viscosity, cSt at 104 °F	D445	1.9	4.1
Ash, wt %	D482		0.01
Color	D1500		2.5
Aromatics, vol %	D1319, D5186		35
Stability			
Thermal, % reflectance (W or Y)	D6468 (W)	75	
	D6468 (Y)	82	
Aging Period (Minutes)	D6468	90	
Or			
Oxidation, mg/100 ml	D2274		2.5
Haze Rating ^{2/}	D4176		2
NACE Corrosion	TM0172, D7548	B+	



X1X Grade Ultra Low Sulfur Diesel Fuel for Export Specifications (continued)

(This fuel is for export from the United States only)

Foot Notes:

- 1/ Delivered products meet all applicable requirements at time and place of delivery and the product transfer documents will include the sulfur per-gallon standard that the fuel meets per 40 CFR 1090.1115(a)(1) and an accurate and clear designation of the fuel per 40 CFR 1090.1115(a)(2).
- 2/ Compliance with ASTM D4176 will be determined using Procedure 2 at 77 °F or tank temperature at the time of sampling, whichever is lower.
- 3/ ASTM D2887 Simulated Distillation results must be reported after D86 correlation.
- 4/ The maximum temperature must be less or equal to the minimum environmental temperature expected.

Notes:

- X1X complies with the ULSD standards of 40 CFR 1090.305.
- X1X is diesel fuel for export from the United States only per 40 CFR 1090.1105
- X1X is designated as ULSD in accordance with 40 CFR 1090.1115.
- X1X may not be co-mingled with any domestic diesel fuels

Additional Requirements:

Biodiesel: The presence of biodiesel is prohibited.

Dyes: X Grade shipments may not be dyed.

XB5 Grade #2 Ultra Low Sulfur Diesel Fuel with up to 5% Biodiesel Specifications

Product Property	Method	Minimum	Maximum	Deliveries ^{1/}
Gravity, °API	D287		Report	
Color	D1500		2.5	3
Distillation ^{4/}	D86, D2887			
50% Recovered, °F			Report	
90% Recovered, °F		540	640	
End Point °F			700	
Copper Corrosion	D130		1	
Cetane				
Cetane Number	D613	40		
Or				
Cetane Index, A or B	D4737	40		
Cetane Index ^{2/}	D976	40		
Flash Point, °F	D93	135		130
Stability				
Thermal, % reflectance (W or Y)	D6468 (W)	75		
	D6468 (Y)	82		
Aging Period (Minutes)	D6468	90		
Or				
Oxidation, mg/100 ml	D2274		2.5	
Carbon Residue on 10% Bottoms, wt %	D524		0.35	
Cloud Point, °F	D2500		Report	N/A
Pour Point, °F	D97		Report	N/A
Viscosity, cSt at 104 °F	D445	1.9	4.1	
Ash, wt %	D482		0.01	
Haze Rating ^{3/}	D4176		2	3
NACE Corrosion	TM0172, D7548	B+		
Sulfur, ppm	D2622		11	

XB5 Grade #2 Ultra Low Sulfur Diesel Fuel with up to 5% Biodiesel Specifications
(continued)

Foot Notes:

- 1/ Delivered products meet all applicable requirements at time and place of delivery and the product transfer documents will include the sulfur per-gallon standard that the fuel meets per 40 CFR 1090.1165(a)(1) and an accurate and clear designation of the fuel per 40 CFR 1090.1165(a)(2).
- 2/ ASTM D976 used to demonstrate aromatics compliance per 40 CFR 1090.305.
- 3/ Compliance with ASTM D4176 will be determined using Procedure 2 at 77 °F or tank temperature at the time of sampling, whichever is lower.
- 4/ ASTM D2887 Simulated Distillation results must be reported after D86 correlation.

Notes:

- XB5 complies with the ULSD standards of 40 CFR 1090.305.
- XB5 is designated as ULSD in accordance with 40 CFR 1090.1115.
- XB5 may contain up to 5% biodiesel.

Additional Requirements:

Biodiesel: Injection of up to 5% biodiesel meeting the specification of ASTM D6751 may be injected into X grade outbound from the origin for shipments on the following line segments:

- East Houston to Hearne 20”

Dyes: X Grade shipments may not be dyed.

X, XHO, TB, TC Grade #2 Ultra Low Sulfur Diesel Fuel Specifications

Central, Rocky Mountain, and Southern Systems

Central System:

Product Property ^{1/}	Method	Minimum	Maximum
Gravity, °API	D287		Report
Color	D1500		2.5
Distillation ^{4/}	D86, D2887		
50% Recovered, °F			Report
90% Recovered, °F		540	640
End Point °F			700
Copper Corrosion	D130		1
Cetane			
Cetane Number	D613	40	
Or			
Cetane Index, A or B	D4737	40	
Cetane Index ^{2/}	D976	40	
Flash Point, °F	D93	140	
Stability			
Thermal, % reflectance (W or Y)	D6468 (W)	75	
	D6468 (Y)	82	
Aging Period (Minutes)	D6468	90	
Or			
Oxidation, mg/100 ml	D2274		2.5
Carbon Residue on 10% Bottoms, wt %	D524		0.35
Cloud Point, °F	D2500		
September-March			+15
April-August			+20
Pour Point, °F	D97		
September-March			+0
April-August			+10
Viscosity, cSt at 104 °F	D445	1.9	4.1
Ash, wt %	D482		0.01
Haze Rating ^{3/}	D4176		2
NACE Corrosion	TM0172, D7548	B+	
Sulfur, ppm	D2622		11

X, XHO, TB, TC Grade #2 Ultra Low Sulfur Diesel Fuel Specifications
Central, Rocky Mountain, and Southern Systems

Rocky Mountain System:

Product Property ^{1/}	Method	Minimum	Maximum
Gravity, °API	D287		Report
Color	D1500		2.5
Distillation ^{4/}	D86, D2887		
50% Recovered, °F			Report
90% Recovered, °F		540	640
End Point °F			700
Copper Corrosion	D130		1
Cetane			
Cetane Number	D613	40	
Or			
Cetane Index, A or B	D4737	40	
Cetane Index ^{2/}	D976	40	
Flash Point, °F	D93	134	
Stability			
Thermal, % reflectance (W or Y)	D6468 (W)	75	
	D6468 (Y)	82	
Aging Period (Minutes)	D6468	90	
Or			
Oxidation, mg/100 ml	D2274		2.5
Carbon Residue on 10% Bottoms, wt %	D524		0.35
Cloud Point, °F	D2500		
September-March			+15
April-August			+20
Pour Point, °F	D97		
September-March			+0
April-August			+10
Viscosity, cSt at 104 °F	D445	1.9	4.1
Ash, wt %	D482		0.01
Haze Rating ^{3/}	D4176		2
NACE Corrosion	TM0172, D7548	B+	
Sulfur, ppm	D2622		12

X, XHO, TB, TC Grade #2 Ultra Low Sulfur Diesel Fuel Specifications
Central, Rocky Mountain, and Southern Systems

Southern System:

Product Property ^{1/}	Method	Minimum	Maximum
Gravity, °API	D287		Report
Color	D1500		2.5
Distillation ^{4/}	D86, D2887		
50% Recovered, °F			Report
90% Recovered, °F		540	640
End Point °F			700
Copper Corrosion	D130		1
Cetane			
Cetane Number	D613	40	
Or			
Cetane Index, A or B	D4737	40	
Cetane Index ^{2/}	D976	40	
Flash Point, °F	D93	135	
Stability			
Thermal, % reflectance (W or Y)	D6468 (W)	75	
	D6468 (Y)	82	
Aging Period (Minutes)	D6468	90	
Or			
Oxidation, mg/100 ml	D2274		2.5
Carbon Residue on 10% Bottoms, wt %	D524		0.35
Cloud Point, °F	D2500		
October-February			+15
March-August			+28
September			+20
Pour Point, °F	D97		Report
Viscosity, cSt at 104 °F	D445	1.9	4.1
Ash, wt %	D482		0.01
Haze Rating ^{3/}	D4176		2
NACE Corrosion	TM0172, D7548	B+	
Sulfur, ppm	D2622		11

X, XHO, TB, TC Grade #2 Ultra Low Sulfur Diesel Fuel Specifications
Central, Rocky Mountain, and Southern Systems (continued)

Foot Notes:

- 1/ Delivered products meet all applicable requirements at time and place of delivery and the product transfer documents will include the sulfur per-gallon standard that the fuel meets per 40 CFR 1090.1165(a)(1) and an accurate and clear designation of the fuel per 40 CFR 1090.1165(a)(2).
- 2/ ASTM D976 used to demonstrate aromatics compliance per 40 CFR 1090.305.
- 3/ Compliance with ASTM D4176 will be determined using Procedure 2 at 77 °F or tank temperature at the time of sampling, whichever is lower.
- 4/ ASTM D2887 Simulated Distillation results must be reported after D86 correlation.

Notes:

- X, XHO, TB, and TC comply with the ULSD standards of 40 CFR 1090.305.
- X, TB, and TC are designated as ULSD in accordance with 40 CFR 1090.1115.
- XHO is designated as Certified NTFD in accordance with 40 CFR 1090.1115.
- The presence of biodiesel is prohibited at origin. Deliveries of X-Grade may contain up to 5% biodiesel at the Dubuque, IA terminal.
- X-Grade shipments may not be dyed.

XU Grade #2 Ultra Low Sulfur Diesel Fuel Specifications

Rocky Mountain System:

Product Property	Method	Minimum	Maximum	Deliveries ^{1/}
Gravity, °API	D287		Report	
Color	D1500		2.5	3
Distillation ^{4/}	D86, D2887			
50% Recovered, °F			Report	
90% Recovered, °F		540	640	
Copper Corrosion	D130		1	
Cetane				
Cetane Number	D613	40		
Or				
Cetane Index, A or B	D4737	40		
Cetane Index ^{2/}	D976	40		
Flash Point, °F	D93	134		130
Stability				
Thermal, % reflectance (W or Y)	D6468 (W)	75		
	D6468 (Y)	82		
Aging Period (Minutes)	D6468	90		
Or				
Oxidation, mg/100 ml	D2274		2.5	
Carbon Residue on 10% Bottoms, wt %	D524		0.35	
Cloud Point, °F	D2500			
October-March			+5	
April-September			+20	
Pour Point, °F	D97			
October-March			-20	
April-September			Report	
Viscosity, cSt at 104 °F	D445	1.9	4.1	
Ash, wt %	D482		0.01	
Haze Rating ^{3/}	D4176		2	3
NACE Corrosion	TM0172, D7548	B+		
Sulfur, ppm	D2622		12	

XU Grade Ultra Low Sulfur #2 Diesel Fuel Specifications (continued)

Foot Notes:

- 1/ Delivered products meet all applicable requirements at time and place of delivery and the product transfer documents will include the sulfur per-gallon standard that the fuel meets per 40 CFR 1090.1165(a)(1) and an accurate and clear designation of the fuel per 40 CFR 1090.1165(a)(2).
- 2/ ASTM D976 used to demonstrate aromatics compliance per 40 CFR 1090.305.
- 3/ Compliance with ASTM D4176 will be determined using Procedure 2 at 77 °F or tank temperature at the time of sampling, whichever is lower.
- 4/ ASTM D2887 Simulated Distillation results must be reported after D86 correlation.

Notes:

- XU complies with the ULSD standards of 40 CFR 1090.305.
- XU is designated as ULSD in accordance with 40 CFR 1090.1115.

Additional Requirements:

Biodiesel: The presence of biodiesel is prohibited.

Dyes: X Grade shipments may not be dyed.

Y Grade of #1 Ultra Low Sulfur Diesel Fuel Specifications

Product Property	Method	Minimum	Maximum	Deliveries ^{1/}
Gravity, °API	D287	35.0		
Distillation ^{4/}	D86, D2887			
10% Recovered, °F			419	
90% Recovered, °F			550	
Copper Corrosion	D130	1		
Cetane				
Cetane Number	D613	40.0		
Or				
Cetane Index, A or B	D4737	40.0		
Cetane Index ^{2/}	D976	40		
Flash Point, °F	D93	125	160	115
Carbon Residue on 10% Bottoms, wt %	D524		0.15	
Pour Point, °F	D97		-25	
Viscosity at 104 °F, cSt	D445	1.3	2.1	
Ash, wt %	D482		0.01	
Haze Rating ^{3/}	D4176		2	3
NACE Corrosion	TM172, D7548	B+		
Sulfur, ppm	D2622		11	

Y Grade of #1 Ultra Low Sulfur Diesel Fuel Specifications (continued)

Foot Notes:

- 1/ Delivered products meet all applicable requirements at time and place of delivery and the product transfer documents will include the sulfur per-gallon standard that the fuel meets per 40 CFR 1090.1165(a)(1) and an accurate and clear designation of the fuel per 40 CFR 1090.1165(a)(2).
- 2/ ASTM D976 used to demonstrate aromatics compliance per 40 CFR 1090.305.
- 3/ Compliance with ASTM D4176 will be determined using Procedure 2 at 77 °F or tank temperature at the time of sampling, whichever is lower.
- 4/ ASTM D2887 Simulated Distillation results must be reported after D86 correlation.

Notes:

- Y complies with the ULSD standards of 40 CFR 1090.305.
- Y is designated as ULSD in accordance with 40 CFR 1090.1115.

Additional Requirements:

Biodiesel: The presence of biodiesel is prohibited.

Dyes: X Grade shipments may not be dyed.

YM Grade of #1 Ultra Low Sulfur Diesel Fuel Specifications

Product Property	Method	Minimum	Maximum	Deliveries ^{1/}
Gravity, °API	D287	35.0		
Distillation ^{4/}	D86, D2887			
10% Recovered, °F			419	
90% Recovered, °F			550	
Copper Corrosion	D130	1		
Cetane				
Cetane Number	D613	40.0		
Or				
Cetane Index, A or B	D4737	40.0		
Cetane Index ^{2/}	D976	40		
Flash Point, °F	D93	108	160	100
Carbon Residue on 10% Bottoms, wt %	D524		0.15	
Pour Point, °F	D97	-25		
Viscosity at 104 °F, cSt	D445	1.3	2.1	
Ash, wt %	D482		0.01	
Haze Rating ^{3/}	D4176		2	3
NACE Corrosion	TM172, D7548	B+		
Sulfur, ppm	D2622		12	
Mercaptan Sulfur, wt% ^{5/}	D3227		0.0004	

YM Grade of #1 Ultra Low Sulfur Diesel Fuel Specifications (continued)

Foot Notes:

- 1/ Delivered products meet all applicable requirements at time and place of delivery and the product transfer documents will include the sulfur per-gallon standard that the fuel meets per 40 CFR 1090.1165(a)(1) and an accurate and clear designation of the fuel per 40 CFR 1090.1165(a)(2).
- 2/ ASTM D976 used to demonstrate aromatics compliance per 40 CFR 1090.305.
- 3/ Compliance with ASTM D4176 will be determined using Procedure 2 at 77 °F or tank temperature at the time of sampling, whichever is lower.
- 4/ ASTM D2887 Simulated Distillation results must be reported after D86 correlation.
- 5/ Mercaptan Sulfur determination is waived if the result of the Doctor Test ASTM D4952 is negative

Notes:

- YM complies with the ULSD standards of 40 CFR 1090.305.
- YM is designated as ULSD in accordance with 40 CFR 1090.1115.

Additional Requirements:

Biodiesel: The presence of biodiesel is prohibited.

Dyes: X Grade shipments may not be dyed.

ZB Grade #2 Ultra Low Sulfur Biodiesel Fuel Specifications

(Intended to be use as a #2 ULSD Blend stock)

Product Property	Method ^{2/}	Minimum	Maximum
Density, g/mL	D4052		Report
Filtration, Seconds	D7501		125
Flash Point, °C	D93	93	
Alcohol Control (must meet one of the following)			
Flash Point, °C	D93	130	
Methanol content, wt%	EN14110		0.2
Cloud Point, °F, max	D2500		
Summer (May 1 st – August 31 st)			46
Winter (September 1 st – April 30 th)	Central System ^{4/}		36
Cloud Point, °F, max	D2500		
Summer (April 1 st – September 30 th)			56
Winter (October 1 st – March 31 st)	South System ^{5/}		36
Carbon Residue on 100% Sample, wt %	D4530		0.050
Sulfur, ppm (mg/kg)	D5453		15
Stability ^{3/}			
Rancimat, (hrs.)	EN15751, EN14112	6	
Copper Corrosion	D130		1
Cetane Number	D613	47	
Distillation			
Atmospheric equivalent temperature 90% recovered, °F or Simulated Distillation, (Modified)	D1160, D2887		680
Viscosity at 104 °F, cSt	D445	1.9	6.0
Sulfated Ash, wt %	D874		0.020
Free Glycerin, wt %	D6584		0.020
Monoglyceride, wt%	D6584		
Winter and Summer	Central System ^{4/}		0.400
Summer (April 1 st – September 30 th)			0.600
Winter (October 1 st – March 31 st)	South System ^{5/}		0.400
Total Glycerin, wt %	D6584		0.240
Acid Number, mg KOH/g	D664		0.50
Haze Rating @ 60 °F	D4176		2
Phosphorus content, wt%	D4951		0.001

ZB Grade #2 Ultra Low Sulfur Biodiesel Fuel Specifications (continued)

Product Property	Method ^{2/}	Minimum	Maximum
Calcium and Magnesium, combined, ppm (mg/g)	EN14538		
	Central System ^{4/}		5
	South System ^{5/}		2
Sodium & Potassium combined, ppm (mg/g)	EN14538		
	Central System ^{4/}		5
	South System ^{5/}		3.5
Total Contamination mg/kg ^{5/}	D7321		15
Water & Sediment, vol%	D2709		0.050
Total Water, ppm	D6304		500
Delivery Temperature	MMP	+50	
Workmanship ^{1/}	MMP		

Foot Notes:

- 1/ **Workmanship:** At the time of acceptance, the finished fuel shall be visually free from undissolved water, sediment, or suspended matter and shall be clear and bright.
- 2/ Alternative methods found in ASTM D6751 are accepted
- 3/ **Additives:**
 - BioExtend 30
 - Eastman - Tenox 21
 - Kemin BF 320
 - NALCO EC 5609A
- 4/ **Central Locations:** Includes Aurora, Des Moines, Mason City, Marshall, Mankato, Rochester, Minneapolis, Wrenshall, Alexandria, Fargo, Grand Forks
- 5/ **South Locations:** Includes East Houston, Herne
- 6/ All fuel shall comply with 40 CFR Subpart M - Renewable Fuel Standard

Notes:

- ZB complies with the ULSD standards of 40 CFR 1090.305.
- ZB is designated as ULSD in accordance with 40 CFR 1090.1115.
- ZB meets or exceeds the requirements of ASTM D6751 as B100 or B99.