Bengal Pipeline Company

Section 3
Product Codes and Specifications

Effective Date December 01, 2023

Bengal Pipeline Company

SUMMARY

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	This section contains specifications for products that are handled on a segregated and fungible (common-stream) basis. A "fungible batch" is defined as a batch of petroleum product meeting carrier's established specification that may be commingled with other quantities of petroleum product meeting the same specifications. A "segregated batch" is defined as a batch of petroleum product being the property of a single shipper and meeting carrier's established specifications.	
	Not all products are delivered to all locations. Please see each product specification for delivery restrictions. Additionally, some grades may only be transported seasonally. Seasonal restrictions are set forth in the RVP calendar, which is in Bengal website - Product Specification/Quality Assurance. Delivery of batches may be limited by facilities.	
	For gasoline product codes the order of the letter and number designates whether the product is fungible or segregated. Gasoline product codes that begin with a letter are fungible and starting with a number are segregated.	
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2.1 PRODUCT DESIGNATION AND PTD LANGUAGE - GASOLINE

PRODUCT GRADES	PRODUCT DESCRIPTION	PRODUCT DESIGNATION AND PTD LANGUAGE
Summer Grades		
A2/2A & D2/2D	Summer 9.0 psi CBOB	Summer 9.0 psi CBOB. This product does not meet the requirements for summer reformulated gasoline. This gasoline requires 10 vol% ethanol. Non detergent additized gasoline. 10.0 psi after blending with 10% denatured fuel ethanol.
F1/1F & H1/1H	Summer RBOB	Summer RBOB. This product meets the requirements for summer reformulated or conventional gasoline. This gasoline requires 10 vol% ethanol. Non detergent additized gasoline. 7.4 psi RVP with 10% denatured fuel ethanol.
M2/2M & V2/2V	Summer Conventional Gasoline	Summer 9.0 psi CG. This product does not meet the requirements for summer reformulated gasoline. Non detergent additized gasoline." E0: Contains no ethanol.
Winter Grades		
A3/3A; A4/4A; A5/5A & D3/3D; D4/4D; D5/5D	Winter CBOB	Winter CBOB: This gasoline requires 10 vol% ethanol. Non detergent additized gasoline.
F3/3F; F4/4F; F5/5F & H3/3H; H4/4H; H5/5H	Winter RBOB	Winter RBOB: This gasoline requires 10 vol% ethanol. Non detergent additized gasoline.
M3/3M; M4/4M; M5/5M & V3/3V; V4/4V; V5/5V	Winter Conventional Gasoline	Winter CG: E0: Contains no ethanol. Non detergent additized gasoline.
Blendstock Grades		
1L; 2L; 3L; 4L	Gasoline blendstocks	Gasoline Blendstock. The Part 79, 80 & 1090 responsibilities (including any RVO) for any gasoline or BOB produced from this blendstock are the responsibility of the party producing the fuel.

2.2 PRODUCT DESIGNATION AND PRODUCT PTD LANGUAGE - KEROSENE

PRODUCT GRADES	PRODUCT DESCRIPTION	PRODUCT DESIGNATION AND PRODUCT PTD LANGUAGE
51	Undyed 15 ppm sulfur ULSK	Kerosene 15 ppm sulfur maximum. Not for use in highway vehicles or engines or nonroad, locomotive or marine engines.
52	Jet Fuel (Military JP-5)	Jet Fuel. National Security Exempt Fuel. This fuel is for use in vehicles, engines, or equipment under an EPA-approved national security exemption only.
53	Certified NTDF - ULSK	Jet Fuel. National Security Exempt Fuel. This fuel is for use in vehicles, engines, or equipment under an EPA-approved national security exemption only.
54	Jet Fuel	Jet Fuel. 3000 ppm sulfur maximum. Not for use in highway vehicles or engines or nonroad, locomotive or marine engines.
55	Jet Fuel	Jet Fuel. 400 ppm sulfur maximum. Not for use in highway vehicles or engines or nonroad, locomotive or marine engines.
56	Jet Fuel (Bonded Jet-A)	Jet Fuel. 3000 ppm sulfur maximum. Not for use in highway vehicles or engines or nonroad, locomotive or marine engines.
57	Kerosene	Kerosene. 500 ppm sulfur maximum. Not for use in highway vehicles or engines or nonroad, locomotive or marine engines.
58	Jet Fuel (Military JP-8)	Jet Fuel. National Security Exempt Fuel. This fuel is for use in vehicles, engines, or equipment under an EPA-approved national security exemption only.
59	Undyed Distillate (Kerosene) Blendstock	Distillate Blendstock. 3000 ppm Sulfur maximum. # 1 distillate. This product requires further processing and is not a finished diesel product. The Part 79, 80 & 1090 responsibilities (including any RVO) for any diesel fuel produced from this blendstock are the responsibility of the party producing the MVNRLM or ECA diesel fuel. Contains no known renewable content.

2.3.1 PRODUCT DESIGNATION AND PRODUCT TRANSFER PTD LANGUAGE- DIESEL

PRODUCT GRADES	PRODUCT DESCRIPTION	PRODUCT DESIGNATION AND PRODUCT PTD LANGUAGE
47	**SAF**	Synthetic paraffinic kerosine not for shipment. Grade is for blending only. This volume of neat renewable fuel is designated and intended to be blended into jet fuel in the 48 U.S. contiguous states and Hawaii. Any person exporting this fuel is subject to the requirements of 40 CFR 80.1430. This fuel is for aviation use only.
63	**Undyed 15 ppm sulfur diesel fuel**	Undyed #2 MVNRLM Diesel Fuel. 15 ppm sulfur (maximum) Diesel Fuel . This volume of neat or blended renewable diesel is designated and intended for use as transportation fuel, heating oil or jet fuel in the 48 U.S. contiguous states and Hawaii. Any person exporting this fuel is subject to the requirements of 40 CFR 80.1430. Contains up to 5% Renewable Diesel.
62	**Undyed 15 ppm sulfur diesel fuel**	Undyed #2 MVNRLM Diesel Fuel. 15 ppm sulfur (maximum) Diesel Fuel.
65/69	**15 ppm sulfur distillate blendstock**	Distillate blendstock. 15 ppm Sulfur maximum. #2 distillate. This product requires further processing and is not a finished diesel product. The Part 79, 80 & 1090 responsibilities (including any RVO) for any diesel fuel produced from this blendstock are the responsibility of the party producing the MVNRLM or ECA diesel fuel. Contains no known renewable content.
67	**Certified NTDF - Heating Oil**	15 ppm sulfur (maximum) certified NTDF - Heating Oil - This fuel is designated for non-transportation use.
77	**Heating Oil**	Heating Oil. 2000 ppm sulfur maximum.
71	**Distillate for Export**	Distillate blendstock. 2000 ppm sulfur maximum. This distillate is for export from the United States only.

2.3.2 PRODUCT DESIGNATION AND PRODUCT TRANSFER PTD LANGUAGE- DIESEL

PRODUCT GRADES	PRODUCT DESCRIPTION:	PRODUCT DESIGNATION AND PRODUCT PTD LANGUAGE
72	**500 ppm sulfur distillate blendstock**	Distillate blendstock. 500 ppm Sulfur maximum. #2 distillate. This product requires further processing and is not a finished diesel product. The Part 79, 80 & 1090 responsibilities (including any RVO) for any diesel fuel produced from this blendstock are the responsibility of the party producing the MVNRLM or ECA diesel fuel. Contains no known renewable content.
73	**500 ppm LM Diesel Fuel**	500 ppm sulfur (maximum) LM Diesel Fuel. For use only in accordance with a compliance plan under 40 CFR 1090.515(g). Not for use in highway vehicles or other nonroad vehicles and engines.
75	**Heating Oil**	Heating Oil. 500 ppm sulfur maximum. Not for use in highway vehicles or engines or nonroad, locomotive, or marine engines.
78	**Military Diesel Fuel Marine**	National Security Exempt Fuel. This fuel is for use in vehicles, engines, or equipment under an EPA-approved national security exemption only.
79	**10,000 ppm sulfur distillate blendstock**	Distillate blendstock. 10,000 ppm Sulfur maximum. #2 distillate. This product requires further processing and is not a finished diesel product. The Part 79, 80 & 1090 responsibilities (including any RVO) for any diesel fuel produced from this blendstock are the responsibility of the party producing the MVNRLM or ECA diesel fuel. Contains no known renewable content.
81	**#1ULSD**	Undyed #1 MVNRLM 15 ppm (maximum) sulfur diesel fuel.

3.1.1 PRODUCT CODES - GASOLINE				
Section	**Fungible Product Code**	**Segregated Product Code**	**Description**	**Page**
3.3			**CBOB - 87 octane after blending with 10% DFE**	12
		1A	Summer 8.8 psi RVP	
	A2	2A	Summer 10.0 psi RVP	
	A3	3A	Winter 12.5 psi RVP	
	A4	4A	Winter 14.5 psi RVP	
	A5	5A	Winter 15.5 psi RVP	
3.4			**CBOB - 93 octane after blending with 10% DFE**	14
	D2	2D	Summer 10.0 psi RVP	
	D3	3D	Winter 12.5 psi RVP	
	D4	4D	Winter 14.5 psi RVP	
	D5	5D	Winter 15.5 psi RVP	
3.5			**RBOB - 87 octane after blending with 10% DFE**	16
	F1	1F	Summer 7.4 psi RVP	
	F3	3F	Winter11.5 psi RVP	
	F4	4F	Winter13.5 psi RVP	
	F5	5F	Winter 15.0 psi RVP	
3.6			**RBOB - 93 octane after blending with 10% DFE**	18
	H1	1H	Summer 7.4 psi RVP	
	H3	3H	Winter11.5 psi RVP	
	H4	4H	Winter13.5 psi RVP	
	H5	5H	Winter 15.0 psi RVP	
	Notes:			
1. Delivery of certain products may be limited by facilites and some grades may only be transported seasonally.				
2. See product specifications for detailed transfer document information.				

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3.1.2 PRODUCT CODES - GASOLINE				
Section	Fungible Product Code	Segregated Product Code	Description	Page
3.7			**Gasoline Blendstocks - Segregated Only**	20
		1L	Low Octane (Octane R+M/2 <83)	
		2L	Regular (83< Octane R+M/2 <87)	
		3L	Mid-grade (87< Octane R+M/2 <93)	
		4L	Premium (Octane R+M/2 >93)	
3.8			**Conventional Gasoline - 87 Octane**	22
	M2	2M	Summer 9.0 psi RVP	
	M3	3M	Winter 11.5 psi RVP	
	M4	4M	Winter 13.5 psi RVP	
	M5	5M	Winter 15.0 psi RVP	
3.9			**Conventional Gasoline - 93 Octane**	24
	V2	2V	Summer 9.0 psi RVP	
	V3	3V	Winter 11.5 psi RVP	
	V4	4V	Winter 13.5 psi RVP	
	V5	5V	Winter 15.0 psi RVP	
NOTES:				
1. Delivery of certain products may be limited by facilities and some grades may only be transported seasonally.				
2. See product specifications for detailed transfer document information.				

3.1.3 PRODUCT CODES - DISTILLATE				
Section	**Fungible Product Code**	**Segregated Product Code**	**Description**	**Page**
3.10	47		**Sustainable Aviation Fuel (SAF)**	26
			SAF100 Sustainable Aviation Fuel	
			Ultra Low Sulfur Kerosene	
3.11	51		Undyed 15 ppm Sulfur Kerosene	27
3.13		53	Undyed 15 ppm Sulfur Kerosene (Certified NTDF)	30
			Kerosene	
3.12	52		Military Jet JP-5	29
3.14	54		Aviation Kerosene	32
3.15	55		Aviation Kerosene/K-1	34
3.16	56		Bonded Aviation Kerosene	36
3.17		57	Kerosene	37
3.18	58		Military Jet JP-8	38
3.19		59	Distillate Blendstock	39
			15 ppm Sulfur Diesel Fuel	
3.20	62		15 ppm Sulfur Diesel Fuel	40
3.21	63		15 ppm Sulfur Diesel Fuel	42
3.22		65	15 ppm Sulfur Diesel Fuel	44
3.23	67		15 ppm Heating Oil - (Certified NTDF)	45
3.24		69	15 ppm Sulfur Diesel Blendstock	47
			Fuel Oils, Diesel Fuels, Military DFM – Not Dyed by Colonial	
3.25		71	Undyed, Distillate Fuel for Export Only - 2000 ppm sulfur	48
3.26		72	Distillate Blendstock 500 ppm sulfur	49
3.27		73	Undyed 500 ppm Sulfur LM Diesel Fuel	50
3.28	75		Undyed, 420 ppm Sulfur Heating Oil	51
3.29	77		Undyed Heating Oil - 2000 ppm Sulfur	53
3.30	78		Undyed Military Diesel Fuel Marine	55
3.31		79	Distillate Blendstock	56
			ULSD # 1	
3.32	81		15 ppm sulfur #1 Diesel Fuel	57
			Transmix - Fungible Only	
[W]3.3~~2~~3	90		Distillate - Conventional Gasoline	59
	91		Distillate - RFG	
	92		Distillate - RFG	
	93		Distillate - RBOB	
	94		Distillate - RBOB	
	96		Distillate - Distillate	
			High Sulfur Kerosene - Ultra Low Sulfur Diesel	
Notes:				
1. All products are not delivered to all locations, see product specifications for applicable limitations.				
2. See product specifications for detailed transfer document information.				

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

3.2.1 Gum Inhibitors and Metal Deactivators

Gasoline shipments may, but are not required to, contain the following:

N, N'di-secondary butyl para-phenylenediamine
N, N'di (I-ethyl-2-methylpentyl) para-phenylenediamine
N, N'di-isopropyl-para-phenylenediamine
N, N'bis-(I, 4-diamethylpentyl)-p-phenylenediamine
Ortho-tertiary butylphenol
2,4-di-tertiary butylphenol
N,secondary butyl, N' phenyl-para-phenylenediamine
Butylated ethyl,methyl and dimethyl phenols
N, N'disalicylidene-l, 2 propanediamine
2, 6-di-tertiary butyl 4 methyl phenol
n-Butyl para-aminophenol
2,4,6 - tritertiary butylphenol
2,4-diamethyl-6-tertiary-butylphenol
2,6-tertiary butylphenol
Mixed propylated and butylated phenols
2,4,6 tri-isopropylphenol

3.2.2 Corrosion Inhibitors

All products shipped on Bengal Pipeline, with the exception of all grades of Aviation Kerosine, are required to meet a minimum level of corrosion protection prior to shipment. The concentration of inhibitor dosage will be controlled to meet a minimum rating of B+ (less than 5% of test surface rusted) as determined by NACE Standard TM0172-2001, Test Method-Antirust Properties of Petroleum Products Pipeline Cargoes.

Diesel and gasolines shipped on Bengal Pipeline may contain only the following corrosion inhibitors:

Aqua Process	11CH77
Afton Chem.	HiTEC 6455,4875
Corexit	5267
Innospec	DCI-4A, DCI-6A, DCI-11, DCI-30.N
Ethyl HiTec	580
Lubrizol	8014, 8017,541
MidContinental	MCC5001
Mobil	C-605

Nalco	5403, 5405, 5406, EC5624A, EC5626A
SPEC-AID	8Q22, 8Q110ULS, 8Q112ULS, 8Q123ULS
Tolad	245, 249, 351, 3232, 3232D, 4410
Unichem	7500, 7501, 7510
UOP	Unicor, Unicor J, Unicor PL
HAL/MC	RPS-661, RPS-622, RPS 807, RPS-924, RPS-925, RPS-926C

In addition to the above additives, the following may be used in diesel fuels and fuel oil transported by Bengal: Dupont AFA-1, Innospec DMA-4, Nalco 5400-A.

3.2.3 Static Dissipator Additives (Conductivity Improvers)

Product shipments may, but are not required to, contain static dissipator additive(SDA). The only approved SDAs for use on Colonial Pipeline is Innospec Stadis® 450 and AvGuard. SDA is prohibited from all aviation kerosine grades (grades 51, 53, 54, 55, 56, 57, and 59). The origin maximum concentration of Stadis® 450 and Avguard is 0.75 mg/l, and the origin maximum conductivity allowed is 250 pS/m at 21°C(70°F) by ASTM D2624.

3.2.4 Aviation Kerosene Additives

Product may only contain antioxidants and metal deactivators specified and within the concentration noted in Table 2: Detailed Requirements for Additives in Aviation Turbine Fuels of latest ASTM D-1655 with advance approval from Bengal prior to shipment. Use of these additives is expected to be short term at reasonable treat levels. All other additives are prohibited. Use of these additives must be clearly indicated on Certificate of Analysis. Bengal reserves the right to deny shipment of product containing

3.2.5 Cloud and Pour Point Depressant Additives

Product may only contain ethylene vinyl acetate copolymer based cloud and pour point depressant additives only upon advance approval from Bengal prior to shipment. Use of these additives is expected to be short term at reasonable treat levels. Bengal reserves the right to deny shipment of product containing cloud and pour point depressant additives.

3.2.6 Cetane Improver Additives

Product may only contain 2-ethyl hexyl nitrate or T-butyl peroxide based cetane improver additives only upon advance approval from Colonial prior to shipment. Use of these additives is expected to be short term at reasonable treat levels. Bengal reserves the right to deny shipment of product containing cetane improver additives.

3.2.7 Renewable Diesel

Renewable diesel is a liquid fuel derived from 100% hydrotreated bio-mass feedstocks that meets the registration requirements for fuels and fuel additives established by the EPA under section 211 of the Clean Air Act and the requirements of ASTM D975. Renewable diesel containing fatty acid esters (FAME, FAEE, or other esters) is prohibited for all distillate grades which allow up to 5% renewable (63,83). Product with >5% renewable diesel may be shipped as 65 or 69 grade.

Bengal assumes no responsibility as a blender and all RIN'S (Renewable Identification Number) must be separated before entering Colonial's system. The volume of Renewable Diesel must be disclosed on the COA (Certificate of Analysis).

3.2.8 Prohibited Additives

As stated in Section 3.2 above, Bengal only permits certain types and concentrations of additives and all other types and concentrations of additives are prohibited. Prohibited additives include, but are not limited to, the following:
Lubricity additives
Intake Valve Detergent Additives
Port Fuel Injector(PFI) additives
Additives containing Phosphorus
Marker Solvent Yellow 124

3.2.8.1 Hydrogen Sulfide

Bengal does not accept for shipment product containing H_2S in the liquid or vapor phase. No H_2S is defined as <1 ppm H_2S in the liquid per ASTM D7621 or UOP 163 and <10 ppm H_2S in the vapor space per ASTM D5705. The use of H_2S scavengers must be approved by Colonial's QA group prior to use. Any products treated with H_2S scavenger must be resampled and tested post treatment and a certificate of analysis showing the H_2S has been successfully mitigated must be submitted and reviewed by the Colonial Pipeline QA coordinator prior to the product being lifted into the Bengal Pipeline system.

3.2.9 Additive Documentation Requirements

If present, the type and concentration of approved additives must be clearly indicated on Certificate of Analysis. Additive treat rates are acceptable for concentration reporting. Carrier may request review of volume reconciliation data to verify actual treat rates.

3.2.10 Sustainable Aviation Fuel (SAF)

SAF is defined as the portion of synthetic paraffinic kerosine (SPK) volume in a blend of fuel meeting ASTM D7566 Standard Specification for Aviation Turbine Fuels Containing Synthesized Hydrocarbons. ASTM D7566 provides the requirements for blends of crude based kerosine and SPK to be classified as fuel meeting the D1655 Standard Specification for Aviation Turbine Fuels. The specific SPK as Detailed in D7566 annexes - (A1) FISCHER TROPSCH SPK or (A2) HEFA SPK are the only allowable SPK that may be shipped on Bengal Pipeline. Grade 47 Specification for Sustainable Aviation Fuel is being created for purposes of tracking the SPK volume of the blended fuel for blending services provided by Bengal and is not for shipment.

3.3.1

A GRADE

SPECIFICATION FOR CONVENTIONAL REGULAR BLENDSTOCK (CBOB) 87 OCTANE AFTER BLENDING WITH 10% DFE

Cancels Previous Issues of A grades

This CBOB may not be combined with any other CBOB except CBOB having the same requirement for oxygenate type and amount.

All parameters must be met after blending with denatured fuel ethanol unless noted.

ALL A GRADE REQUIREMENTS (SEGREGATED AND FUNGIBLE)

Product Property		ASTM Test Method	Test Results			Note
			Minimum	Maximum		
Octane	RON	D2699	Report			
	MON	D2700	82.0			
	(R+M)/2		87.0			
Oxygen Content, weight %		D5599		0.1		1,2 6
RVP (psi)		D5191				3, 10
Grades				**With Ethanol**	**Without Ethanol**	
A2,2A				10.0	9.0	
A3,3A				12.5	X	
A4,4A				14.5	X	
A5,5A				15.5	X	

Gasoline designed for gasoline-ethanol blends in accordance with 40 CFR 1090 Subpart N.
Suitable for the special RVP provisions for ethanol blends that contain 9 and 10 vol % ethanol.
The use of this gasoline to manufacture a gasoline-ethanol blend containing anything other than between 9 and 10 volume percent ethanol may cause a summertime RVP violation.

NOTES (Apply to Fungible and Segregated)

Heavy Metals are not allowed to be present.
Additive requirements/restrictions - refer to section 3.2.
This is a base gasoline, not for sale to the ultimate consumer.
Any gasoline exhibiting an offensive odor and/or poses a personal health hazard will not be accepted for shipment.
Any gasoline containing more than 0.50 wt. % of dicyclopentadiene will not be accepted for shipment.
The referee method will be based on a gas chromatograph test.
Delivery test results may vary by the smaller of ASTM reproducibility for a given test or any test tolerance as allowed by state or EPA regulations at the point of delivery.

3.3.2

A GRADE

SPECIFICATION FOR CONVENTIONAL REGULAR BLENDSTOCK (CBOB) 87 OCTANE AFTER BLENDING WITH 10% DFE

Cancels Previous Issues of A grades

FUNGIBLE ONLY REQUIREMENTS:

	ASTM Test	Test Results		Notes
Product Property	**Method**	**Minimum**	**Maximum**	
Benzene (vol%)	D5769		3.8	3
Color			Undyed	
Corrosion (Cu) 3 hrs @122°F (50°C)	D130		1	
Corrosion (Ag) 3 hrs @122°F (50°C)	D7671		1	
Doctor test	D4952	Negative (sweet)		4
Mercaptan sulfur, wt.%	D3227		0.002	
Solvent Washed Gum mg/100 ml	D381		4	
Gravity °API at 60°F	D4052	Report		6
Oxidation stability-minutes	D525	240		6
Phosphorous, gms/gal	D3231		0.004	
Sulfur (ppmwt)	D2622		80	7, 6
Nace Corrosion	TM0172	B+ (Origin)		6
Volatility:				
Driveability Index	D4814		See Chart	
Distillation, [W]°C °F @ %Evap.	D86		See Chart	
Vapor/Liquid Ratio (V/L), °F @ 20	D5188		See Chart	5

Chart

Grades	Driveability	10 vol%	50 vol%		90 vol%	End Pt.	V/L
	Index	**Max**	**Min**	**Max**	**Max**	**Max**	**Min**
A2	1250.0	158.0	150.0	250.0	374.0	430.0	122.0
A3	1230.0	140.0	150.0	240.0	365.0	430.0	116.0
A4	1220.0	131.0	150.0	235.0	365.0	430.0	107.0
A5	1200.0	122.0	150.0	230.0	365.0	430.0	102.0

Notes

1. All A grades may not contain oxygenates, such as ethers and alcohols. The use of non-hydrocarbon blending components in these grades is prohibited.
2. Refer to test methods published in 40 CFR 1090 Subpart N. Alternative oxygenates test method ASTM D 4815, may be used according to federal and state regulations.
3. For products blended to meet EPA tests must be performed in accordance with the procedures described in 40 CFR, 1090 Subpart N and Subpart C.
4. Mercaptan Sulfur waived if fuel is negative by Doctor test.
5. Computer and Linear methods may be used to determine V/L value.
6. Specifications must be met before blending of denatured fuel ethanol.
7. Refer to 40 CFR 1090 Subpart N. Alternative sulfur test methods, ASTM D 5453 and D 7039, may be used according to federal and state regulations.
8. Bengal will accept test methods results that are listed in ASTM D4814 for all tests. Test methods listed in the table above are considered referee methods by Bengal Pipeline. Referee methods apply for any disputes.
9. Use of these grades is controlled by the RVP calendar.
10. Summer RVP MUST be checked using EPA formula as 40 CFR 1090.1355

3.4.1

D GRADE

SPECIFICATION FOR CONVENTIONAL PREMIUM BLENDSTOCK (CBOB) 93 OCTANE AFTER BLENDING WITH 10% DFE

Cancels Previous Issues of D grades

This CBOB may not be combined with any other CBOB except CBOB having the same requirement for oxygenate type and amount.
All parameters must be met after blending with denatured fuel ethanol unless noted.

ALL D GRADE REQUIREMENTS (SEGREGATED AND FUNGIBLE)

Product Property		**ASTM Test**	**Test Results**			**Note**
		Method	**Minimum**	**Maximum**		
Octane	RON	D2699	Report			
	MON	D2700	Report			
	(R+M)/2		93.0			
Oxygen Content, weight %		D5599		0.1		1,2 6
RVP (psi)		D5191				3, 10
Grades				**With Ethanol**	**Without Ethanol**	
D2,2D				10.0	9.0	
D3,3D				12.5	X	
D4,4D				14.5	X	
D5,5D				15.5	X	

Gasoline designed for gasoline-ethanol blends in accordance with 40 CFR 1090 Subpart N.
Suitable for the special RVP provisions for ethanol blends that contain 9 and 10 vol % ethanol.
The use of this gasoline to manufacture a gasoline-ethanol blend containing anything other than between 9 and 10 volume percent ethanol may cause a summertime RVP violation.

NOTES (Apply to Fungible and Segregated):

Heavy Metals are not allowed to be present.
Additive requirements/restrictions - refer to section 3.2.
This is a base gasoline, not for sale to the ultimate consumer.
Any gasoline exhibiting an offensive odor and/or poses a personal health hazard will not be accepted for shipment
Any gasoline containing more than 0.50 wt. % of dicyclopentadiene will not be accepted for shipment.
The referee method will be based on a gas chromatograph test.
Delivery test results may vary by the smaller of ASTM reproducibility for a given test or any test tolerance as allowed by state or EPA regulations at the point of delivery.

3.4.2

D GRADE

SPECIFICATION FOR CONVENTIONAL PREMIUM BLENDSTOCK (CBOB) 93 OCTANE AFTER BLENDING WITH 10% DFE

Cancels Previous Issues of D grades

FUNGIBLE ONLY REQUIREMENTS:

Product Property	ASTM Test Method	Test Results Minimum	Test Results Maximum	Notes
Benzene (vol%)	D5769		3.8	3
Color			Undyed	
Corrosion (Cu) 3 hrs @122°F (50°C)	D130		1	
Corrosion (Ag) 3 hrs @122°F (50°C)	D7671		1	
Doctor test	D4952	Negative (sweet)		4
Mercaptan sulfur, wt.%	D3227		0.002	
Solvent Washed Gum mg/100 ml	D381		4	
Gravity °API at 60°F	D4052	Report		6
Oxidation stability-minutes	D525	240		6
Phosphorous, gms/gal	D3231		0.004	
Sulfur (ppmwt)	D2622		80	7, 6
Nace Corrosion	TM0172	B+ (Origin)		6
Volatility:				
Driveability Index	D4814		See Chart	
Distillation, [W]°€ °F @ %Evap.	D86		See Chart	
Vapor/Liquid Ratio (V/L), °F @ 20	D5188		See Chart	5

Chart

Grades	Driveability Index	10 vol% Max	50 vol% Min	50 vol% Max	90 vol% Max	End Pt. Max	V/L Min
D2	1250.0	158.0	150.0	250.0	374.0	430.0	122.0
D3	1230.0	140.0	150.0	240.0	365.0	430.0	116.0
D4	1220.0	131.0	150.0	235.0	365.0	430.0	107.0
D5	1200.0	122.0	150.0	230.0	365.0	430.0	102.0

NOTES:

1. All D grades may not contain oxygenates, such as ethers and alcohols. The use of non-hydrocarbon blending components in these grades is prohibited.
2. Refer to test methods published in 40 CFR 1090 Subpart N. Alternative oxygenates test method ASTM D 4815, may be used according to federal and state regulations.
3. For products blended to meet EPA tests must be performed in accordance with the procedures described in 40 CFR 1090 Subpart and Subpart C
4. Mercaptan Sulfur waived if fuel is negative by Doctor test.
5. Computer and Linear methods may be used to determine V/L value.
6. Specifications must be met before blending of denatured fuel ethanol.
7. Refer to 40 CFR 1090 Subpart N Alternative sulfur test methods, ASTM D 5453 and D 7039, may be used according to federal and state regulations.
8. Bengal will accept test methods results that are listed in ASTM D4814 for all tests. Test methods listed in the table above are considered referee methods by Bengal Pipeline. Referee methods apply for any disputes.
9. Use of these grades is controlled by the RVP calendar.
10. Summer RVP MUST be checked using EPA formula as 40 CFR 1090.1355

Bengal Pipeline Company

3.5.1

F GRADE

SPECIFICATION FOR REFORMULATED REGULAR BLENDSTOCK (CBOB) 87 OCTANE AFTER BLENDING WITH 10% DFE

Cancels Previous Issues of F grades

This RBOB may not be combined with any other RBOB except RBOB having the same requirement for oxygenate type and amount.
All parameters must be met after blending with denatured fuel ethanol unless noted.

ALL F GRADE REQUIREMENTS (SEGREGATED AND FUNGIBLE)

Product Property			ASTM Test Method	Test Results Minimum	Test Results Maximum	Note
Octane	RON		D2699	Report		
	MON		D2700	82.0		
	(R+M)/2			87.0		
Benzene (vol%)			D5769		3.80	3
Oxygen Content, weight %			D5599		0.1	1,2, 6, 7
Sulfur (ppmwt)			D2622		80	8, 6
RVP (psi)			D5191			3, 11
Grades						
F1,1F					7.4	
F3,3F					11.5	
F4,4F					13.5	
F5,5F					15.0	

FUNGIBLE ONLY REQUIREMENTS:

Color			Undyed	
Corrosion (Cu) 3 hrs @122°F (50°C)	D130		1	
Corrosion (Ag) 3 hrs @122°F (50°C)	D7671		1	
Doctor test	D4952	Negative (sweet)		4
Mercaptan sulfur, wt.%	D3227		0.002	
Solvent Washed Gum mg/100 ml	D381		4	
Gravity °API at 60°F	D4052	Report		6
Oxidation stability-minutes	D525	240		6
Phosphorous, gms/gal	D3231		0.004	
Nace Corrosion	TM0172	B+ (Origin)		6

Volatility:

Driveability Index	D4814	See Chart		
Distillation, [W]℃ °F @ %Evap.	D86	See Chart		
Vapor/Liquid Ratio (V/L),[W] ℃ °F @ 20	D5188	See Chart		5

Chart

Grades	Driveability Index	10 vol%	50 vol%		90 vol%	End Pt.	V/L
		Max	Min	Max	Max	Max	Min
F1	1250	158.0	150.0	250.0	374.0	430.0	122.0
F3	1230	140.0	150.0	240.0	365.0	430.0	116.0
F4	1220	131.0	150.0	235.0	365.0	430.0	107.0
F5	1200	122.0	150.0	230.0	365.0	430.0	102.0

3.5.2

F GRADE

SPECIFICATION FOR REFORMULATED REGULAR BLENDSTOCK (CBOB) 87 OCTANE AFTER BLENDING WITH 10% DFE

Cancels Previous Issues of F grades

NOTES (Apply to Fungible and Segregated):

Heavy Metals are not allowed to be present.
Additive requirements/restrictions - refer to section 3.2.
This is a base gasoline, not for sale to the ultimate consumer.
Any gasoline exhibiting an offensive odor and/or poses a personal health hazard will not be accepted for shipment.
Any gasoline containing more than 0.50 wt. % of dicyclopentadiene will not be accepted for shipment.
The referee method will be based on a gas chromatograph test.
1. All F grades may not contain oxygenates, such as ethers and alcohols. The use of non-hydrocarbon blending components in these grades is prohibited.
2. Refer to test methods published in 40 CFR 1090 Subpart N Alternative oxygenates test method ASTM D 4815, may be used according to federal and state regulations.
3. For products blended to meet EPA tests must be performed in accordance with the procedures described in 40 CFR 1090 Subpart N and Subpart C
4. Mercaptan Sulfur waived if fuel is negative by Doctor test.
5. Computer and Linear methods may be used to determine V/L value.
6. Specifications must be met before blending of denatured fuel ethanol.
7. Oxygen content must meet a minimum of 1.7 wt.% and a maximum of 4.0 wt.% after blending of denatured fuel ethanol.
8. Refer to 40 CFR 1090 Subpart N. Alternative sulfur test methods, ASTM D 5453 and D 7039, may be used according to federal and state regulations.
9 Bengal will accept test methods results that are listed in ASTM D4814 for all tests. Test methods listed in the table above are considered referee methods by Bengal Pipeline. Referee methods apply for any disputes.
10. Use of these grades is controlled by the RVP calendar.
11. Summer RVP MUST be checked using EPA formula as 40 CFR 1090.1355

3.6.1

H GRADE

SPECIFICATION FOR REFORMULATED PREMIUM BLENDSTOCK (CBOB) 93 OCTANE AFTER BLENDING WITH 10% DFE

Cancels Previous Issues of H grades

This RBOB may not be combined with any other RBOB except RBOB having the same requirement for oxygenate type and amount.
All parameters must be met after blending with denatured fuel ethanol unless noted.

ALL H GRADE REQUIREMENTS (SEGREGATED AND FUNGIBLE)

Product Property		ASTM Test Method	Test Results Minimum	Test Results Maximum	Notes
Octane	RON	D2699	Report		
	MON	D2700	Report		
	(R+M)/2		93.0		
Benzene (vol%)		D5769		3.80	3
Oxygen Content, weight %		D5599		0.1	1,2, 6, 7
Sulfur (ppmwt)		D2622		80	8, 6
RVP (psi)		D5191			3, 11
Grades					
H1,1H				7.4	
H3,3H				11.5	
H4,4H				13.5	
H5,5H				15.0	

FUNGIBLE ONLY REQUIREMENTS:

Color			Undyed	
Corrosion (Cu) 3 hrs @122°F (50°C)	D130		1	
Corrosion (Ag) 3 hrs @122°F (50°C)	D7671		1	
Doctor test	D4952		Negative (sweet)	4
Mercaptan sulfur, wt.%	D3227		0.002	
Solvent Washed Gum mg/100 ml	D381		4	
Gravity °API at 60°F	D4052	Report		6
Oxidation stability-minutes	D525	240		6
Phosphorous, gms/gal	D3231		0.004	
Nace Corrosion	TM0172	B+ (Origin)		6

Volatility:

Driveability Index	D4814	See Chart		
Distillation, [W]°€ °F @ %Evap.	D86	See Chart		
Vapor/Liquid Ratio (V/L), °F @ 20	D5188	See Chart		5

Chart

Grades	Driveability Index	10 vol% Max	50 vol% Min	50 vol% Max	90 vol% Max	End Pt. Max	V/L Min
H1	1250.	158.0	150.0	250.0	374.0	430.0	122.0
H3	1230.	140.0	150.0	240.0	365.0	430.0	116.0
H4	1220.	131.0	150.0	235.0	365.0	430.0	107.0
H5	1200.	122.0	150.0	230.0	365.0	430.0	102.0

3.6.2

H GRADE

SPECIFICATION FOR REFORMULATED PREMIUM BLENDSTOCK (CBOB) 93 OCTANE AFTER BLENDING WITH 10% DFE

Cancels Previous Issues of H grades

NOTES (Apply to Fungible and Segregated):

Heavy Metals are not allowed to be present.
Additive requirements/restrictions - refer to section 3.2.
This is a base gasoline, not for sale to the ultimate consumer.
Any gasoline exhibiting an offensive odor and/or poses a personal health hazard will not be accepted for shipment.
Any gasoline containing more than 0.50 wt. % of dicyclopentadiene will not be accepted for shipment.
The referee method will be based on a gas chromatograph test.
1. All H grades may not contain oxygenates, such as ethers and alcohols. The use of non-hydrocarbon blending components in these grades is prohibited.
2. Refer to test methods published in 40 CFR 1090 Subpart N Alternative oxygenates test method, ASTM D4815, may be used according to federal and state regulations.
3. For products blended to meet EPA tests must be performed in accordance with the procedures described in 40 CFR 1090 Subpart N and Subpart C
4. Mercaptan Sulfur waived if fuel is negative by Doctor test.
5. Computer and Linear methods may be used to determine V/L value.
6. Specifications must be met before blending of denatured fuel ethanol.
7. Oxygen content must meet a minimum of 1.7 wt.% and a maximum of 4.0 wt.% after blending of denatured fuel ethanol.
8. Refer to 40 CFR 1090 Subpart N. Alternative sulfur test methods, ASTM D 5453 and D 7039, may be used according to federal and state regulations.
9. Bengal will accept test methods results that are listed in ASTM D4814 for all tests. Test methods listed in the table above are considered referee methods by Bengal Pipeline. Referee methods apply for any disputes.
10 Use of these grades is controlled by the RVP calendar.
11. Summer RVP MUST be checked using EPA formula as 40 CFR 1090.1355

3.7.1

L GRADE
SPECIFICATION FOR SEGREGATED BLENDSTOCK

Cancels Previous Issues of L Grades

In order to allow for the proper placement of the batch in our sequence, when nominating the batch, the shipper must supply to the best of their knowledge the following information:

Octane
Oxygen Content, weight %
RVP (psi)
All properties listed in next page

The Pre-shipment/Transfer Document must be received before shipment with the actual results.

TABLE A

1L	This product code is intended for the shipment of low octane (<83.0 R+M/2) gasoline blendstocks. Nomination and shipment of a buffer batch is required with the batch. All interfaces will be cut into the 1L product in order to protect other batches. The nomination volumes of the buffer batch and 1L product will be adjusted to reflect actual barrels delivered.
2L	This product code is intended for the shipment of >83.0 and <87.0 R+M/2 gasoline blendstocks. This product does not require a buffer batch and will be handled with normal procedures.
3L	This product code is intended for the shipment of >87.0 and <93.0 R+M/2 gasoline blendstocks. This product does not require a buffer batch and will be handled with normal procedures.
4L	This product code is intended for the shipment of >93.0 R+M/2 gasoline blendstocks. This product does not require a buffer batch and will be handled with normal procedures.

NOTES:

1. Bengal will accept test methods results that are listed in ASTM D4814 for all tests. Test methods listed in the table above are considered referee methods by Bengal Pipeline. Referee methods apply for any disputes
2. Delivery test results may vary by the smaller of ASTM reproducibility for a given test or any test tolerance as allowed by state or EPA regulations at the point of delivery.
3. Additive requirements/restrictions - refer to section 3.2.
4. Use of these grades is controlled by the RVP calendar.
L grades are intended for the shipment of Naphtha, Reformate, and Alcolate. Shipment of any other product as "L" Grade requires Bengal approval

3.7.2

L GRADE
SPECIFICATION FOR SEGREGATED BLENDSTOCK

Cancels Previous Issues of L Grades
ALL L GRADE REQUIREMENTS (SEGREGATED ONLY)

Product Property	ASTM Test Method	Test Results		Note
		Minimum	Maximum	
Mercaptan sulfur, wt.%	D3227		0.002	
Corrosion (Cu) 3 hrs @122°F (50°C)	D130	Report		
Corrosion (Ag) 3 hrs @122°F (50°C)	D7671	Report		
Sulfur (ppmwt)	D2622	Report		
Phosphorous, gms/gal	D3231	Report		
Aromatics	D1319		50	
Benzene (vol%)	D5769	Report	3.8	
Solvent Washed Gum mg/100 ml	D381	Report		
API Gravity @60F	D4052	48	90	
Drivability Index	D4814	Report		
Doctor Test	D4952	Negative		
Vapor/Liquid Ratio (V/L),[W] °€ °F @ 20	D5188	Report		
RVP (psi)	D5191	Report		4
Oxidation Stability - Minutes	D525	Report		
Oxygen Content, weight %	D5599	Report		
Distillation, [W]°€ °F @ %Evap.				
Distillation (IBP)	D86	Report		
Distillation (5%)		Report		
Distillation (10%)		Report		
Distillation (15%)		Report		
Distillation (20%)		Report		
Distillation (50%)		Report		
Distillation (90%)		Report		
Distillation (EBP)		Report		
Distillation Slope		Report		
Color		Undyed		
Octane	D2699	Report		
	D2700	Report		
				Table A
NACE Corrosion	TM0172	B^+		

3.8.1

M GRADE
SPECIFICATION FOR CONVENTIONAL REGULAR GASOLINE 87 OCTANE INDEX

Cancels Previous Issues of M Grades

This product does not meet requirements for reformulated gasoline, and may not be used in any reformulated gasoline covered area.

ALL M GRADE REQUIREMENTS (SEGREGATED AND FUNGIBLE)

Product Property		ASTM Test Method	Test Results		Notes
			Minimum	Maximum	
Octane	RON	D2699	Report		
	MON	D2700	82.0		
	(R+M)/2		87.0		
Oxygen Content, weight %		D5599		0.1	1
RVP (psi)		D5191			2, 8
Grades				**Without Ethanol**	**With Ethanol**
M2,2M				9.0	X
M3,3M				11.5	X
M4,4M				13.5	X
M5,5M				15.0	X

NOTES (Apply to Fungible and Segregated)

Suitable for the special RVP provisions for ethanol blends that contain 9 and 10 vol % ethanol.
The use of this gasoline to manufacture a gasoline-ethanol blend containing anything other than between 9 and 10 volume percent ethanol may cause a summertime RVP violation.
Heavy Metals are not allowed to be present.
Additive requirements/restrictions - refer to section 3.2.
This is a base gasoline, not for sale to the ultimate consumer.
Any gasoline exhibiting an offensive odor and/or poses a personal health hazard will not be accepted for shipment.
Any gasoline containing more than 0.50 wt. % of dicyclopentadiene will not be accepted for shipment.
The referee method will be based on a gas chromatograph test.
Delivery test results may vary by the smaller of ASTM reproducibility for a given test or any test tolerance as allowed by state or EPA regulations at the point of delivery.

3.8.2

M GRADE

SPECIFICATION FOR CONVENTIONAL REGULAR GASOLINE 87 OCTANE INDEX

Cancels Previous Issues of M Grades

FUNGIBLE ONLY REQUIREMENTS:

Product Property	ASTM Test Method	Test Results		Note
		Minimum	Maximum	
Benzene, vol.%	D5769		3.8	2
Color			Undyed	
Corrosion (Cu) 3 hrs @122°F (50°C)	D130		1	
Corrosion (Ag) 3 hrs @122°F (50°C)	D7671		1	
Doctor test	D4952	Negative (sweet)		4
Mercaptan sulfur, wt.%	D3227		0.002	
Solvent Washed Gum mg/100 ml	D381		4	
Gravity °API at 60°F	D4052	Report		
Oxidation stability-minutes	D525	240		
Phosphorous, gms/gal	D3231		0.004	
Sulfur (ppmwt)	D2622		80	5
Nace Corrosion	TM0172	B+ (Origin)		

Volatility:

Driveability Index	D4814		See Chart	
Distillation, [W]€ °F @ %Evap.	D86		See Chart	
Vapor/Liquid Ratio (V/L),[W] € °F @ 20	D5188		See Chart	4

Chart

Grades	Driveability Index	10 vol%	50 vol%		90 vol%	End Pt.	V/L
		Max	Min	Max	Max	Max	Min
M2	1250.	158.0	170.0	250.0	374.0	430.0	133.0
M3	1230.	140.0	170.0	240.0	365.0	430.0	124.0
M4	1220.	131.0	170.0	235.0	365.0	430.0	116.0
M5	1200.	122.0	170.0	230.0	365.0	430.0	105.0

NOTES (Apply to Fungible and Segregated):

1. Non-oxygenated is defined as having no more than 0.1 wt.% oxygen. The use of oxygenated and/or non-hydrocarbon blending components in these grades is prohibited.
2. For products blended to meet EPA tests must be performed in accordance with the procedures described in 40 CFR, 1090 Subpart N and Subpart C.
3. Mercaptan Sulfur waived if fuel is negative by Doctor test.
4. Computer and Linear methods may be used to determine V/L value.
5. Refer to 40 CFR 1090 Subpart N. Alternative sulfur test methods, ASTM D 5453 and D 7039, may be used according to federal and state regulations.
6. Bengal will accept test methods results that are listed in ASTM D4814 for all tests. Test methods listed in the table above are considered referee methods by Bengal Pipeline. Referee methods apply for any disputes.
7. Use of these grades is controlled by the RVP calendar.
8. Summer RVP MUST be checked using EPA formula as 40 CFR 1090.1355

3.9.1

V GRADE

SPECIFICATION FOR CONVENTIONAL PREMIUM GASOLINE 93 OCTANE INDEX

Cancels Previous Issues of V Grades

This product does not meet requirements for reformulated gasoline, and may not be used in any reformulated gasoline covered area.

ALL V GRADE REQUIREMENTS (SEGREGATED AND FUNGIBLE)

Product Property		**ASTM Test**	**Test Results**		**Note**
		Method	**Minimum**	**Maximum**	
Octane	RON	D2699	Report		
	MON	D2700	Report		
	(R+M)/2		93.0		
Oxygen Content, weight %		D5599		0.1	1
RVP (psi)		D5191			2, 8
Grades				**Without Ethanol**	**With Ethanol**
V2,2V				9.0	X
V3,3V				11.5	X
V4,4V				13.5	X
V5,5V				15.0	X

Suitable for the special RVP provisions for ethanol blends that contain 9 and 10 vol % ethanol.
The use of this gasoline to manufacture a gasoline-ethanol blend containing anything other than between 9 and 10 volume percent ethanol may cause a summertime RVP violation.
Heavy Metals are not allowed to be present.
Additive requirements/restrictions - refer to section 3.2.
This is a base gasoline, not for sale to the ultimate consumer.
Any gasoline exhibiting an offensive odor and/or poses a personal health hazard will not be accepted for shipment.
Any gasoline containing more than 0.50 wt. % of dicyclopentadiene will not be accepted for shipment.
The referee method will be based on a gas chromatograph test.
Delivery test results may vary by the smaller of ASTM reproducibility for a given test or any test tolerance as allowed by state or EPA regulations at the point of delivery.

3.9.2

V GRADE

SPECIFICATION FOR CONVENTIONAL PREMIUM GASOLINE 93 OCTANE INDEX

Cancels Previous Issues of V Grades

FUNGIBLE ONLY REQUIREMENTS:

Product Property	ASTM Test Method	Test Results		Note
		Minimum	Maximum	
Benzene, vol.%	D5769		3.8	2
Color			Undyed	
Corrosion (Cu) 3 hrs @122°F (50°C)	D130		1	
Corrosion (Ag) 3 hrs @122°F (50°C)	D7671		1	
Doctor test	D4952	Negative (sweet)		3
Mercaptan sulfur, wt.%	D3227		0.002	
Solvent Washed Gum mg/100 ml	D381		4	
Gravity °API at 60°F	D4052	Report		
Oxidation stability-minutes	D525	240		7
Phosphorous, gms/gal	D3231		0.004	
Sulfur (ppmwt)	D2622		80	5
Nace Corrosion	TM0172	B+ (Origin)		
Volatility:				
Driveability Index	D4814		See Chart	
Distillation, [W]€ °F @ %Evap.	D86		See Chart	
Vapor/Liquid Ratio (V/L),[W] €°F @ 20	D5188		See Chart	4

Chart

Grades	Driveability Index	10 vol%	50 vol%		90 vol%	End Pt.	V/L
		Max	Min	Max	Max	Max	Min
V2	1250.	158.0	170.0	250.0	374.0	430.0	133.0
V3	1230.	140.0	170.0	240.0	365.0	430.0	124.0
V4	1220.	131.0	170.0	235.0	365.0	430.0	116.0
V5	1200.	122.0	170.0	230.0	365.0	430.0	105.0

NOTES (Apply to Fungible and Segregated):

1. Non-oxygenated is defined as having no more than 0.1 wt.% oxygen. The use of oxygenated and/or non-hydrocarbon blending components in these grades is prohibited.
2. For products blended to meet EPA tests must be performed in accordance with the procedures described in 40 CFR, 1090 Subpart N and Subpart C.
3. Mercaptan Sulfur waived if fuel is negative by Doctor test.
4. Computer and Linear methods may be used to determine V/L value.
5. Refer to 40 CFR 1090 Subpart N. Alternative sulfur test methods, ASTM D 5453 and D 7039, may be used according to federal and state regulations.
6. Bengal will accept test methods results that are listed in ASTM D4814 for all tests. Test methods listed in the table above are considered referee methods by Bengal Pipeline. Referee methods apply for any disputes.
7. Use of these grades is controlled by the RVP calendar.
8. Summer RVP MUST be checked using EPA formula as 40 CFR 1090.1355

3.10

GRADE 47
SPECIFICATION FOR SUSTAINABLE AVIATION FUEL

EPA Designation: Jet Fuel
Grade 47

The purpose of this grade is to allow Bengal during blending provided by Bengal to track the volume of synethtic paraffinic kerosine present in the blended product. This grade may not be shipped on Bengal Pipeline.

3.11.1

GRADE 51
SPECIFICATIONS FOR FUNGIBLE ULTRA LOW SULFUR KEROSENE

EPA Designation: MVNRLM, Motor Vehicle Diesel fuel 15 ppm Sulfur
Cancels Previous Issues of Grade 51

Product Property	ASTM Test Method	Test Results Minimum	Test Results Maximum	Note
Composition Properties				
Haze rating @ 25°C (77°F) Procedure 2	D4176		2	
Sulfur, ppmwt	D5453		11 (origin)	3
	D5453		15 (delivery)	
Doctor Test	D4952	Negative (Sweet)		4
Mercaptan Sulfur, wt.%	D3227		0.003	
Aromatics, vol.%	D1319		25	
	D6379		26.5	
Acidity total max, mg KOH/g	D3242		0.1	
Combustion				
Net Heat of combustion BTU/Pound	D3338	18,400		
Smoke point, mm **OR**	D1322	25		
Smoke point, mm and	D1322	18		
Naphthalenes, vol.%	D1840		3	
Ash, wt%	D482		0.01	
Burning Quality	D187	Report		7
Cabon Residue: Ramsbotton on 10% Botton	D524		0.2	
Fluidity				
Freezing Point,°C	D5972		-40	
Viscosity, cSt @ 104°F (40°C)	D445	1.3	1.9	
Viscosity, cSt @ -4°F (-20°C)	D445		8.0	
Volatility and density				
Physical Distillation, °C(°F)	D86			6
10% recovered			400	
50% recovered		Report		
90% recovered			550	
End Point			572	
Residue, %			1.5	
Loss, %			1.5	
Flash Point, °F	D56	123		
Gravity	D4052	37	51	
Density at 15°C, Kg/m^3	D4052	775	840	

3.11.2

GRADE 51
SPECIFICATIONS FOR FUNGIBLE ULTRA LOW SULFUR KEROSENE

Cancels Previous Issues of Grade 51

Product Property	ASTM Test Method	Test Results Minimum	Test Results Maximum	Note
Stability				
Thermal Oxidative Stability	D3241			
Test/Control Temperature		275°C (Origin)		
		260°C (Delivery)		
Pres. drop in mm/Hg			25	
Tube rating: one of the following requirement shall be met				
(1) Annex A1 VTR, VTR color code			<3	
No Peacock or abnormal color deposits				
(2) Annex A2 ITR or Annex 3 ETR nm			85	
Average over area of 2.5 mm				
Cetane (Number or Index)	D613	40		5
Contaminants				
Existent Gum, mg/100 ml	D381, IP540		7.0	
MSEP: Origin	D3948	85		
MSEP: Delivery	D7224	75		
Color: Origin	D6045	21		
Color: Delivery	D6045	18		
Corrosion				
Corrosion 2 hrs. @ 212°F (100°C)	D130		1	
Conductivity				
Electrical Conductivity pS/m @ 21°C(70°F)	D2624		Report	[N]11

NOTES:

1. Product shall be clear and bright and free of suspended matter.
2. Additive requirements/restrictions - refer to section 3.2.
3. Origin laboratory certifying sulfur content can qualify the test method used per EPA performance based testing criteria (see CFR 1090 Subpart D).
4. Mercaptan Sulfur -is not required if Doctor test is negative. Doctor test is not required if mercaptan is meets specifcation.
5. When cetane number by test method D613 is not available, test method D4737A can be used as an approximation.
6. Either physical or simulated distillation can be used, Simulated distillation MUST be correlated to D86
7.Typical results pass according to Paragraph 4.2 of ASTM D3699 Standard Specifications for kerosene.
8. Typical results pass according to Paragraph 4.2 of ASTM D3699 Standars Specification for kerosene.
9. Bengal will accept test methods results that are listed in ASTM D1655 and ASTM D975 for all tests. Test methods listed in the table above are considered referee methods by Colonial Pipeline. Referee methods apply for any dispute.
10. If conductivity additive is used, conductivity shall be 250 pS/m maximum at origin

3.12

GRADE 52
SPECIFICATIONS FOR FUNGIBLE MILITARY GRADE JP-5

EPA Designation: Exempt distillate covered by national security exemption under 1090.605

Cancels Previous Issues of Grade 52

Shipments of grade 52 must meet the latest military specification for JP-5

Bengal Pipeline Company

3.13.1

GRADE 53

SPECIFICATIONS FOR SEGREGATED ULTRA LOW SULFUR KEROSENE - CERTIFIED NTDF

EPA Designation: -Kerosene, 15 ppm sulfue - Certified NTDF

Cancels Previous Issues of Grade 53

Product Property	ASTM Test Method	Test Results Minimum	Test Results Maximum	Note
Composition Properties				
[N] Haze rating @ 25°C (77°F) Procedure 2	[N]D4176		2	
Sulfur, ppmwt	D5453		11 (origin)	3
	D5453		14 (delivery)	
Doctor Test	D4952	Negative (Sweet)		
Mercaptan Sulfur, wt.%	D3227		0.003	4
Aromatics, vol.%	D1319		25	
	D6379		26.5	
Acidity total max, mg KOH/g	D3242		0.1	
Combustion				
Net Heat of combustion BTU/Pound	D3338	18,400		
Smoke point, mm **OR**	D1322	25		
Smoke point, mm and	D1322	18		
Naphthalenes, vol.%	D1840		3	
Ash, wt%	D482		0.01	
Burning Quality	D187	Report		7
Cabon Residue: Ramsbotton on 10% Botton	D524		0.2	
Fluidity				
Freezing Point,°C	D5972		-40	
Viscosity, cSt @ 104°F (40°C)	D445	1.3	1.9	
Viscosity, cSt @ -4°F (-20°C)	D445		8.0	
Volatility and density				
Physical Distillation, (°F)	D86			6
10% recovered			400	
50% recovered		Report		
90% recovered			550	
End Point			572	
Residue, %			1.5	
Loss, %			1.5	
Flash Point, °F	D56	108		
Gravity	D4052	37	51	
Density at 15°C, Kg/m^3	D4052	775	840	
Additives		Report		

3.13.2

GRADE 53

[N]SPECIFICATIONS FOR SEGREGATED ULTRA LOW SULFUR KEROSENE - CERTIFIED NTDF

Cancels Previous Issues of Grade 53

Product Property	ASTM Test Method	Test Results		Note
		Minimum	Maximum	
Stability				
Thermal Oxidative Stability	D3241			
Test/Control Temperature		275°C (Origin)		
		260°C (Delivery)		
Pres. drop in mm/Hg			25	
Tube rating: one of the following requirement shall be met				
(1) Annex A1 VTR, VTR color code			<3	
No Peacock or abnormal color deposits				
(2) Annex A2 ITR or Annex 3 ETR nm			85	
Average over area of 2.5 mm				
Cetane (Number or Index)	D613	40		5
Contaminants				
Existent Gum, mg/100 ml	D381, IP540		7.0	
MSEP: Origin	D3948	85		
MSEP: Delivery	D7224	75		
Color: Origin	D6045	21		
Color: Delivery	D6045	18		
Corrosion				
Corrosion 2 hrs. @ 212°F (100°C)	D130		1	
Conductivity				
Electrical Conductivity pS/m @ 21°C(70°F)	D2624		Report	12

NOTES:

1. Product shall be clear and bright and free of suspended matter.
2. Additive requirements/restrictions - refer to section 3.2.
3. Origin laboratory certifying sulfur content can qualify the test method used per EPA performance based testing criteria (see CFR 1090 Subpart D).
4. Mercaptan Sulfur -is not required if Doctor test is negative. Doctor test is not required if mercaptan is meets specifcation.
5. When cetane number by test method D613 is not available, test method D4737A can be used as an approximation.
6. Either physical or simulated distillation can be used, Simulated distillation MUST be correlated to D86
7. Typical results pass according to Paragraph 4.2 of ASTM D3699 Standard Specifications for kerosine.
8. Bengal will accept test methods results that are listed in ASTM D1655 and ASTM D975 for all tests. Test methods listed in the table above are considered referee methods by Colonial Pipeline. Referee methods apply for any dispute.
9. Biofuel Components (eg Biodiesel) are not permitted in this product
10. This fuel is designated for non-transportation use (Certified NTDF - 15 ppm sulfur Max) and Kerosene
11 If conductivity additive is used, conductivity shall be 250 pS/m maximum at origin

3.14.1

GRADE 54
SPECIFICATIONS FOR FUNGIBLE AVIATION KEROSENE

EPA Designation: Jet Fuel
Cancels Previous Issues of Grade 54

Product Property	ASTM Test Method	Test Results Minimum	Test Results Maximum	Note
Composition Properties				
Sulfur, ppmwt	D4294		3000	5
Haze rating @ 25°C (77°F) Procedure 2	D4176		2	
Doctor Test	D4952	Negative Sweet		4
Mercaptan Sulfur, wt.%	D3227		0.003	
Aromatics, vol.%	D1319		25	
	D6379		26.5	
Acidity total max, mg KOH/g	D3242		0.1	
Combustion				
Net Heat of combustion BTU/Pound	D3338	18,400		
Smoke point, mm	D1322	25		
OR				
Smoke point, mm **AND**	D1322	18		
Naphthalenes, vol.%	D1840		3.0	
Fluidity				
Freezing Point, °C	D5972		-40	
Viscosity, cSt @ -4°F (-20°C)	D445		8.0	
Volatility and density				
Physical Distillation, (°F)	D86			6
10% recovered			400	
50% recovered		Report		
90% recovered		Report		
End Point			572	
Residue, %			1.5	
Loss, %			1.5	
Flash Point, °F	D56	105		
Gravity	D4052	37	51	
Density at 15°C, Kg/m^3	D4052	775	840	

Contaminants				
Existent Gum, mg/100 ml	D381, IP540		7.0	
MSEP: Origin	D3948	85		
MSEP: Delivery	D7224	75		
Corrosion				
Corrosion 2 hrs. @ 212°F (100°C)	D130		1	

3.14.2

GRADE 54
SPECIFICATIONS FOR FUNGIBLE AVIATION KEROSENE

Cancels Previous Issues of Grade 54

Product Property	ASTM Test Method	Test Results		Note
		Minimum	Maximum	
Stability				
Thermal Oxidative Stability	D3241			
Test/Control Temperature		275°C (Origin)		
	260°C (Delivery)			
Pres. drop in mm/Hg			25	
Tube rating: one of the following requirement shall be met				
(1) Annex A1 VTR, VTR color code			<3	
No Peacock or abnormal color deposits				
(2) Annex A2 ITR or Annex 3 ETR nm			85	
Average over area of 2.5 mm				
Conductivity				
Electrical Conductivity pS/m @ 21°C(70°F)	D2624		Report	[N]9

NOTES:

1. Product shall be clear and bright and free of suspended matter.
2. Additive requirements/restrictions - refer to section 3.2.
3. At this time, the test limits described in MIL-T-5624P, Appendix A, parts 70.a(1) and 70.b will not be imposed
4. Mercaptan Sulfur is not required if Doctor test is negative. Doctor test is not required if mercaptan is meets specifcation.
5. Origin laboratory certifying sulfur content can qualify the test method used per EPA performance based testing criteria (See 1090 Subpart D).
6. Either physical or simulated distillation can be used. Simulated distillation MUST be correlated to D86
7. Bengal will accept test methods results that are listed in ASTM D1655 for all tests. Test methods listed in the table above are considered referee methods by Bengal Pipeline. Referee methods apply for any disputes.
8 This product may contain Sustainable Aviation Fuel (synthesized paraffinic kerosine) as defined and meeting the most recent version of ASTM D7566 Standard Specification for Aviation Turbine Fuels Containing Synthesized Hydrocarbons. The specific synthesized paraffinic kerosine (SPK) as Detailed in D7566 annexes - (A1) FISCHER TROPSCH SPK or (A2) HEFA SPK are the only SPK allowed to be present. If the product contains SPK, the supplier must report the type and volume percent.
9 If conductivity additive is used, conductivity shall be 250 pS/m maximum at origin
10 This product may contain up to 5% by volume co-hydroprocessed synthesized kerosene. If co-processing the manufacturing site MUST run the following additional tests consistent with D1655 Annex A1, Table A1:1.
(i) Test Thermal Stability and pass at 280°C.
(ii) Test viscosity and pass at -40°C as a new requirement; the limit is less than 12.0 CSt.
(iii) Test for unconverted esters/fatty acids using ASTM D7797; the limit is less than or equal to 15 mg/kg.

Bengal Pipeline Company

3.15.1

GRADE 55
SPECIFICATIONS FOR FUNGIBLE AVIATION KEROSENE

EPA Designation: Kerosene
Cancels Previous Issues of Grade 55

Product Property	ASTM Test Method	Test Results Minimum	Test Results Maximum	Note
Composition Properties				
Sulfur, ppmwt	D5453		400	4
Haze rating @ 25°C (77°F) Procedure 2	D4176		2	
Doctor Test	D4952	Negative (Sweet)		5
Mercaptan Sulfur, wt.%	D3227		0.003	
Aromatics, vol.%	D1319		25	
	D6379		26.5	
Acidity total max, mg KOH/g	D3242		0.1	
Combustion				
Net Heat of combustion BTU/Pound	D3338	18,400		
Smoke point, mm	D1322	25		
OR				
Smoke point, mm **AND**	D1322	18		
Naphthalenes, vol.%	D1840		3.0	
Ash, wt%	D482		0.01	
Burning Quality	D187	Report		6
Cabon resideu: Ramsbotton on 10% Bottom	D524		0.2	
Fluidity				
Freezing Point,°C	D5972		-40	
Viscosity, cSt @ 104oF (40oC)	D445	1.3	1.9	
Viscosity, cSt @ -4°F (-20°C)	D445		8.0	
Volatility and density				
Physical Distillation, °F	D86			7
10% recovered			400	
50% recovered		Report		
90% recovered			550	
End Point			572	
Residue, %			1.5	
Loss, %			1.5	
Flash Point, °F	D56	123		
Gravity	D4052	37	51	
Density at 15°C, Kg/m^3	D4052	775	840	

3.15.2

GRADE 55
SPECIFICATIONS FOR FUNGIBLE AVIATION KEROSENE

Cancels Previous Issues of Grade 55

Product Property	ASTM Test Method	Test Results		Note
		Minimum	Maximum	
Stability				
Thermal Oxidative Stability	D3241			
Test/Control Temperature		275°C (Origin)		
		260°C (Delivery)		
Pres. drop in mm/Hg			25	
Tube rating: one of the following requirement shall be met				
(1) Annex A1 VTR, VTR color code			<3	
No Peacock or abnormal color deposits				
(2) Annex A2 ITR or Annex 3 ETR nm			85	
Average over area of 2.5 mm				
Cetane Number	D613	40	6	
Contaminants				
Existent Gum, mg/100 ml	D381, IP540		7.0	
MSEP: Origin	D3948	85		
MSEP: Delivery	D7224	75		
Color : Origin	D6045	21		
Color :Delivery	D6045	18		
Corrosion				
Corrosion 2 hrs. @ 212°F (100°C)	D130		1	
Conductivity				
Electrical Conductivity pS/m @ 21°C(70°F)	D2624		Report	[N]10

NOTES:

1. Product shall be clear and bright and free of suspended matter.
2. Additive requirements/restrictions - refer to section 3.2.
3. At this time, the test limits described in MIL-T-5624P, Appendix A, parts 70.a(1) and 70.b will not be imposed
4. Origin laboratory certifying sulfur content can qualify the test method used per EPA performance based testing criteria (See 1090 Subpart D).
5. Mercaptan Sulfur -is not required if Doctor test is negative. Doctor test is not required if mercaptan is meets specifcation.
6. Typical results pass according to Paragraph 4.2 of ASTM D3699 Standard Specifications for kerosine.
7. Either physical or simulated distillation can be used. Simulated distillation MUST be correlated to D86
8. Where cetane number by test method D613 is not available, test method D4737A can be used as an approximation.
9. Bengal will accept test methods results that are listed in ASTM D1655 for all tests. Test methods listed in the table above are considered referee methods by Bengal Pipeline. Referee methods apply for any disputes.
10 If conductivity additive is used, conductivity shall be 250 pS/m maximum at origin

3.16

GRADE 56
SPECIFICATION FOR BONDED AVIATION KEROSENE

EPA Designation: Jet Fuel
Cancels Previous Issues of Grade 56.

Shipments of Grade 56 must meet specifications for Fungible Aviation Kerosine Grade 54.

NOTES:

1. Not available for delivery to Spartanburg, Greensboro local lines or lines #[W]~~17,~~ 22 and 24.

3.17

GRADE 57

SPECIFICATION FOR SEGREGATED KEROSENE

EPA Designation: Kerosene

Cancels Previous Issues of Grade 57

Product Property	ASTM Test Method	Test Results		Note
		Minimum	Maximum	
Sulfur, ppmwt	D5453		500	1

In order to allow for the proper placement of the batch in our sequence, when nominating the batch, the shipper must supply to the best of his knowledge the following information:

The pre-shipment documentation with the actual results must be received before shipment.

NOTES:

1. Origin laboratory certifying sulfur content can qualify the test method used per EPA performance based testing criteria (See 1090 Subpart D).
2. Additive requirements/restrictions - refer to section 3.2.
the table above are considered referee methods by Bengal Pipeline. Referee methods apply for any disputes.

3.18

GRADE 58
SPECIFICATIONS FOR FUNGIBLE MILITARY GRADE JP-8

EPA Designation: Except distillate covered by national security exemption under 1090.605

Cancels Previous Issues of Grade 58

Shipments of Grade 58 must meet the latest military specifications for JP-8.

3.19

GRADE 59
SPECIFICATION FOR SEGREGATED DISTILLATE BLENDSTOCK

EPA Designation: None Required (Product is an unfinished blendstock)

Cancels Previous Issues of Grade 59

Product Property	ASTM Test Method	Test Results		Note
		Minimum	Maximum	
Gravity	D4052	37	51	
Flash Point, °F	D56	100		
Sulfur, ppmwt	D4294		3000	3
Nace Corrosion	TM0172	B+ (origin)		
Electrical Conductivity, pS/m @ 21°C(70°F)	D2624		Report	

In order to allow for the proper placement of the batch in our sequence, when nominating the batch, the shipper must supply to the best of his knowledge any product property that does not meet our fungible specification for 54 grade.

NOTES:

1. Product shall be clear and bright and free of suspended matter.
2. The pre-shipment documentation with the actual results must be received before shipment.
3. Origin laboratory certifying sulfur content can qualify the test method used per EPA performance based testing criteria (See 1090 Subpart D).
4. Additives requirements/restrictions - refer to section 3.2.
5. Bengal will accept test methods results that are listed in ASTM D1655 for all tests. Test methods listed in the table above are considered referee methods by Bengal Pipeline. Referee methods apply for any disputes

3.20.1

GRADE 62
SPECIFICATIONS FOR FUNGIBLE 15 PPM SULFUR DIESEL FUEL

EPA Designation: MVNRLM, Motor vehicle diesel fuel, 15 ppm sulfur
Cancels Previous Issues of Grade 62

PRODUCT PROPERTY	ASTM Test Method	Test Results Minimum	Test Results Maximum	Note
Gravity API	D4052	30		
Flash Point, °F	D93	130 (Origin)		
		125.8 (Delivery)		
Physical Distillation, °F	D86			4
50%			Report	
90%		540	640	
End Point			700	
Color ASTM	D6045		2.5 (origin)	
Color Visual		Undyed		
Viscosity, cSt @ 40oC (104oF)	D445	1.9	4.1	
Pour Point	D97			2
Cloud Point	D2500			2
Corrosion, 3 hrs. @ 50°C (122°F)	D130		1	
Total Sulfur, ppmwt	D5453		11 (Origin)	3
			15(Delivery)	
Cetane Number	D613	40		5
And One of the following condition should be met				
1. Aromatics (Volume %) , **OR**	D1319		35	
2. Cetane Index	D976	40		
Ash, wt.%	D482		0.01	
Carbon Residue: Ramsbottom on 10% Bottom	D524		0.35	
BS&W, vol.%	D2709		< 0.05	
Oxidation stability, mg/100 ml	D2274		2.5	
OR				
Thermal Stability, 90 minutes, 150°C Pad Rating	DuPont F-21		7	
OR				
Thermal Stability Reflectance	D6468			
Y/Green **OR**		73%		
W Unit		68%		
Haze rating @ 25°C (77°F) Procedure 2	D4176		2	
Nace Corrosion	TM0172	B+ (Origin)		
Electrical Conductivity, pS/m @ 21°C(70°F)	D2624		250	

3.20.2

GRADE 62

SPECIFICATIONS FOR FUNGIBLE 15 PPM SULFUR DIESEL FUEL

Cancels Previous Issues of Grade 62

NOTES:

1. Additive requirements/restrictions - refer to section 3.2.	
2. This schedule denotes the fluidity of the distillate at the time and place of origin.	
Pour Point – August 1st through March 14th	Maximum: 0^{o}F.
Pour Point – March 15th through July 31st	Maximum: 10.4^{o}F
Cloud Point – August 1st through March 14th	Maximum: 15.8^{o}F
Cloud Point – March 15th through July 31st	Maximum: 19.4^{o}F
3. Origin laboratory certifying sulfur content can qualify the test method used per EPA performance based testing criteria (See 1090 Subpart D).	
4. Either physical or simulated distillation can be used. Simulated distillation MUST be correlated to D86	
5. Bengal will accept test methods results that are listed in ASTM D975 for all tests. Test methods listed in the table above are considered referee methods by Bengal Pipeline. Referee methods apply for any disputes.	
6. 62 grade will only be allowed to originate as "clear", no renewable diesel fuel allowed. Product containing up to 5% renewable diesel may be shipped as 63 grade.	
Delivery test results may vary by the smaller of ASTM reproducibility for a given test or any test tolerance as allowed by state or EPA regulations at the point of delivery.	

3.21.1

GRADE 63

SPECIFICATIONS FOR FUNGIBLE 15 PPM SULFUR DIESEL FUEL CONTAINING UP TO 5% RENEWABLE HYDROTREATED DIESEL FUEL

EPA Designation: MVNRLM, Motor vehicle diesel fuel, 15 ppm sulfur

Cancels Previous Issues of Grade 63

PRODUCT PROPERTY	ASTM Test Method	Test Results		Note
		Minimum	Maximum	
Renewable Fuel (volume %)	D7371		5	5
Gravity API	D4052	30		
Flash Point, °F	D93	130 (Origin)		
	125.8 (Delivery)			
Physical Distillation, °C(°F)	D86			4
50%			Report	
90%		540	640	
End Point			700	
Color ASTM	D6045		2.5 (origin)	
Color Visual		Undyed		
Viscosity, cSt @ 40oC (104oF)	D445	1.9	4.1	
Pour Point	D97			2
Cloud Point	D2500			2
Corrosion, 3 hrs. @ 50°C (122°F)	D130		1	
Total Sulfur, ppmwt	D5453		11 (Origin)	3
			15(Delivery)	
Cetane Number	D613	40		6
And One of the following condition should be met				
1. Aromatics (Volume %) , OR	D1319		35	
2. Cetane Index	D976	40		
Ash, wt.%	D482		0.01	
Carbon Residue: Ramsbottom on 10% Bottom	D524		0.35	
BS&W, vol.%	D2709		< 0.05	
Oxidation stability, mg/100 ml	D2274		2.5	
OR				
Thermal Stability, 90 minutes, 150°C Pad Rating	DuPont F-21		7	
OR				
Thermal Stability Reflectance	D6468			
Y/Green **OR**		73%		
W Unit		68%		
Haze rating @ 25°C (77°F) Procedure 2	D4176		2	
Nace Corrosion	TM0172	B+ (Origin)		
Electrical Conductivity, pS/m @ 21°C(70°F)	D2624		250	

3.21.1

GRADE 63

SPECIFICATIONS FOR FUNGIBLE 15 PPM SULFUR DIESEL FUEL CONTAINING UP TO 5% RENEWABLE HYDROTREATED DIESEL FUEL

Cancels Previous Issues of Grade 63

NOTES:

1. Additive requirements/restrictions - refer to section 3.2.	
2. This schedule denotes the fluidity of the distillate at the time and place of origin.	
Pour Point – August 1st through March 14th	Maximum: 0°F.
Pour Point – March 15th through July 31st	Maximum: 10.4°F
Cloud Point – August 1st through March 14th	Maximum: 15.8°F
Cloud Point – March 15th through July 31st	Maximum: 19.4°F
3. Origin laboratory certifying sulfur content can qualify the test method used per EPA performance based testing criteria (See 1090 Subpart D).	
4.Either physical or simulated distillation can be used. Simulated distillation MUST be correlated to D86	
5. May contain up to 5% Renewable Diesel as definied in section 3.2.7	
6. Bengal will accept test methods results that are listed in ASTM D975 for all tests. Test methods listed in the table above are considered referee methods by Bengal Pipeline. Referee methods apply for any disputes.	
Delivery test results may vary by the smaller of ASTM reproducibility for a given test or any test tolerance as allowed by state or EPA regulations at the point of delivery.	

3.22

GRADE 65
SPECIFICATION FOR SEGREGATED 15 PPM SULFUR DISTILLATE

EPA Designation: MVNRLM 15 ppm sulfur
Cancels Previous Issues of Grade 65

PRODUCT PROPERTY	ASTM Test Method	Test Results		Note
		Minimum	Maximum	
Gravity API	D4052	30		
Flash Point, °F	D93	100		
Nace Corrosion	TM0172	B+ (origin)		
Total Sulfur, ppmwt	D5453		15	1
Electrical Conductivity, pS/m @ 21°C(70°F)	D2624		250	

In order to allow for the proper placement of the batch in our sequence, when nominating the batch, the shipper must supply to the best of his knowledge the following information:

The pre-shipment documentation with the actual results must be received before shipment.

NOTES:

The pre-shipment documentation with the actual results must be received before shipment.
1. Origin laboratory certifying sulfur content can qualify the test method used per EPA performance based testing criteria (See 1090 Subpart D).
2. Additive requirements/restrictions - refer to section 3.2.
3. May contain Renewable Diesel as defined in section 3.2.7
4. Bengal will accept test methods results that are listed in ASTM D975 for all tests. Test methods listed in the table above are considered referee methods by Bengal Pipeline. Referee methods apply for any dispute.
Delivery test results may vary by the smaller of ASTM reproducibility for a given test or any test tolerance as allowed by state or EPA regulations at the point of delivery.

Bengal Pipeline Company

3.23.1

GRADE 67

SPECIFICATIONS FOR FUNGIBLE 15 PPM DISTILLATE FUEL (CERTIFIED NTDF)

EPA Designation: Heating Oil (Certified NTDF)

Cancels Previous Issues of Grade 67

PRODUCT PROPERTY	ASTM Test Method	Test Results		Note
		Minimum	Maximum	
Gravity API	D4052	30		
Flash Point, °F	D93	130 (Origin)		
		125.8 (Delivery)		
Physical Distillation, °C(°F)	D86			4
50%			Report	
90%		540	640	
End Point			700	
Color ASTM	D6045		2.5 (origin)	
Color Visual		Undyed		
Viscosity, cSt @ 40oC (104oF)	D445	1.9	4.1	
Pour Point	D97			2
Cloud Point	D2500			2
Corrosion, 3 hrs. @ 50°C (122°F)	D130		1	
Total Sulfur, ppmwt	D5453		11 (Origin)	3
			15(Delivery)	
Cetane Number	D613	40		5
And One of the following condition should be met				
1. Aromatics (Volume %) , **OR**	D1319		35	
2. Cetane Index	D976	40		
Ash, wt.%	D482		0.01	
Carbon Residue: Ramsbottom on 10% Bottom	D524		0.35	
BS&W, vol.%	D2709		< 0.05	
Oxidation stability, mg/100 ml	D2274		2.5	
OR				
Thermal Stability, 90 minutes, 150°C Pad Rating	DuPont F-21		7	
OR				
Thermal Stability Reflectance	D6468			
Y/Green **OR**		73%		
W Unit		68%		
Haze rating @ 25°C (77°F) Procedure 2	D4176		2	
Nace Corrosion	TM0172	B+ (Origin)		
Electrical Conductivity, pS/m @ 21°C(70°F)	D2624		250	

3.23.2

GRADE 67

SPECIFICATIONS FOR FUNGIBLE 15 PPM DISTILLATE FUEL (CERTIFIED NTDF)

EPA Designation: Heating Oil Certified NTDF

Cancels Previous Issues of Grade 67

NOTES:

1. Additive requirements/restrictions - refer to section 3.2.	
2. This schedule denotes the fluidity of the distillate at the time and place of origin.	
Pour Point – August 1st through March 14th	Maximum: 0°F.
Pour Point – March 15th through July 31st	Maximum: (10.4°F)
Cloud Point – August 1st through March 14th	Maximum: (15.8°F)
Cloud Point – March 15th through July 31st	Maximum:-(19.4°F)
3. Origin laboratory certifying sulfur content can qualify the test method used per EPA performance based testing criteria (See 1090 Subpart D).	
4. Either physical or simulated distillation can be used. Simulated distillation MUST be correlated to D86	
5. Bengal will accept test methods results that are listed in ASTM D975 for all tests. Test methods listed in the table above are considered referee methods by Bengal Pipeline. Referee methods apply for any disputes.	
Delivery test results may vary by the smaller of ASTM reproducibility for a given test or any test tolerance as allowed by state or EPA regulations at the point of delivery.	

3.24

GRADE 69
SPECIFICATION FOR SEGREGATED 15 PPM SULFUR DISTILLATE BLENDSTOCK

EPA Designation: None Required (Product is an unfinished blendstock)
Cancels Previous Issues of Grade 69

PRODUCT PROPERTY	ASTM Test Method	Test Results		Note
		Minimum	Maximum	
Gravity API	D4052	30		
Flash Point, ^{o}F	D93	100		
Nace Corrosion	TM0172	B+ (origin)		
Total Sulfur, ppmwt	D5453		15	1
Electrical Conductivity, pS/m @ 21°C(70°F)	D2624		250	

In order to allow for the proper placement of the batch in our sequence, when nominating the batch, the shipper must supply to the best of his knowledge the following information:

The pre-shipment documentation with the actual results must be received before shipment.

NOTES:

The pre-shipment documentation with the actual results must be received before shipment.
1. Origin laboratory certifying sulfur content can qualify the test method used per EPA performance based testing criteria (See 1090 Subpart D).
2. Additive requirements/restrictions - refer to section 3.2.
3. May contain Renewable Diesel as defined in section 3.2.7
4. Bengal will accept test methods results that are listed in ASTM D975 for all tests. Test methods listed in the table above are considered referee methods by Bengal Pipeline. Referee methods apply for any disputes.
Delivery test results may vary by the smaller of ASTM reproducibility for a given test or any test tolerance as allowed by state or EPA regulations at the point of delivery.

3.25

GRADE 71

SPECIFICATION FOR SEGREGATED HIGH SULFUR DISTILLATE FUEL FOR EXPORT ONLY

EPA Designation: Distillate Fuel for Intra

Cancels Previous Issues of Grade 71

PRODUCT PROPERTY	ASTM Test Method	Test Results		Note
		Minimum	Maximum	
Total Sulfur, ppmwt	D5453		2000	1
Nace Corrosion	TM0172	B+ (origin)		
Electrical Conductivity, pS/m @ 21°C(70°F)	D2624		250	

This product is for export only and is not required to contain dye. It may not be used in the continental U.S. without the addition of dye to meet domestic fuel oil requirements.

In order to allow for the proper placement of the batch in our sequence, when nominating the batch, the shipper must supply to the best of his knowledge the following information:

The pre-shipment documentation with the actual results must be received before shipment.

NOTES:

1. Origin laboratory certifying sulfur content can qualify the test method used per EPA performance based testing criteria (See 1090 Subpart D).
2. Additive requirements/restrictions - refer to section 3.2.
the table above are considered referee methods by Bengal Pipeline. Referee methods apply for any disputes.
Delivery test results may vary by the smaller of ASTM reproducibility for a given test or any test tolerance as allowed by state or EPA regulations at the point of delivery.

Bengal Pipeline Company

3.26

GRADE 72
SPECIFICATION FOR SEGREGATED DISTILLATE BLENDSTOCK

EPA Designation: None Required (Product is an unfinished blendstock)
Cancels Previous Issues of Grade 72

PRODUCT PROPERTY	ASTM Test Method	Test Results		Note
		Minimum	Maximum	
Gravity API	D4052	25	42	
Flash Point, °F	D93	100		
Nace Corrosion	TM0172	B+ (origin)		
Total Sulfur, ppmwt	D5453		500	1
Electrical Conductivity, pS/m @ 21°C(70°F)	D2624		250	

In order to allow for the proper placement of the batch in our sequence, when nominating the batch, the shipper must supply to the best of his knowledge the following information:

The pre-shipment documentation with the actual results must be received before shipment.

NOTES:

The pre-shipment documentation with the actual results must be received before shipment.
1. Origin laboratory certifying sulfur content can qualify the test method used per EPA performance based testing criteria (See 1090 Subpart D).
2. Additive requirements/restrictions - refer to section 3.2.
3. Bengal will accept test methods results that are listed in ASTM D396for all tests. Test methods listed in the table above are considered referee methods by Bengal Pipeline. Referee methods apply for any disputes.
Delivery test results may vary by the smaller of ASTM reproducibility for a given test or any test tolerance as allowed by state or EPA regulations at the point of delivery.

3.27

GRADE 73
SPECIFICATION FOR SEGREGATED 500 PPM LOCOMOTIVE FUEL

EPA Designation: -LM 500 ppm sulfur diesel fuel
Cancels Previous Issues of Grade 73

PRODUCT PROPERTY	ASTM Test Method	Test Results		Note
		Minimum	Maximum	
Sulfur, ppmwt	D5453		500	1
Flash Point ^{o}F	D93	140		
Nace Corrosion	TM0172	B+ (origin)		
Electrical Conductivity, pS/m @ 21°C(70°F)	D2624		250	

In order to allow for the proper placement of the batch in our sequence, when nominating the batch, the shipper must supply to the best of his knowledge the following information:

The Pre-shipment documentation with the actual results must be received before shipment

NOTES:

1. Origin laboratory certifying sulfur content can qualify the test method used per EPA performance based testing criteria (See 1090 Subpart D).
2. Additive requirements/restrictions - refer to section 3.2.
3. Bengal will accept test methods results that are listed in ASTM D396for all tests. Test methods listed in the table above are considered referee methods by Bengal Pipeline. Referee methods apply for any disputes.
Delivery test results may vary by the smaller of ASTM reproducibility for a given test or any test tolerance as allowed by state or EPA regulations at the point of delivery.

Bengal Pipeline Company

3.28.1

GRADE 75

SPECIFICATIONS FOR FUNGIBLE 500 PPM SULFUR HEATING OIL

EPA Designation: Heating Oil

Cancels Previous Issues of Grade 75

PRODUCT PROPERTY	ASTM Test Method	Test Results		Note
		Minimum	Maximum	
Gravity API	D4052	30		
Flash Point, °F	D93	124 (Origin)		
		116 (Delivery)		
Physical Distillation, °C(°F)	D86			4
50%			Report	
90%		540	640	
End Point			700	
Color ASTM	D6045		2.5 [W] Origin	3
Color Visual		Undyed		
Viscosity, cSt @ 40oC (104oF)	D445	1.9	4.1	
Pour Point	D97			2
Cloud Point	D2500			2
Corrosion, 3 hrs. @ 50°C (122°F)	D130		1	
Total Sulfur, ppmwt	D5453		420 (Origin)	5
			500 (Delivery)	
Cetane Number	D613	40		6
And One of the following condition should be met 1.				
Aromatics (Volume %) , **OR**	D1319		35	
2. Cetane Index	D976	40		
Ash, wt.%	D482		0.01	
Carbon Residue: Ramsbottom on 10% Bottom	D524		0.35	
BS&W, vol.%	D2709		< 0.05	
Oxidation stability, mg/100 ml	D2274		2.5	
OR				
Thermal Stability, 90 minutes, 150°C Pad Rating	DuPont F-21		7	
OR				
Thermal Stability Reflectance	D6468			
Y/Green **OR**		73%		
W Unit		68%		
Haze rating @ 25°C (77°F) Procedure 2	D4176		2	
Nace Corrosion	TM0172	B+ (Origin)		
Electrical Conductivity, pS/m @ 21°C(70°F)	D2624		250	

3.28.2

GRADE 75
SPECIFICATIONS FOR FUNGIBLE 500 PPM SULFUR HEATING OIL

Cancels Previous Issues of Grade 75

NOTES:

1. Additive requirements/restrictions - refer to section 3.2.	
2. This schedule denotes the fluidity of the distillate at the time and place of origin.	
Pour Point – August 1st through March 14th	Maximum: 0°F.
Pour Point – March 15th through July 31st	Maximum: 10.4°F
Cloud Point – August 1st through March 14th	Maximum: 15.8°F
Cloud Point – March 15th through July 31st	Maximum: 19.4°F
3. ASTM color measurement before addition of dye.	
4. Either physical or simulated distillation can be used. Simulated distillation MUST be correlated to D86	
5. Origin laboratory certifying sulfur content can qualify the test method used per EPA performance based testing criteria (See 1090 Subpart D).	
6. Bengal will accept test methods results that are listed in ASTM D396/D975 for all tests. Test methods listed in the table above are considered referee methods by Bengal Pipeline. Referee methods apply for any disputes	
Delivery test results may vary by the smaller of ASTM reproducibility for a given test or any test tolerance as allowed by state or EPA regulations at the point of delivery	

Bengal Pipeline Company

3.29.1

GRADE 77

SPECIFICATIONS FOR FUNGIBLE HIGH SULFUR UNDYED HEATING OIL GRADE 77

EPA Designation: Heating Oil

Cancels Previous Issues of Grade 77

PRODUCT PROPERTY	ASTM Test Method	Test Results		Note
		Minimum	Maximum	
Gravity API	D4052	30		
Flash Point, °F	D93	124 (Origin)		
		116 (Delivery)		
Physical Distillation, °C(°F)	D86			5
50%			Report	
90%		540	640	
End Point			700	
Color ASTM	D6045		2.5 (Origin)	3
Color Visual		Undyed		
Viscosity, cSt @ 40oC (104oF)	D445	1.9	4.1	
Pour Point	D97			2
Cloud Point	D2500			2
Corrosion, 3 hrs. @ 50°C (122°F)	D130		1	
Total Sulfur, ppmwt	D4294		2000	4
Cetane Number	D613	40		6
And One of the following condition should be met				
1. Aromatics (Volume %) , **OR**	D1319		35	
2. Cetane Index	D976	40		
Ash, wt.%	D482		0.01	
Carbon Residue: Ramsbottom on 10% Bottom	D524		0.35	
BS&W, vol.%	D2709		< 0.05	
Oxidation stability, mg/100 ml	D2274		2.5	
OR				
Thermal Stability, 90 minutes, 150°C Pad Rating	DuPont F-21		7	
OR				
Thermal Stability Reflectance	D6468			
Y/Green **OR**		73%		
W Unit		68%		
Haze rating @ 25°C (77°F) Procedure 2	D4176		2	
Nace Corrosion	TM0172	B+ (Origin)		
Electrical Conductivity, pS/m @ 21°C(70°F)	D2624		250	

3.29.2

GRADE 75

SPECIFICATIONS FOR FUNGIBLE 500 PPM SULFUR HEATING OIL

EPA Designation: Heating Oil
Cancels Previous Issues of Grade 77

NOTES:

1. Additive requirements/restrictions - refer to section 3.2.	
2. This schedule denotes the fluidity of the distillate at the time and place of origin.	
Pour Point – August 1st through March 14th	Maximum: 0°F.
Pour Point – March 15th through July 31st	Maximum: 10.4°F
Cloud Point – August 1st through March 14th	Maximum: 15.8°F
Cloud Point – March 15th through July 31st	Maximum: 19.4°F
3. ASTM color measurement before addition of dye	
4. Origin laboratory certifying sulfur content can qualify the test method used per EPA performance based testing criteria (See 1090 Subpart D).	
5. Either physical or simulated distillation can be used. Simulated distillation MUST be correlated to D86	
6. Bengal will accept test methods results that are listed in ASTM D396/ 975 for all tests. Test methods listed in the table above are considered referee methods by Bengal Pipeline. Referee methods apply for any disputes	
Delivery test results may vary by the smaller of ASTM reproducibility for a given test or any test tolerance as allowed by state or EPA regulations at the point of delivery.	

3.30

GRADE 78
SPECIFICATION FOR FUNGIBLE MILITARY DIESEL FUEL MARINE GRADE F-76

EPA Designation: Except distillate covered by national security exemption under 1090.605

Cancels Previous Issues of Grade 78

Shipments of Grade 78 must meet the latest military specification for DFM.

Bengal Pipeline Company

3.31

GRADE 79
SPECIFICATION FOR SEGREGATED DISTILLATE BLENDSTOCK

EPA Designation: None Required (Product is an unfinished blendstock)
Cancels Previous Issues of Grade 79

PRODUCT PROPERTY	ASTM Test	Test Results		Note
	Method	Minimum	Maximum	
Gravity API	D4052	25	42	
Flash Point, °F	D93	100		
Nace Corrosion	TM0172	B+ (origin)		
Total Sulfur, ppmwt	D7039		10000	1
Electrical Conductivity, pS/m @ 21°C(70°F)	D2624		250	

In order to allow for the proper placement of the batch in our sequence, when nominating the batch, the shipper must supply to the best of his knowledge the following information:

The pre-shipment documentation with the actual results must be received before shipment.

NOTES:

The pre-shipment documentation with the actual results must be received before shipment.
1. Origin laboratory certifying sulfur content can qualify the test method used per EPA performance based testing criteria (See 1090 Subpart D).
2. Additive requirements/restrictions - refer to section 3.2.
3. Bengal will accept test methods results that are listed in ASTM D396 for all tests. Test methods listed in the table above are considered referee methods by Bengal Pipeline. Referee methods apply for any disputes.
Delivery test results may vary by the smaller of ASTM reproducibility for a given test or any test tolerance as allowed by state or EPA regulations at the point of delivery.

Bengal Pipeline Company

3.32.1

GRADE 81

SPECIFICATIONS FOR FUNGIBLE ULTRA LOW SULFUR DIESEL #1

EPA Designation: Undyed #1 MVNRLM

Cancels Previous Issues of Grade 81

Product Property	ASTM Test Method	Test Results Minimum	Test Results Maximum	Note
Composition Properties				
Appearance	White Bucket	Report		
Sulfur, ppmwt	D5453		11 (origin)	3
	D5453		15 (Delivery)	
Doctor Test	D4952	Negative (Sweet)		4
Mercaptan Sulfur, wt.%	D3227		0.003	
Aromatics, vol.%	D1319		25	
Ash, wt%	D482		0.01	
Burning Quality	D187	Report		6
Cabon Residue: Ramsbotton on 10% Bottom	D524		0.15	
Freezing Point,^{o}C	D5972		-40	
Viscosity, cSt @ 104^{o}F (40^{o}C)	D445	1.3	1.9	
Physical Distillation,^{o}F	D86			5
10% recovered			400.	
50% recovered		Report		
90% recovered			550.	
End Point			572	
Residue, %			1.5	
Loss, %			1.5	
Flash Point, ^{o}F	D56	108		
Gravity	D4052	37	51	
Thermal Stability, 90 Minutes				
150^{o}C Pad Rating	DuPont		7	
Cetane Index	D976	40		6
And One of the following condition should be met				
1. Aromatics (Volume %) , **OR**	D1319		35	
2. Cetane Index	D976	40		
Color: Origin	D156	18		
Color: Delivery		+16		
Corrosion 2 hrs. @ 212^{o}F (100^{o}C)	D130		1	
NACE	TM0172	B+		
Additives		Report		
Electrical Conductivity pS/m @ 21°C(70°F)	D2624		Report	

Nace Corrosion	TM0172	B^{+} Origin		

3.32.2

GRADE 81

SPECIFICATIONS FOR FUNGIBLE ULTRA LOW SULFUR DIESEL #1

Cancels Previous Issues of Grade 81

NOTES:

1. Product shall be clear and bright and free of suspended matter.
2. Additive requirements/restrictions - refer to section 3.2.
3. Origin laboratory certifying sulfur content can qualify the test method used per EPA performance based testing criteria (see CFR 1090 Subpart D).
4. Mercaptan Sulfur waived if fuel is negative by Doctor test.
5. Either physical or simulated distillation can be used, Simulated distillation MUST be correlated to D86
6. Bengal will accept test methods results that are listed in ASTM D975 for all tests. Test methods listed in the table above are considered referee methods by Colonial Pipeline. Referee methods apply for any dispute.
7. All products (except aviation grades) must meet a minimum level of corrosion protection, indicated by a minimum rating of B+ as determined by NACE Standard Test Method TM0172 (Determining Corrosive Properties in Petroleum Product Pipelines).
8. Intended to be consistent with ASTM Grade No. 1 middle distillate fuels, unless otherwise noted.
9. Biofuel Components (eg Biodiesel) are not permitted in this product

[w]3.3~~2~~3

GRADES 90-96
SPECIFICATION FOR FUNGIBLE TRANSMIX

Cancels Previous Issues of Grade 90-94

Each grade can consist of varying concentrations of the following distillate and gasoline:

Grade	Distillate	Gasoline
90	Distillate	Conventional
91	Distillate	RFG
92	Distillate	RFG
93	Distillate	RBOB
94	Distillate	RBOB
	Distillate	**Distillate**
96	High Sulfur Kerosine	Ultra Low Sulfur Diesel (ULSD)

Explanation of Reference Marks

[N]……..New
[W]……Change in Wording
[C]……Cancels