NuStar Pipeline Operating Partnership L.P.
a wholly owned subsidiary of Sunoco LP

Product Specifications

(Specifications apply at MidCon North Pipeline System origins)
(Deliveries from the North Pipeline System meet all ASTM Specifications as well as Federal and State regulations)

North Pipeline System

SPECIFICATIONS FOR A GRADE GASOLINE

North Pipeline System

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

Specification Points	ASTM Test Method	Origin Shipments Minimum	Origin Shipments Maximum	Deliveries (At Terminals)
Gravity, Degrees API	D287	Report Only		
Color		Undyed		
Volatility 2/				
RVP 6/ 8/	D5191			
Distillation 9/	D86			
Benzene, vol % 9/	D3606		4.9	
Mercaptan Sulfur,wt % 3/	D3227		0.003	
Hydrogen Sulfide	D3227		None	
Copper Corrosion	D 130		1	
Silver Corrosion	D4814,D7671		1	
Gum, Existent, mg/100ml	D 381		4	5
Oxidation Stability, min.	D 525	240		180
Phosphorous, g/gal	D3231		0.003	0.005
Lead, g/gal	D3237		0.010	0.05
Research Octane {R}	D2699	Report		
Motor Octane {M}	D2700	Report		
(R+M)/2	D4814	91.0		
Sulfur, ppm 8/	D2622		80	
Oxygenates, wt % 7/	D4815		0.05	
Haze rating 4/	D4176		2	3
NACE Corrosion	TM0172 D7548	B+		
Odor 5/		Nonoffensive		

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/ RVP limits on ethanol blended gasoline are controlled by various federal and state regulations and waivers, which are generally greater than the limits of base gasoline.

7/ Values below the detectable 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 oxygenated blend.

Notes:

All parameters must be met without the blending of denatured ethanol unless noted.

In accordance with 40 CFR 1090.1010©(2), 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.

SPECIFICATIONS FOR SUB OCTANE GRADE CBOB GASOLINE

North Line System

(Conventional Before Oxygenate Blending.)

Specification Points	ASTM Test Method	Origin Shipments Minimum	Origin Shipments Maximum	Deliveries 1/ (At Terminals)
Gravity, Degrees API	D287,D1298,D4052		Report Only	
Color			Undyed	
Volatility 2/				
RVP 6/ 8/	D5191			
Distillation 9/	D86			
Mercaptan Sulfur, wt % 3/	D3227		0.003	
Hydrogen Sulfide	D3227		None	
Copper Corrosion	D130		1	
Silver Corrosion	D7667,D7671		1	
Gum, Existent, mg/100ml	D381		4	5
Oxidation Stability, min.	D525	240		
Phosphorous, g/gal	D3231		0.003	0.005
Lead, g/gal	D3237		0.010	0.05
Research Octane {R} 9/	D2699	Report		
Motor Octane {M} 9/	D2700	82.0		
(R+M)/2 9/	D4814	87.0		
Sulfur, ppm 8/	D2622		80	
Benzene, vol % 9/	D3606		4.9	
Oxygenates, vol % 7/	D4815,D5599		0.05	
Haze rating 4/	D4176		2	3
NACE Corrosion	TM0172, D7548	B+		
Odor 5/		Nonoffensive		

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/ 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/ Value 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 does not meet the requirements for summer reformulated gasoline.

This product is non-additized.

SPECFICATION FOR FUNGIBLE ULTRA LOW SULFUR FUEL DIESEL GRADE 37

Specification Points	ASTM Test Methods	Shipments (At Origin) Minimum	Shipments (At Origin) Maximum	Deliveries (At Terminals)1/ May Be
Gravity, Degrees A.P.I.	D287	30		
Color	D1500		2.5	3.0
Color visual		Undyed		
Distillation,	D86			
50% Recovered, F			Report	
90% Recovered, F		540	640	
OR				
Simulated distillation	D2887			
50% Recovered, F			Report	
90% Recovered, F		572	672	
Corrosion, Copper Strip @122 F	D130		1	
Cetane				
(1) Cetane Number	D613	40.0		
Or (2) Cetane Index, Procedure A	D4737	40.0		
Cetane Index 1/	D976	40		
Flash, F	D93	130		125
Thermal Stability,				
(1) Thermal, % reflectance	D6468 (W)	75		
	D6468(Y)	82		
Aging Period (minutes)	D6468	90		
OR (2) Oxidation, mg/100ml	D2274		2.5	
Carbon Residue on 10% Bottoms (Ramsbottom) - Percent	D524		0.35	
Cloud Point, F	D2500, D5771 D5772, D5773			2/
Pour Point, F	D97, D5949 D5950, D5985			2/
Viscosity, cSt @104 F	D445	1.9	4.1	
Haze Rating 3/	D4176		2	3
Ash, wt %	D482		0.01	
Sulfur, ppm 4/	D2622		11	
NACE Corrosion	TM0172, D7548	B+		
Aromatics (Volume %)	D1319		31.7	

Or Aromatics by Cetane Index	D976	40	
BS&W, vol.%	D2709		<0.05

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

2/ ASTM D976 data is required for low sulfur oils to demonstrate aromatics compliance per the EPA.

3/ Due to fungible specifications, the cloud/pour point for diesel products must comply with the ASTM specifications for the region in which the diesel is produced. It should be noted that diesel products distributed into colder climates may require lower cloud and/or pour points or suppressors, i.e., winterization.

4/ The finished product shall be visually free of undissolved water, sediment, and suspended matter in proffered tankage and at the point of delivery. Compliance with this workmanship clause will be determined by ASTM D4176, Procedure 2 at 77 F or at actual conditions present at the point and time of sampling, whichever is lower.

5/ Origin laboratory certifying sulfur content must qualify the test method used per EPA Performance Based Testing Criteria (see CFR 80.584). The referee method will be ASTM D5453. *Sulfur limit, 12 ppm for interconnecting pipelines.

Additional Requirements:

Biodiesel: The use of any biodiesel fuel as a blending component is prohibited.

Dyes: ULSD grade shipments may not be dyed.

SPECFICATION FOR Y GRADE No.1 FUEL OIL DISTILLATE
Grade 58

Specification Points	ASTM Test Methods	Shipments (At Origin) Minimum	Shipments (At Origin) Maximum	Deliveries (At Terminals) May Be
Gravity, Degrees A.P.I.	D287	35.0		
Distillation,	D86			
10% Recovered, F			419	
90% Recovered, F			550	
OR				
Simulated Distillation	D2887			
10% Recovered, F			383	
90% Recovered, F			580	
Corrosion, Copper Strip @122 F	D130		1	
Cetane				
(1)Cetane Number	D613	40.0		
(2)Cetane Index, procedure A	D4737	40.0		
Cetane Index 1/	D976	40		
Flash, F	D93	125	160	115
Carbon Residue on 10% Bottoms (Ramsbottom) - Percent	D524		0.15	
Pour Point, F	D97		-25	
Haze Rating 2/	D4176	2	3	
Sulfur - ppm 3/	D2622		11	15
Mercaptan Sulfur, wt % 4/	D3227		0.004	
Viscosity at 104 F, cSt	D445	1.3	2.1	
Ash, wt %	D482		0.01	
NACE Corrosion	TM0172, D7548	B+		

1/ ASTM D976 data is required for low sulfur fuel oils to demonstrate aromatics compliance per the EPA.

2/ The finished product shall be visually free of undissolved water, sediment, and suspendedmatter in proffered tankage and at the point of delivery. Compliance with this workmanship clause will be determined by ASTM D4176, Procedure 2 at 77 F or at actual conditions present at the point and time of sampling, whichever is lower.

3/ ASTM D7039 and D5453 may be used as an alternate method providing adequate correlation to ASTM D2622 is provided. *Sulfur limit, 12 ppm for interconnecting pipelines.

4/ Mercaptan Sulfur determination is waived if the result of the Doctor Test ASTM D4952 is negative.

Dyes: Y-Grade petroleum fuel oil distillate shipments shall not be dyed.

Biodiesel: The use of any biodiesel as a blending component is prohibited.

SPECFICATION FOR JP-8 GRADE MILITARY JET FUEL
Grade 05

Specification Points	ASTM Test Methods	Shipments (At Origin) Minimum	Shipments (At Origin) Maximum	Deliveries (At Terminals) May Be*
Gravity, API	D287	37.0	51.0	
Density, kg/L at 60F	D4052	0.775	0.840	
Total Acid Number, mg KOH/g	D3242		0.015	
Freezing Point, F	D2386		-52	
Existent Gum, mg/100ml	D381		7.0	
Sulfur, ppm	D2622		3000	
Mercaptan Sulfur, wt.%	D3227		0.002	
Doctor Test	D4952	Negative		
Color, Saybolt	D156	Report		
Corrosion, Copper	D130		1	
Water Separation Index	D3948	1/		
Water Reaction, Interface Rating	D1094		1b	
Aromatics, vol. %	D1319		25.0	
Flash Point, F	D93	100		
Viscosity @ -4 F, cSt	D445		8.0	
Electrical Conductivity, pSm	D2624	2/		2/
Thermal Stability;	D3241 3/			
Filter pressure drop, mm Hg.			25	
Heater tube deposit rating			< 3	
Distillation, F @ 760 mm Hg	D86			
Initial Boiling Point, F		Report		
10% Recovered, F			401	
20% Recovered, F		Report		
50% Recovered, F		Report		
90% Recovered, F		Report		
Final Boiling Point, F			572	
Residue, Vol. %			1.5	
Loss, Vol. %			1.5	
OR				
Simulated Distillation	D2887			
Initial Boiling Point, F		Report		
10% Recovered, F			401	
20% Recovered, F		Report		
50% Recovered, F		Report		
90% Recovered, F		Report		

Final Boiling Point, F				572
Net Heat of Combustion, BTU/lb	D3338	18,400		
OR: MJ/kg	D4809	42.8		
Combustion				
(1) Smoke Point, mm	D1322	25.0		
OR				
(2) Smoke Point, mm	D1322	19.0		
AND Napthalenes vol. %	D1840			3.0
Hydrogen Content, wt%	D3701	13.4		
Cetane Index	D976		Report	
Particulate Matter, mg/L	D5452 4/			1.0
Filtration Time, minutes				15
Fuel System Icing Inhibitor, vol %	D5006 5/	0.10		0.15

1/ The minimum microseparometer rating shall be as follows:

J8 Additives	MSEP Rating, min.
Antioxidant (AO)*, Metal Deactivator (MDA)*	90
AO*, MDA*, and Fuel System Icing Inhibitor (FSII)	85
AO*, MDA*, and Corrosion Inhibitor/Lubricity Improver (CI/LI)	80
AO*, MDA*, FSII and CI/LI	70

* Even though the presence or absence does not change these limits, samples submitted for specification conformance testing shall contain the same additives present in the refinery batch. Regardless of which minimum the refiner elects to meet, the refiner shall report the MSEP rating on a laboratory hand blend of the fuel with all additives required by the specification.

2/ The conductivity must be between 150 and 450pS/m at ambient temperature or 85 F, whichever is lower (150 to 700 for JP8+100 shipments that contain thermal stability improver additive), unless otherwise directed by the procuring activity.

3/ ASTM D3241 Thermal Stability test must be conducted at 260 C for 2.5 hours. Peacock or abnormal color deposits result in a failure and are not accepted.

4/ A minimum sample size of 3.79 liters (one gallon) shall be filtered. Filtration time will be determined in accordance with the procedure in Appendix A of MIL-DTL-83133E (or most current version); this procedure may be used to determine the particulate matter as an alternate to ASTM D5452 or ASTM D2276.

5/ FSII test shall be performed using the DiEGME scale of the refractometer.

Other Requirements

Additives: Shipper must provide the type and amount of each additive used upon request.

Antioxidants: Immediately after processing, and before the fuel is exposed to the atmosphere (i.e. during rundown into feed/batch tankage), add an approved antioxidant from the following list in order to prevent the formation of gums and peroxides after manufacture. The concentration of antioxidant to be added shall be:

a. Not less than 17.2 mg or more than 24.0 mg of active ingredient per liter of fuel (6.0 to 8.4 lb/1000 barrels) to all JP-8 fuel that contains blending stocks that have been hydrogen treated.
b. At the option of the supplier, not more than 24.0 mg of active ingredient per liter of fuel (8.4 lb/1000 barrels) may be added to JP-8 fuels that do not contain hydrogen treated blending stocks.

Approved Antioxidants

a. 2, 6-di-tert-butyl-4-methylphenol
b. 6-tert-butyl-2, 4-dimethylphenol
c. 2, 6-di-tert-butylphenol
d. 75% minimum: 2, 6-di-tert-butylphenol
   25% maximum: tert-butyl phenols and tri-tert-butylphenols
e. 72% minimum: 6-tert-butyl-2, 4-dimethylphenol
   28% maximum: tert-butyl-methylphenols and tert-butyl dimethylphenols
f. 55% minimum: 2, 4-dimethyl-6-tert-butylphenol and
   15% minimum: 2, 6-di-tert-butyl—4-methylphenol and
   30% maximum: mixed methyl and dimethyl tert-butylphenols

Metal Deactivator: A metal deactivator, N,N'-disalycylidene-1, 2-propanediamine, may be blended into the fuel. The concentration of active material used on initial batching of the fuel at the refinery shall not exceed 2.0 mg/L. Cumulative addition of metal deactivator when redoping the fuel shall not exceed 5.7 mg/L. Metal deactivator additive shall not be used in JP-8 unless the supplier has obtained written consent from the Procuring Activity and user.

Static Dissipater Additive: An additive shall be blended into the fuels in sufficient concentration to increase the conductivity of the fuel to within the range specified in the specifications at the point of injection. The point of injection of the additive shall be determined by agreement between the purchasing authority and the supplier. The following electrical conductivity additive is approved: Statis 450 marketed by Octel America Inc., Newark, DE 19702.

Corrosion Inhibitor: A corrosion inhibitor conforming to MIL-PRF-25017 shall be blended into the F-34 (JP-8) grade fuel by the contractor. The corrosion inhibitor additive is optional for F-35. The amount added shall be equal or greater than the minimum effective concentration and shall not exceed the maximum allowable concentration listed in the latest revision of QPL-25017. The contractor or transporting agency, or both, shall maintain and upon request shall make available to the Government evidence that the corrosion inhibitors used are equal in every respect to the qualification products listed in QPL-25017. The point of injection of the corrosion inhibitor shall be determined by agreement between the Purchasing Authority and the supplier.

Fuel System Icing Inhibitor (FSII): the use of a fuel system icing inhibitor shall be mandatory for NATO F-34 (JP-8) and shall conform to MIL-DTL-85470. the point of injection of the additive shall be determined by agreement between the Purchasing Authority and the supplier.

Thermal Stability Improver Additive: Due to logistical concern, personnel at the operating location shall request written approval from the cognizant activity to add a thermal stability improver additive to the fuel. If approval is given, the concentration of the additive and location of injection shall be specified by the cognizant service activity found in MIL-DTL-8133E section 3.3.6. JP-8 fuel with an approved thermal stability improver additive at the required concentration shall be designated as JP-8+100. Thermal stability improver additive shall not be used in JP-8 without approval, in writing (reference MIL-DTL-83133E section 3.3.6 for addresses).

Qualified thermal stability improver additives:

Additive name	Qualification Reference	Manufacturer
SPEC AID 8Q462	AFRL/PRSF Ltr, 9 Dec 97	BetzDeraborn 9669 Grogan Mill Road PO Box 4300 The Woodlands, TX 77387
AeroShell Performance Additive 101	AFRL.PRSF Ltr, 13 Jan 98	Shell Aviation Shell-Mex House Strand London WC2R 0ZA

Premixing of Additives: Additives shall not be premixed with other additives before injection into the fuel so as to prevent possible reactions among the concentrated forms of different additives.

Workmanship: At the time of Government acceptance, the finished fuel shall be visually free from undissolved water, sediment, or suspended matter and shall be clear and bright.

Additional Provisions: The Carrier shall not be responsible for the concentrations of additives in JP-8 grade jet fuel deliveries except as provided for in the tariff.

SPECIFICATIONS FOR E GRADE ETHANOL

Specification Points	Test Method	Shipments	Deliveries 1/
Apparent proof, 60 F	Hydrometer	Report	
Or Density, 60F	D4052	Report	
Water, Vol %, max	E203 or E1064	1.0	
Ethanol, Volume %, min	D5501	93.5	93.0
Methanol, Volume %, max	D5501	0.5	
Sulfur, ppm (wt/wt), max	D5453	10	
Solvent Washed Gum, D381 Mg/100ml, max	Air jet method	5.0	
Potential Sulfate, mass ppm, max	D7319	4	
Chloride, mg/L, Max	D7319	5	
Copper, mg/L, Max	D1688 Procedure A, Modified per D4806	0.08	
Acidity (as Acetic Acid), Mass %, max	D1613	0.007	
pHe Minimum	D6423	6.5	
pHe Maximum		9.0	
Appearance @ 60 F	Visual examination	Visibly free of suspended or precipitated contaminants. Must be clear and bright.	
Denaturant Content and Type Volume %	2/	2	

Corrosion Inhibitor Additive,	**Minimum treat rate**	**Vendor**	**Additive**
One of the following is required:	5 lbs./1000 bbls.	Innospec	DCI-11 Plus
	20 lbs./1000 bbls.	G.E. Betz	Endcor GCC9711
	20 lbs./1000 bbls.	Petrolite	Tolad 3222

13 lbs./1000 bbls.	Petrolite	Tolad 3224
20 lbs./1000 bbls.	Betz	ACN 13
10 lbs./1000 bbls.	US Water Services	CorrPro 656X
13 lbs./1000 bbls.	US Water Services	CorrPro656/656T
5 lbs./1000 bbls.	US Water Services	CorrPro N or NT
6 lbs./1000 bbls.	Ashland	Anergy ECI-6
3 lbs./1000 bbls.	G.E. Power & Water	8Q123ULS
5 lbs./1000 bbls.	Nalco Water	EC5624A Plus
7 lbs,/1000 bbls.	Apollo Water Services	FCA-1008

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

2/ Only approved denaturants listed in 40 CFR part 1090.275. The denaturant range must be within the guidelines provided of in IRS Notice 2009.06, which is 1.96% to no more than 2.5%.

3/ All fuel will comply with 40 CFR subpart M – Renewable Fuel Standard.

SPECFICATION FOR B GRADE BIO-DIESEL FUEL

Specification Points	ASTM * Test Methods	Shipments (At Origin) Minimum	Maximum	Deliveries 1/ (At Terminals) May Be
Density, Kg/L	D4052	Report		
Distillation,	D1160			
Atmospheric equivalent temperature 90% Recovered, F or			680	
Simulated Distillation (Modified)	D2887		680	
Corrosion, Copper Strip @122 F	D130		1	
Cetane Number	D613	47		
Flash, P.M., F	D93	200		
Alcohol control (Must meet one of the following)				
Methanol content, % mass	EN14110		0.2	
Flash, P.M., F	D93	266		
Oxidation Stability	EN14112	6 hrs		3 hrs
Carbon Residue on 100% sample, %	D4530		0.050	
Cloud Point, F	D2500		36	
Viscosity, cSt @104 F	D445	1.9	6.0	
Sulfated Ash, % mass	D874		0.020	
Haze Rating @ 60 F	D4176		No. 2	
Sulfur, ppm 2/	D5453		15	
NACE Corrosion	TM0172	B+		
Free Glycerin, % mass	D6584		0.020	
Monoglyceride, % mass	D6584		0.400	
Total Glycerin, % mass	D6584		0.240	
Acid Number, mgKOH/g	D664		0.40	0.50
Phosphorus content wt %	D4951		0.001	
Water & Sediment vol %	D2709		0.050	
Calcium and Magnesium, combined, ppm	EN14538		5.0	
Sodium and Potassium, combined, ppm	EN14538		5.0	
Minimum Delivery Temperature 3/	MMP			
Workmanship 4/	MMP			
Filtration, Seconds (modified),max	D7501		125	

Biodiesel Supplier must be BQ9000 certified. No Methyl Esters derived from yellow grease.

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

2/ All results provided must use an EPA qualified instrument.

3/ Minimum delivery temperature of +50 F for acceptance for delivery.

4/ **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.

Additives:	BioExtend 30
	Eastman – Tenox 21
	Kemin BF 320
	Nalco EC5609A

* Alternative methods found in association the D6751 the ASTM specification for biodiesel are accepted.

SPECFICATION FOR H GRADE NORMAL BUTANE
Certified Grade

Specification Points	ASTM Test Methods	Shipments (At Origin) Minimum	Shipments (At Origin) Maximum	Deliveries (At Terminals) May Be
Specific Gravity	D1657	0.580	0.588	
Copper Corrosion	D1838		1	
Sulfur, ppm	D6667		10	
Vapor Pressure at 100 F, psi	D1267		50	
Dryness, Free Water by Inspection			None	
Composition, POD or	D2163			
Chromatography analysis				
Liquid volume %				
Normal Butane /1		85		(Combined)
Isobutane /1		85		(Combined)
Benzene			0.03	
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	

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

/1 Combined Normal and Iso-Butanes must be at least 85% by volume.

Gasoline, Fuel Oil and Diesel Fuel Additive Specifications

(From origin or interconnecting pipeline.)

The following additive specifications apply to all grades except aviation products, LPG's, and Natural Gasoline.

Gasoline Additives

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-phenlyenediamine
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

UOP12P	UOP12S	UOP17P
UOP3455	UOP5S	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	

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	BakerHughes T249
Innospec DCI-6A	UOP Unicor J	Unichem 7501
HiTech 580	Hitec E-534	BakerHughes T9715
Nalco EC5407A	SpecAid 8Q5127	BakerHughes T9719
SpecAid 8Q110ULS	SpecAid 8Q5156	

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	SpecAid 8Q403ULS	Nalco 5303
UOP Polyflo-122	BakerHughes T9076	Nalco 5301
UOP Polyflo-128	Unichem 7530	UOPPolyflo195
BakerHughes T 9022-M		SpecAid8Q401

Pour depressants

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 2151	SpecAid 8Q5201	Tolad 3030
Betz Q5201	Paradyne 25	Betz 8Q12
Hitec 4518	Unichem 8094	Hitec 4566
Exxon ECA 7305	SpecAid8Q14ULS	Nalco 5375
UOP Polyflo 6000	SpecAid 8Q72ULS	
Baker Hughes T3034	Baker Hughes T3034-D	

Seasonal Gasoline Volatility Classes

(Shipments from Origin)

Reid Vapor Pressure, D5191 1/

March 1 – September 15 DVPE using EPA formula 2/

September 16 – February 28 DVPE using D5191 formula

Distillation, ASTM D86 3/	Class A	Class B	Class C	Class D	Class E
10% Evaporated F, max	158.0	149.0	140.0	131.0	122.0
50% Evaporated F, min	150.0	150.0	150.0	145.0	145.0
50% Evaporated F, max	250.0	245.0	240.0	235.0	230.0
90% Evaporated F, max	374.0	374.0	365.0	365.0	365.0
Final Boiling Point F, max 4/	425.0	425.0	425.0	425.0	425.0
Residue, vol % max	2	2	2	2	2
Driveability Index, D4814 max	1250	1240	1230	1220	1200

Vapor to Liquid Ratio=20:1 F 3/5/	Class 1	Class 2	Class 3	Class 4	Class 5
D5188, min	129	122	116	107	102

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 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.

SEASONAL GASOLINE VOLATILITY
SHIPMENTS FROM ORIGIN

A Grade Premium Gasoline
North Line System

		Jan. 1-31	Feb. 1-28	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
Minnesota	DVPE	13.5	10.0	8.5	8.5	8.5	9.0	9.0	9.0	9.0	9.0	11.5	13.5	15.0	15.0
	Class	D-5	B-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
North Dakota	DVPE	13.5	10.0	8.5	8.5	8.5	9.0	9.0	9.0	9.0	9.0	11.5	13.5	15.0	15.0
	Class	D-5	B-5	A-4	A-4	A-4	A-4	A-3	A-2	A-2	A-3	C-3	D-4	E-5	E-5

SEASONAL GASOLINE VOLATILITY SHIPMENTS FROM ORIGIN

V-GRADE
North Line System

		Jan. 1-31	Feb. 1-28	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
Minnesota	DVPE	15.0	13.5	8.5	8.5	8.5	9.0	9.0	9.0	9.0	9.0	11.5	13.5	15.0	15.0
	Class	E-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
North Dakota	DVPE	15.0	13.5	8.5	8.5	8.5	9.0	9.0	9.0	9.0	9.0	11.5	13.5	15.0	15.0
	Class	E-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

Date	Summary of Changes
May 5, 2024	Initial filing after merger of Sunoco L.P. and NuStar Energy L.P.
September 26, 2025	Updated volatility schedules in line with changes made to ASTM D4814-24, "Standard Specification for Automotive Spark-Ignition Engine Fuel" (Regulatory - This was driven by new climate data.) Added "Seasonal Gasoline Volatility Classes" section to address the new lower T50 temperature for the 13.5 and 15.0 RVP Classes.