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

Product Specifications

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

MidCon Pipeline System

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SPECIFICATIONS FOR A GRADE GASOLINE

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

Specification Points	ASTM Test Method	Origin Shipments Minimum	Deliveries 1/ Maximum	Deliveries 1/ (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		
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 V GRADE SUB-OCTANE CBOB GASOLINE

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

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/				
Distillation 9/	D86			
RVP 6/ 8/	D5191			
Mercaptan Sulfur, wt % 3/	D3227		0.003	
Hydrogen Sulfide	D3227		None	
Copper Corrosion	D130		1	
Silver Corrosion	D4814		1	
Gum, Existent, mg/100ml	D381		4	5
Oxidation Stability, min.	D525	240		180
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, wt% 9/	D3606		4.9	
Oxygenates, wt % 7/	D4815, D5599		0.05	

Haze rating 4/	D4176		2	3
NACE Corrosion	TM0172	B+		
	D7548			
Odor 5/		Nonoffensive		

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

2/ Refer to NuStar'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/ 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 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 D GRADE ULTRA LOW PREMIUM DIESEL FUEL

	ASTM	Shipments		Deliveries
	Test	(At Origin)	(At Terminals)	
Specification Points	Methods	Minimum	Maximum	May Be
Gravity, Degrees A.P.I.	D287	33.5	39.0	
Color	D1500		2.0	2.5
Distillation,	D86			
IBP		340		
50% Recovered, F		460		
90% Recovered, F		540	640	
Corrosion, Copper Strip @122 F	D130		1	
Cetane				
(1) Cetane Number	D613	47.5		
OR (2) Cetane Index, A or B	D4737	47.5		
Cetane Index 1/	D976	40		
Flash, P.M., F	D93	145		140
Stability				
(1) Thermal, % reflectance	D6468 (W)	75		
	D6468(Y)	82		
OR (2)Potential Gum, mg/100ml	2/		15	
Carbon Residue on 10% Bottoms, %	D524		0.20	
Cloud Point, F	D2500		3/	
Pour Point, F	D97		3/	
Viscosity, cSt @104 F	D445	1.9	4.1	
Ash, wt %	D482		0.01	

Haze Rating 4/	D4176		2	3
Sulfur, ppm 5/	D2622		10*	15
NACE Corrosion	TM0172	B+		

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

2/ The Potential Gum will be determined by ASTM method D381 modified (Steam Jet Evaporation at 485 F) after a 16 hour induction period by ASTM D525 modified.

3/

Month	Pour Pt. F of Max.	Cloud Pt. of Max.
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/ 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/ 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.

Dyes: D-Grade diesel fuel shipments shall not be dyed.

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

SPECFICATION FOR X GRADE ULTRA LOW SULFUR FUEL OIL DISTILLATE

Grade 37

Specification Points	ASTM Test Methods	Shipments (At Origin) Minimum	Shipments (At Origin) Maximum	Deliveries (At Terminals) May Be	Note
Gravity, Degrees A.P.I.	D287		Report		
Color	D1500		2.5	3.0	
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			
(2) Cetane Index, prcdure	BD4737	40.0			
Cetane Index	D976	40			1/
Flash, F	D93	140		130	
Stability					
(1) Thermal, % reflectance	D6468 (W)	75			
	D6468 (Y)	82			
OR (2) Potential Color			6		2/

Potential Gum, mg/100ml 3/			50	
OR (3) Oxidation, mg/100ml	D2274		2.5	
Carbon Residue on 10% Bottoms (Ramsbottom) - Percent	D524		0.35	
Cloud Point, F 4/	D2500			
Pour Point, F 4/	D97			
Viscosity, cSt @104 F	D445	1.9	4.1	
Haze Rating 5/	D4176		2	3
Ash, wt %	D482		0.01	
Sulfur, ppm 6/	D2622		*10	15
NACE Corrosion	TM0172	B+		
Conductivity, pS/m@70 F 7/	D2624		250	

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

2/ The Potential Color will be determined by ASTM Method D1500 on a filtered sample after a 16-hour induction period by ASTM Method D525 Modified.

3/ The Potential Gum will be determined by ASTM Method D381 Modified (Steam Jet Evaporated @ 485 F) after a 16-hour induction period by ASTM Method D525 Modified.

4/ Mid Con pipeline system:

Month	Pour Pt. F, Max.	Cloud Pt. F, Max.
January	0	+14
February	0	+14
March	0	+14
April	+10	+20
May	+10	+20
June	+10	+20
July	+10	+20
August	+10	+20
September	0	+14
October	0	+14
November	0	+14
December	0	+14

All other regions:

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.

5/ 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.

6/ 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.

7/ Fuels with inherent conductivities above 250 pS/m will be accepted for shipment, provided shipper provides documentation that no additives were used.

Dyes: X-Grade ultra-low sulfur fuel oil distillate shipments shall not be dyed

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

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 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.

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 B GRADE BIO-DIESEL FUEL

Specification Points	ASTM * Test Methods	Shipments (At Origin) Minimum	Shipments (At Origin) Maximum	Deliveries 1/ (At Terminals) May Be
Density, Kg/L	D4052	Report		
Distillation,	D1160			
Atmospheric equivalent temperature			680	
90% Recovered, F or				
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: Bio Extend 30

Eastman – Tenox 21

Kemin BF 320

Nalco EC5609A

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

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, Mg/100ml, max	D381 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	D6423	
Minimum		6.5
Maximum		9.0
Appearance @ 60 F	Visual examination	Visibly free of suspended or precipitated contaminants. Must be clear and bright.
Denaturant Content and Type 2/ Volume %		2

Corrosion Inhibitor Additive, Additive	**Minimum treat rate**	**Vendor**	
One of the following is required:			
	5 lbs./1000 bbls.	Innospec	DCI-11 Plus
	20 lbs./1000 bbls.	G.E. Betz	
EndcorGCC9711			
	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 Service	
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 HD5 GRADE PROPANE

Specification Points	ASTM Test Methods	Shipments (At Origin) Minimum	Shipments (At Origin) Maximum	Deliveries (From Terminals) 1/
Composition				
Chromatograph analysis	D2163			
Percent by liquid volume:				
Propane		90		
Propylene			5.0	
Butanes and heavier			2.5	
Pentanes and heavier		None		
Specific gravity, at 60/60 F	D1657,D2598	Report		
Vapor pressure, psig at 100 F	D1267,D2598		208	
Weathering, 95% evaporated	D1837		-37	
Nonvolatile residue at 100 F, ml	D2158		0.05	
Oil, no oil stain observation, ml	D2158		Pass	2/
Sulfur, ppmW	D2784,D6667		120	3/
Corrosion, copper strip at 100 F	D1838		No. 1	
Dryness				
Valve freeze, seconds	D2713 or		Pass	(60)
	Cobalt Bromide Test		Pass	4/
Hydrogen Sulfide	D2420		Pass	5/
Odorant				6/

1/ Same as shipment specifications except for normal testing and handling tolerances.

2/ The requirement is for no persistent oil ring when 0.3 ml of solvent residue mixture is added to a filter paper in prescribed manner.

3/ Sulfur content includes any sulfur compounds used for odorizing purposes.

4/ The Cobalt Bromide Test is an alternative to D2713 (the Freeze Valve Test) which is approved by the Gas Processors Association and described in their Publication No. 2140. This method is not listed as approved in ASTM D1835.

5/ An acceptable product does not show a distinct coloration.

6/ Products for pipeline shipment or tank car, truck or barge shipments to storage or for further processing are exempted from this requirement and will not contain odorant.

Method of Inspection: Inspection shall be in accordance with MSTI, "Instructions Governing the Measurement, Sampling and Testing of Products for Acceptance and Delivery," currently in effect on inspection date.

SPECFICATION FOR 55 NG GRADE NATURAL GASOLINE

Certified Ethanol Denaturant suitable for use in the manufacture of denatured fuel ethanol meeting EPA standards

Compliance: This material must comply with the allowable denaturants outlined in the latest edition of ASTM D4806.

	ASTM	Shipments		Deliveries
	Test	(At Origin)	(At Terminals)	
Specification Points	Methods	Minimum	Maximum	May Be
Specific Gravity	D1657	0.654	0.685	
Gravity, API	D287	75.0	85.0	
Color, Saybolt	D156	+20		
Copper Corrosion	D130		1	
Sulfur, ppm	D2622, D5453, D7039		120	
Doctor	D484	Negative		
Reid Vapor Pressure, psi	D5191, D6378	12.0	14.0	
Distillation,	D86			
% Evaporated at 140 F		25	85	
90% Recovery, Vol. %			365 F	
Final Boiling Point			437 F	
Dryness, Free Water by Inspection			None	
Benzene, Vol.%	D3606, D5580,D6277		1.10	
Aromatics, %	D5580,D6277		35.0	
Olefins, %	D5580,D1319		10.0	

Appearance: The finished product shall be visually free of undissolved water, sediment, suspended matter and “bubbles” or volatile “boiling” activity in proffered tankage, at the point of delivery and as checked in an open container or hydrometer at sample point.

Additives: 55 NG Grade shipments may not contain additives.

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 Chromatography analysis	D2163			
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.

Rev. 2 11/19/2021

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	

SPECFICATION FOR DHF GRADE DIESEL HYDROTREATER FEEDSTOCK

	ASTM	Shipments		Deliveries
	Test	(At Origin)	(At Terminals)	
Specification Points	Methods	Minimum	Maximum	May Be
Gravity, Degrees A.P.I.	D287	34.0	36.0	
Corrosion, Copper Strip @122 F	D130		1	
Cloud Point, F	D2500		+25 F	
Pour Point, F	D97		+20 F	
Viscosity, cSt @104 F	D445		4.5	
Haze Rating 1/	D4176		2	3
Sulfur, ppm	D2622		2800	
NACE Corrosion	TM0172	B+		

1/ 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.

2/ All DHF pipeline movements require a minimum 1,000-barrel buffer of X-grade (ULSD) product that is subject to regrade.

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

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.

Revision date: March 3, 2025

SEASONAL GASOLINE VOLATILITY
SHIPMENTS FROM ORIGIN

V-GRADE

	Jan. 1-15	Jan. 16-31	Feb. 1-15	Feb. 16-28	Mar. 1-31	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
KANSAS	15.0	13.5	13.5	11.5	8.5	8.5	9.0	9.0	9.0	9.0	9.0	10.0	11.5	13.5	15.0
	E-5	D-5	D-4	C-4	A-3	A-2	A-2	A-2	A-2	A-2	A-2	B-2	C-3	D-4	E-5
NEBRASKA	15.0	13.5	13.5	11.5	8.5	8.5	9.0	9.0	9.0	9.0	9.0	10.0	11.5	13.5	15.0
	E-5	D-5	D-4	C-4	A-4	A-3	A-3	A-2	A-2	A-2	A-2	B-2	C-3	D-4	E-5
OKLAHOMA	15.0	13.5	13.5	11.5	8.5	8.5	9.0	9.0	9.0	9.0	9.0	10.0	11.5	13.5	15.0
	E-5	D-4	D-4	C-4	A-4	A-3	A-2	A-2	A-2	A-2	A-2	B-2	C-3	D-4	E-5
N. DAKOTA	15.0	13.5	13.5	11.5	8.5	8.5	9.0	9.0	9.0	9.0	9.0	11.5	13.5	15.0	15.0
	E-5	D-5	D-5	C-5	A-4	A-4	A-4	A-3	A-2	A-2	A-3	C-3	D-4	E-5	E-5

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SEASONAL GASOLINE VOLATILITY
SHIPMENTS FROM ORIGIN

A-GRADE

	Jan. 1-15	Jan. 16-31	Feb. 1-15	Feb. 16-28	Mar. 1-31	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
KANSAS	13.50	11.50	10.00	10.00	8.50	8.50	9.00	9.00	9.00	9.00	9.00	10.00	11.50	13.50	15.00
	D-5	C-5	B-5	B-5	A-4	A-3	A-3	A-2	A-2	A-2	A-2	B-2	C-3	D-4	E-5
NEBRASKA	13.50	11.50	10.00	10.00	8.50	8.50	9.00	9.00	9.00	9.00	9.00	10.00	11.50	13.50	15.00
	D-5	C-5	B-5	B-5	A-5	A-4	A-3	A-2	A-2	A-2	A-2	B-2	C-3	D-4	E-5
OKLAHOMA	13.50	11.50	10.00	10.00	8.50	8.50	9.00	9.00	9.00	9.00	9.00	10.00	11.50	13.50	15.00
	D-5	C-5	B-4	B-4	A-4	A-3	A-3	A-2	A-2	A-2	A-2	B-2	C-3	D-4	E-5
N. DAKOTA	13.50	11.50	10.00	10.00	8.50	8.50	9.00	9.00	9.00	9.00	9.00	11.50	13.50	15.00	15.00
	D-5	C-5	B-5	B-5	A-5	A-4	A-4	A-3	A-3	A-3	A-3	C-3	D-4	E-5	E-5

	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.