

SEGREGATED PRODUCT SPECIFICATIONS

Introduction

Product specifications for segregated batches received by Plantation must conform to standards of current ASTM specifications and applicable governmental authority at the scheduled destination. Refer to section IV of this manual for additional requirements for the transport of segregated movements of diesel fuels, jet fuels, conventional gasolines, and reformulated gasolines.

Laboratory Report

An official laboratory document is required for each batch of segregated product. This document must be submitted to the Operations Control Department prior to receipt of the segregated batch into the Plantation system. This document may be faxed, mailed, or by some other means of electronic transmission. Please reference the section, Communications, page 15 for telephone numbers and addresses.

The laboratory document shall be received within the following time periods, and must include results for all test properties applicable to the segregated product. Refer to the specific product specification sheet for each product, for a list of test properties.

- Baton Rouge Origins - within 24 hours upon initial receipt of movement into the Baton Rouge tank farm
- Collins Origins - prior to the initial receipt of the movement into pipeline system
- Pascagoula Origin - within 24 hours upon initial receipt of movement into pipeline system

Segregated Grades

<u>Grade(s)</u>	<u>Product Description</u>	<u>Page</u>
F, H	Reformulated Blendstock for Oxygenate Blending (RBOB)	2
L	Conventional Blendstock for Oxygenate Blending (CBOB)	3
M	Conventional Gasolines, non-oxygenated.....	4
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V	Conventional Gasolines, non-oxygenated.....	6
53	Aviation Kerosine, 15 ppm wt. sulfur.....	7
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86	High Sulfur NRLM Diesel Fuel, 2000 ppm wt. sulfur (dyed by Plantation)	9
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Segregated Specifications for Reformulated Blendstock for Oxygenate Blending (RBOB)
For Blending with 10% Denatured Fuel Ethanol (92% purity) as Defined in ASTM D4806

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.

Product Grade: RBOB
PPL Product Codes: F, H Grades
Effective Date: 2/12/07

Test Property	ASTM Test Method	TEST RESULTS	
		Minimum	Maximum
Aromatics, vol. %	D5599, GC-OFID ^(a)		50
Benzene, vol. %	D3606		1.30
Color			Undyed
E200, vol. %	D86	30	70
E300, vol. %	D86	70	100
Emissions Performance Reductions, % Grades (1F, 1H) VOC Control Region 1 Cycles 17 through 23 Cycles 24 through 48	^(b)	Delivery 25.0 Origin 28.0 Origin 27.0	
Gravity, °API at 60°F (before blending)	D287, D1298, D4052		Report
Heavy Metals		not allowed	
Olefins, vol. %	D1319		25
Oxidation Stability, Minutes	D525	240	
Oxygen Content, wt. %	D5599, GC-OFID ^{(a) (c)}	not allowed	
Port Fuel Injector (PFI) and Intake Valve Detergent Additives			^(d)
Reid Vapor Pressure ^(e) Grades 1(F, H) 3(F, H) 4(F, H) 5(F, H)	D5191		^(b) 11.5 13.5 15.0
Corrosion (Ag) 3 hrs @ 122°F (50°C)	D4814-04b Annex A1		1
Nace Corrosion	TM0172-2001	B+ (Origin)	
Sulfur, wt. %	D2622 ^(f)		0.0080

Octane Rating (AKI)

Test Property	ASTM Method	Grades (1-5)F	Grades (1-5)H
RON	D2699	Report	Report
MON	D2700	82.0	Report
AKI (R+M)/2		87.0	93.0

^(a) The test methods published in 40 CFR Charter 1, Part 80.46

^(b) EPA guidelines must be used to calculate the emissions reductions.

^(c) These product grades can not contain blends of aliphatic ethers (oxygenates). The use of any other non-hydrocarbon blending components is prohibited. Origin maximum for MTBE is 0.25vol%. Delivery maximum for MTBE is 0.50vol%.

^(d) The use of Port Fuel injector (PFI) and intake valve detergent additives is prohibited. This is a base gasoline, not for sale to the ultimate consumer.

^(e) During the VOC control period, testing must be performed in accordance with 40 CFR, Part 80, Appendix E, Method 3.

^(f) Refer to 40 CFR, Part 80.195 (d)(2).

Segregated Specifications For Regular Conventional Blendstock for Oxygenate Blending (CBOB). For Blending with 10% Denatured Fuel Ethanol (92% purity) as Defined in ASTM D4806.

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.

Product Grade: Regular CBOB
PPL Product Codes: L Grades
Effective Date: April 2009

Test Property	ASTM Test Method	TEST RESULTS	
		Minimum	Maximum
Color			Undyed
Corrosion (Cu), 3 hrs. @ 122°F (50°C) ^(a)	D130		1
Corrosion (Ag) 3 hrs @ 122°F (50°C)	D4814-04b Annex A1		1
Gravity, °API at 60°F (before blending)	D287, D1298, D4052		Report
Heavy Metals		not allowed	
Oxygen Content, wt. %	D5599, GC-OFID ^{(b)(c)}		0.05 ^(a)
Nace Corrosion	TM0172-2001	B+ (Origin)	
Port Fuel Injector (PFI) and Intake Valve Detergent Additives			^(d)
Reid Vapor Pressure ^(e)	D5191		
Grades 2L			10.0
3L			12.5
4L			14.5
Sulfur, wt. %	D2622 ^(f)		0.0080

Octane Rating (AKI)

Test Property	ASTM Method	Grades (0-4)L
RON	D2699	Report
MON	D2700	82.0
AKI (R+M)/2		87.0

^(a) These product grades can not contain blends of aliphatic ethers (oxygenates). The use of any other non-hydrocarbon blending components is prohibited.

^(b) The test methods published in 40 CFR Charter 1, Part 80.46. ASTM D1319 and ASTM D4815 are alternative test methods for aromatics and oxygenates per federal and state regulations.

^(c) Parameter must be met before blending with denatured fuel ethanol.

^(d) The use of Port Fuel injector (PFI) and intake valve detergent additives is prohibited. This is a base gasoline, not for sale to the ultimate consumer.

^(e) During the VOC control period, testing must be performed in accordance with 40 CFR, Part 80, Appendix E, Method 3.

^(f) Refer to 40 CFR, Part 80.195 (d)(2).

Segregated Specification for Regular Conventional Gasoline, non-oxygenated

Product Grade: Regular Conventional Gasoline, non-oxygenated
PPL Product Codes: M Grade
Effective Date: 3/19/09

Test Property	ASTM Test Method	TEST RESULTS	
		Minimum	Maximum
Color			Undyed
Gravity, °API at 60°F	D287, D1298, D4052		Report
Heavy Metals		not allowed	
Octane: RON MON AKI (R+M)/2	D2699 D2700	Report 82.0 87.0	
Oxygen Content, wt. % ^(a) MTBE, vol. % ^(b)	D4815, D5599, GC-OFID D4815, D5599, GC-OFID		Origin 0.25 Delivery 0.50 (c)
Port Fuel Injector (PFI) and Intake Valve Detergent Additives			
Reid Vapor Pressure ^(d) Grades 1(M) without ethanol with 10% ethanol 2(M) 3(M) 4(M) 5(M)	D5191		7.8 8.8 9.0 11.5 13.5 15.0
Corrosion (Ag) 3 hrs @ 122°F (50°C)	D4814-04b Annex A1		1
Nace Corrosion	TM0172-2001	B+ (Origin)	
Sulfur, wt. %	D2622 ^(e)		0.0080

^(a) These product grades may not contain oxygenates; however, non-oxygenated is defined as having no more than 0.1 wt% oxygen content. The use of any other non-hydrocarbon blending components is prohibited.

^(b) Delivery may contain MTBE in North Carolina, And Virginia.

^(c) The use of Port Fuel injector (PFI) and intake valve detergent additives is prohibited. This is a base gasoline, not for sale to the ultimate consumer.

^(d) During the VOC control period, testing must be performed in accordance with 40 CFR, Part 80, Appendix E, Method 3.

^(e) Refer to 40 CFR, Part 80.195 (d)(2).

Segregated Specifications For Regular Conventional Blendstock for Oxygenate Blending (CBOB). For Blending with 10% Denatured Fuel Ethanol (92% purity) as Defined in ASTM D4806.

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.

Product Grade: Regular CBOB
PPL Product Codes: S & T Grades
Effective Date: April 2008

Test Property	ASTM Test Method	TEST RESULTS	
		Minimum	Maximum
Color			Undyed
Corrosion (Cu), 3 hrs. @ 122°F (50°C) ^(b)	D130		1
Corrosion (Ag) 3 hrs @ 122°F (50°C)	D4814-04b Annex A1		1
Gravity, °API at 60°F (before blending)	D287, D1298, D4052		Report
Heavy Metals		not allowed	
Oxygen Content, wt. %	D5599, GC-OFID ^{(b)(c)}		0.05 ^(a)
Nace Corrosion	TM0172-2001	B+ (Origin)	
Port Fuel Injector (PFI) and Intake Valve Detergent Additives			(d)
Reid Vapor Pressure ^(e) Grades 0(S & T) 2(S & T) 3(S & T) 4(S & T)	D5191		8.0 10.0 12.5 14.5
Sulfur, wt. %	D2622 ^(f)		0.0080

Octane Rating (AKI)

Test Property	ASTM Method	Grades (0-4)S	Grades (0-4)T
RON	D2699	Report	Report
MON	D2700	82.0	Report
AKI (R+M)/2		87.0	93.0

(a) These product grades can not contain blends of aliphatic ethers (oxygenates). The use of any other non-hydrocarbon blending components is prohibited.

(b) The test methods published in 40 CFR Charter 1, Part 80.46. ASTM D1319 and ASTM D4815 are alternative test methods for aromatics and oxygenates per federal and state regulations.

(c) Parameter must be met before blending with denatured fuel ethanol.

(d) The use of Port Fuel injector (PFI) and intake valve detergent additives is prohibited. This is a base gasoline, not for sale to the ultimate consumer.

(e) During the VOC control period, testing must be performed in accordance with 40 CFR, Part 80, Appendix E, Method 3.

(f) Refer to 40 CFR, Part 80.195 (d)(2). There are other regulatory agency requirements for the importer of Atlanta area gasoline into the State of Georgia.

Segregated Specifications for Premium Conventional Gasoline, non-oxygenated

Product Grade: Premium Conventional Gasoline, non-oxygenated
PPL Product Codes: V Grades
Effective Date: 3/19/09

Test Property	ASTM Test Method	TEST RESULTS	
		Minimum	Maximum
Color			Undyed
Gravity, °API at 60°F	D287, D1298, D4052		Report
Heavy Metals		not allowed	
Octane: RON MON AKI (R+M)/2	D2699 D2700	Report Report 93.0	
Oxygen Content, wt. % ^(a) MTBE, vol. %	D4815, D5599, GC-OFID D4815, D5599, GC-OFID		Origin 0.25 Delivery 0.50 (b)
Port Fuel Injector (PFI) and Intake Valve Detergent Additives			(b)
Reid Vapor Pressure ^(c) Grades 1(V) without ethanol with 10% ethanol 2(V) 3(V) 4(V) 5(V)	D5191		7.8 8.8 9.0 11.5 13.5 15.0
Corrosion (Ag) 3 hrs @ 122°F (50°C)	D4814-04b Annex A1		1
Nace Corrosion	TM0172-2001	B+ (Origin)	
Sulfur, wt. %	D2622 ^(d)		0.0080

^(a) These product grades may not contain oxygenates; however, non-oxygenated is defined as having no more than 0.1 wt% oxygen content. The use of any other non-hydrocarbon blending components is prohibited.

^(b) The use of Port Fuel injector (PFI) and intake valve detergent additives is prohibited. This is a base gasoline, not for sale to the ultimate consumer.

^(c) During the VOC control period, testing must be performed in accordance with 40 CFR, Part 80, Appendix E, Method 3.

^(d) Refer to 40 CFR, Part 80.195 (d)(2).

Segregated Specifications for Aviation Kerosine

Product Grade: Aviation Kerosine
PPL Product Codes: 53
Effective Date: 5/8/07

Test Property	ASTM Test Method	TEST RESULTS	
		Minimum	Maximum
Gravity, °API at 60°F	D287, D1298, D4052	37	51
Clear & Bright ^(a)			
Flash Point, °F	D56 or D3828	108	
MSEP Rating	D3948	Report	
Sulfur, ppm wt.	D2622, D5453, D7039		15

^(a) This product grade shall be clear and bright and free of suspended matter.

Segregated Specifications for Aviation Kerosine (400 ppm wt. sulfur)

Product Grade: Aviation Kerosine (400 ppm wt. sulfur)
 PPL Product Codes: 57
 Effective Date: 4/30/06

Test Property	ASTM Test Method	TEST RESULTS	
		Minimum	Maximum
Gravity, °API at 60°F	D287, D1298, D4052	37	51
Clear & Bright ^(a)			
Flash Point, °F	D56 or D3828	123	
MSEP Rating	D3948	Report	
Sulfur, ppm wt.	D2622, D5453, D7039		400

^(a) This product grade shall be clear and bright and free of suspended matter.

Segregated Specifications for High Sulfur NRLM Diesel Fuel (2000 ppm wt. sulfur)

Product Grade: High Sulfur NRLM Diesel Fuel (2000 ppm wt. sulfur)
 PPL Product Codes: 86
 Effective Date: 5/8/07

Test Property	ASTM Test Method	TEST RESULTS	
		Minimum	Maximum
Gravity, °API at 60°F	D287, D1298, D4052		Report
Flash Point, Pensky-Martens, °F	D93	130	
Total Sulfur, ppm wt.	D2622, D5453, D7039		2000
Nace Corrosion	TM0172-2001	B+ (Origin)	
Dye			(a)

^(a) The maximum allowable concentration of red dye (optically equivalent to Solvent Red Dye #26 at a concentration of 0.75 pounds of Solid Red #26 per 1,000 barrels). Plantation will dye this product to meet the IRS diesel dye requirements.

Segregated Specifications for Heating Oil (2000 ppm wt. sulfur)

Product Grade: Heating Oil (2000 ppm wt. sulfur)
 PPL Product Codes: 88
 Effective Date: 5/8/07

Test Property	ASTM Test Method	TEST RESULTS	
		Minimum	Maximum
Gravity, °API at 60°F	D287, D1298, D4052		Report
Flash Point, Pensky-Martens, °F	D93	130	
Total Sulfur, ppm wt.	D2622, D5453, D7039		2000
Sulfur, wt. %	D2622, or D4294		0.50
Nace Corrosion	TM0172-2001	B+ (Origin)	
Dye			(a)

^(a) The maximum allowable concentration of red dye (optically equivalent to Solvent Red Dye #26 at a concentration of 0.75 pounds of Solid Red #26 per 1,000 barrels). Plantation will dye this product to meet the IRS diesel dye requirements.

FUNGIBLE PRODUCT SPECIFICATIONS

Introduction

This section contains product specifications for the following fungible products. Refer to section IV of this manual for additional requirements for the transport of fungible movements of low sulfur diesel fuel and conventional, oxygenated and reformulated gasolines.

Fungible Grades

Grade	Product Description	Page
F	Regular Reformulated Blendstock for Oxygenate Blending (RBOB 10% Denatured Ethanol)	17
H	Premium Reformulated Blendstock for Oxygenate Blending (RBOB 10% Denatured Ethanol)	19
L	Regular Conventional Blendstock for Oxygenate Blending (CBOB 10% Denatured Ethanol)	21
M	Conventional Gasoline, 87 antiknock index, non-oxygenated	23
S	Regular Conventional Blendstock for Oxygenate Blending (CBOB 10% Denatured Ethanol)	25
T	Premium Conventional Blendstock for Oxygenate Blending (CBOB 10% Denatured Ethanol)	27
V	Conventional Gasoline, 93 antiknock index, non-oxygenated	29
52	Aviation Kerosine, JP-5	31
54/56	Aviation Kerosine, Jet-A, 3000 ppm wt. sulfur max	33
58	Aviation Kerosine, JP-8	35
61/68	Ultra Low Sulfur Diesel Fuel, 15 ppm wt. sulfur maximum at delivery	37
74	Undyed Low Sulfur Highway Diesel Fuel, 500 ppm wt. sulfur maximum at delivery	39
75	High Sulfur NRLM Diesel Fuel, 5000 ppm wt. sulfur maximum (Dyed by customer after delivery)	41
76	Undyed NRLM Diesel Fuel, 500 ppm wt. sulfur maximum at delivery (Dyed by Customer after delivery)	43
80	Undyed NRLM Diesel Fuel, 500 ppm wt. sulfur maximum at delivery (Dyed by Plantation on delivery)	43
85	High Sulfur NRLM Diesel Fuel, 5000 ppm wt. sulfur maximum (Dyed by Plantation on delivery)	41
none	Kinder Morgan Biodiesel Specifications – B99 Biodiesel	45

Guidelines for Fungible Products Movements

Plantation shall impose certain guidelines for movements of fungible products in order to continue its policy of treating all customers equitably.

Nominations

Nominations of fungible batches for the month that the batches will move must be received by the fifth day of the preceding month.

Policy and Procedure for Establishing Product Quality Specifications

It is the Carrier's Policy to only receive, transport and distribute products that meet or exceed the local, state or federal requirements for product quality. Carrier reserves the right to impose more stringent product quality specifications due to operational considerations.

Procedure:

- Identify all local, state and federal laws and specifications pertaining to each grade of product transported via the pipeline network operated by Kinder Morgan.
- Identify any operational issues that may require the Carrier to adopt a specification other than required by any local, state or federal regulation.
- In cases where the specification can be met by a range of values, Carrier reserves the right to conduct a survey of current Shippers. In such cases, each "Shipper" (Company) shall be entitled to a single vote. A simple majority among the Shippers will determine the specification in question. Carrier reserves the right to solicit additional information as needed and set the specification as Carrier deems necessary. All information obtained by the Carrier during a survey shall remain confidential.
- It is the Carrier's intent to publish any changes in product specifications at least 60-days prior to implementation whenever possible.

Certification

The fungible product shall meet Plantation's fungible specifications and must conform to standards of current ASTM specifications and applicable governmental authority at the scheduled destination. An official laboratory document is required for each batch of fungible product. This document must be submitted to the Operations Control Center prior to receipt of the fungible batch into the Plantation system. This document may be faxed, mailed, or by some other means of electronic transmission. Please reference the section, Communications, page 15 for telephone numbers and addresses.

The laboratory document shall be received within the following time periods:

- Baton Rouge Origins - within 24 hours upon initial receipt of movement into the Baton Rouge tank farm
- Collins Origins - prior to the initial receipt of the movement into pipeline system
- Pascagoula Origin - within 24 hours upon initial receipt of movement into pipeline system

Customer Approval

Before a customer can transport fungible batches on the Plantation system, Plantation reserves the right to review the customer's laboratories, applicable tankage and facilities, including third party carriers, and applicable operating procedures that are utilized downstream of the laboratory certification point.

Pipeline Sampling And Testing

Plantation will be sampling and testing at origin points to ensure that all fungible batches meet or exceed Plantation's fungible products specifications. In the event there is a difference between the customer's laboratory document test results and Plantation's test results, a determination by an independent laboratory may be made. The independent laboratory's test results will prevail. If there is insufficient time to consult an independent laboratory, Plantation's test results will prevail. Any batch that does not meet the fungible product specifications will be transported in a segregated manner and subject the customer to additional requirements on future movements.

Approved Additives*Gum Inhibitors and Metal Deactivators*

The use of gum inhibitors and metal deactivators is permitted, but not required, as listed below:

Gum Inhibitors and Metal Deactivators
N, N' di-secondary butyl para-phenylenediamine
N, N' disalicylidene-1, 2 propanediamine
2, 6-di-tertiary butyl 4 methyl phenol
N, N' di (1-ethyl-2-methylpentyl) para-phenylenediamine
N, N' di-isopropyl-para-phenylenediamine
N, N' bis-(1,4-diamethylpentyl)-p-phenylenediamine
n-butyl para-aminophenol
2,4,6-tritertiary butylphenol
ortho-tertiary butylphenol
2,4 diamethyl-6-tertiary-butylphenol
2,4 di-tertiary butylphenol
N, secondary butyl, N' phenyl-para-phenylenediamine
Butylated ethyl, methyl and dimethyl phenols
Mixed propylated and butylated phenols
2,4,6 tri-isopropylphenol
2,6-di-tertiary butylphenol

Corrosion Inhibitors

Listed below is an approved list of corrosion inhibitors that may be used by a customer:

Corrosion Inhibitors for Gasolines			
Aqua Process 11CH77 Corexit 5267	MidContinental Chemical MCC5001	SPEC-AID 8Q103	Tolad 351
Innospec DCI-4A	Mobil C-605	SPEC-AID 8Q106	Unichem 7500
Innospec DCI-6A	OndeoNalco 5403	SPEC-AID 8Q109	Unichem 7501
Innospec DCI-11	OndeoNalco 5405	SPEC-AID 8Q110	Unichem 7510
OctelStarreon DCI-30	OndeoNalco 5406	SPEC-Aid 8Q22	UOP Unicor
Ethyl HiTec 580	SPEC-AID 8Q100	Tolad 4410	UOP Unicor J
Lubrizol 8014	SPEC-AID 8Q101	Tolad 245	UOP Unicor PL
Lubrizol 8017	SPEC-AID 8Q102	Tolad 249	

Other Additives

In addition to the above additives, the following may be used in fungible fuel oils and low sulfur diesel fuels:

Other Additives Allowed		
Dupont AFA-1	OctelStarreon DMA-4	OndeoNalco 5400-A

Diesel fuel may contain static dissipator additive (SDA). Innospec Stadis® 450 is the only approved SDA with a maximum origin concentration of 0.75 mg/l. The origin maximum conductivity allowed is 250 pS/m at 21°C (70°F) by ASTM D2624

Biodiesel (FAME) is not allowed at origin.

Plantation will require all products received to be undyed.

Non-taxable fuel oils must dyed with red dye at the destination, either by the customer or Plantation, to meet the IRS requirements for non-taxable fuels. As a service to its customers, Plantation has dye injection facilities at 3 Plantation delivery terminals for this purpose. This charge for this service is twenty-one cents per barrel of delivered product, invoiced monthly to the shipper of record. Please verify that this charge is the most current before making commitments. The list of dye injection locations is listed below.

Plantation Delivery Locations with Dye Injection Capability	
Columbus, Georgia Macon, Georgia	Doraville, Georgia

If the customer wishes Plantation to dye the product up to the IRS level before delivery into a customer delivery terminal, then the product must be nominated with product code 80. If the customer intends to dye the product up to the IRS level at their terminal, then the movement must be nominated with product codes 76. Plantation adds dye at Plantation’s delivery terminal in sufficient quantity to be spectrally equivalent to 3.9 pounds of Solid Red #26 per thousand barrels, in accordance with IRS diesel dye requirements. This service will be discontinued after terminals transition to dying off road diesel at the rack.

Communications

Plantation will notify all customers of any changes in fungible product specifications, or any other action requiring customer action, as soon as possible.

Laboratory documents should be transmitted to the Operations Control Department through one of the following methods:

FAX:	(770) 751-4068
Mailing Address:	Product Quality
	Plantation Pipe Line Company
	1435 Windward Concourse
	Alpharetta, GA 30005

The laboratory document must include Plantation's batch code as a means of identifying the product.

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Fungible Specifications For Regular Reformulated Blendstock for Oxygenate Blending (RBOB).
For Blending with 10% Denatured Fuel Ethanol (92% purity) as Defined in ASTM D4806.

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.

Product Grade: Regular RBOB
PPL Product Codes: F Grades (F1, F3, F4, F5)
Effective Date: 2/12/07

Test Property	ASTM Test Method	TEST RESULTS	
		Minimum	Maximum
Aromatics, vol. %	(a)		50
Benzene, vol. %	D3606		1.30
Color			Undyed
Corrosion (Cu), 3 hrs. @ 122°F (50°C)	D130		1
Corrosion (Ag) 3 hrs @ 122°F (50°C)	D4814-04b Annex A1		1
Dienes (Dicyclopentadiene)			(b)
Doctor Test -OR- Mercaptan Sulfur, wt. % ^(c)	D4952 D3227		Negative 0.002
Driveability Index	D4814		Report
E200, vol. %	D86	30	70
E300, vol. %	D86	70	100
Emissions Performance Reductions, % Grades (A1) VOC Control Region 1 Cycles 17 through 23 Cycles 24 through 48	(d)	Delivery 25.0 Origin 28.0 Origin 27.0	
Existent Gum, mg/100 ml After Washing	D381		4
Gravity, °API at 60°F (before blending)	D287, D1298, D4052		Report
Heavy Metals		not allowed	
Octane: RON (after blending) MON (after blending) AKI (R+M)/2 (after blending)	D2699 D2700	Report 82.0 87.0	
Olefins, vol. %	D1319		25
Oxidation Stability, Minutes	D525	240	
Oxygen Content, wt. % Grades F1, F3, F4, F5	D5599, GC-OFID ^{(a) (e)}	(g)	(g)
Phosphorous, g/gal.	D3231		0.004

(a) The test methods published in 40 CFR Charter 1, Part 80.46. ASTM D1319 and ASTM D4815 are alternative test methods for aromatics and oxygenates per federal and state regulations.

(b) Any gasoline exhibiting an offensive odor or containing more than 0.50 wt. % of dicyclopentadiene will not be accepted for shipment.

(c) Test for mercaptan sulfur not required if Doctor test results are negative.

(d) EPA guidelines must be used to calculate the emissions reductions.

(e) These product grades can not contain blends of aliphatic ethers (oxygenates). The use of any other non-hydrocarbon blending components is prohibited. Origin maximum of MTBE is 0.25vol%. Delivery maximum of MTBE is 0.50vol%.

(g) Oxygen content must meet a minimum of 1.7wt% and a maximum of 4.0wt% after blending with denatured fuel ethanol.

(continued on next page)

Fungible Specifications For Regular Reformulated Blendstock for Oxygenate Blending (RBOB).
For Blending with 10% Denatured Fuel Ethanol (92% purity) as Defined in ASTM D4806.
(continued from previous page)

Product Grade: Regular RBOB
 PPL Product Codes: F Grades (F1, F3, F4, F5)
 Effective Date: 2/12/07

Test Property	ASTM Test Method	TEST RESULTS	
		Minimum	Maximum
Port Fuel Injector (PFI) and Intake Valve Detergent Additives			(h)
Nace Corrosion	TM0172-2001	B+ (Origin)	
Sulfur, wt. %	D2622 (k)		0.0080
Volatility Distillation Reid Vapor Pressure (i) Vapor/Liquid Ratio (V/L)	D86 D5191 D2533, D5188		See Table Below

Volatility & Distillation							
Product Grade	Distillation Temperatures, °C(°F) at % Evaporated				RVP psi	V/L Ratio °C(°F) at 20	
	10 Vol. %	50 Vol. %		90 Vol. %			End Point
Code	Max	min	max	max	max	min	
F1 VOC controlled Region 1	70 (158)	66 (150)	121 (250)	190 (374)	221 (430)	56 (133)	
F3 Non-VOC controlled	60 (140)	66 (150)	116 (240)	185 (365)	221 (430)	51 (124)	
F4 Non-VOC controlled	55 (131)	66 (150)	113 (235)	185 (365)	221 (430)	47 (116)	
F5 Non-VOC controlled	50 (122)	66 (150)	110 (230)	185 (365)	221 (430)	41 (105)	

(h) The use of Port Fuel injector (PFI) and intake valve detergent additives is prohibited. This is a base gasoline, not for sale to the ultimate consumer
 (i) During the VOC control period, testing must be performed in accordance with 40 CFR, Part 80, Appendix E, Method 3.
 (j) EPA guidelines must be used to calculate the emissions reductions.
 (k) Refer to 40 CFR, Part 80.195 (d)(2).

Fungible Specifications For Premium Reformulated Blendstock for Oxygenate Blending (RBOB).
For Blending with 10% Denatured Fuel Ethanol (92% purity) as Defined in ASTM D4806.

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.

Product Grade: Premium RBOB
PPL Product Codes: H Grades (H1, H3, H4, H5)
Effective Date: 2/12/07

Test Property	ASTM Test Method	TEST RESULTS	
		Minimum	Maximum
Aromatics, vol. %	(a)		50
Benzene, vol. %	D3606		1.30
Color			Undyed
Corrosion (Cu), 3 hrs. @ 122°F (50°C) (b)	D130		1
Corrosion (Ag) 3 hrs @ 122°F (50°C)	D4814-04b Annex A1		1
Dienes (Dicyclopentadiene)			(c)
Doctor Test -OR- Mercaptan Sulfur, wt. % (d)	D4952 D3227		Negative 0.002
Driveability Index	D4814		Report
E200, vol. %	D86	30	70
E300, vol. %	D86	70	100
Emissions Performance Reductions, % Grades (D1) VOC Control Region 1 Cycles 17 through 23 Cycles 24 through 48	(e)	Delivery 25.0 Origin 28.0 Origin 27.0	
Existent Gum, mg/100 ml After Washing	D381		4
Gravity, °API at 60°F	D287, D1298, D4052		Report
Heavy Metals		not allowed	
Octane: RON (after blending) MON (after blending) AKI (R+M)/2 (after blending)	D2699 D2700	Report Report 93.0	
Olefins, vol. %	D1319		25
Oxidation Stability, Minutes	D525	240	
Oxygen Content, wt. % Grades H1, H2, H3, H4, H5	D5599, GC-OFID (a) (f)	(g)	(g)
Phosphorous, g/gal.	D3231		0.004

(a) The test methods published in 40 CFR Charter 1, Part 80.46. ASTM D1319 and ASTM D4815 are alternative test methods for aromatics and oxygenates per federal and state regulations.

(b) No additives containing phosphorous may be used in this gasoline. Refer to the section, *Approved Additives*, page 14, for a list of acceptable gum inhibitors, metal deactivators and corrosion inhibitors.

(c) Any gasoline exhibiting an offensive odor or containing more than 0.50 wt. % of dicyclopentadiene will not be accepted for shipment.

(d) Test for mercaptan sulfur not required if Doctor test results are negative.

(e) EPA guidelines must be used to calculate the emissions reductions.

(f) These product grades can not contain blends of aliphatic ethers (oxygenates). The use of any other non-hydrocarbon blending components is prohibited. Origin maximum of MTBE is 0.25vol%. Delivery maximum of MTBE is 0.50vol%.

(g) Oxygen content must meet a minimum of 1.7wt% and a maximum of 4.0wt% after blending with denatured fuel ethanol.

(continued on next page)

Fungible Specifications For Premium Reformulated Blendstock for Oxygenate Blending (RBOB). For Blending with 10% Denatured Fuel Ethanol (92% purity) as Defined in ASTM D4806.

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.

(continued from previous page)

Product Grade: Premium RBOB
PPL Product Codes: H Grades (H1, H3, H4, H5)
Effective Date: 2/12/07

Test Property	ASTM Test Method	TEST RESULTS	
		Minimum	Maximum
Port Fuel Injector (PFI) and Intake Valve Detergent Additives			(h)
Nace Corrosion	TM0172-2001	B+ (Origin)	
Sulfur, wt. %	D2622 (k)		0.0080
Volatility Distillation Reid Vapor Pressure (i) Vapor/Liquid Ratio (V/L)	D86 D5191 D2533, D5188		See Table Below

Volatility & Distillation							
Product Grade	Distillation Temperatures, °C(°F) at % Evaporated					RVP psi	V/L Ratio °C(°F) at 20
	10 Vol. %	50 Vol. %		90 Vol. %	End Point		
Code	Max	min	max	max	max	max	min
H1 VOC controlled Region 1	70 (158)	66 (150)	121 (250)	190 (374)	221 (430)	(j)	56 (133)
H3 Non-VOC controlled	60 (140)	66 (150)	116 (240)	185 (365)	221 (430)	11.5	51 (124)
H4 Non-VOC controlled	55 (131)	66 (150)	113 (235)	185 (365)	221 (430)	13.5	47 (116)
H5 Non-VOC controlled	50 (122)	66 (150)	110 (230)	185 (365)	221 (430)	15.0	41 (105)

(h) The use of Port Fuel injector (PFI) and intake valve detergent additives is prohibited. This is a base gasoline, not for sale to the ultimate consumer.

(i) During the VOC control period, testing must be performed in accordance with 40 CFR, Part 80, Appendix E, Method 3.

(j) EPA guidelines must be used to calculate the emissions reductions.

(k) Refer to 40 CFR, Part 80.195 (d)(2).

Fungible Specifications For Regular Conventional Blendstock for Oxygenate Blending (CBOB).
For Blending with 10% Denatured Fuel Ethanol (92% purity) as Defined in ASTM D4806.

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.

Product Grade: Regular CBOB
PPL Product Codes: L Grades (L2, L3, L4)
Effective Date: April 2009

Test Property	ASTM Test Method	TEST RESULTS	
		Minimum	Maximum
Benzene, vol. %	D3606		4.9
Color			Undyed
Corrosion (Cu), 3 hrs. @ 122°F (50°C)	D130		1
Corrosion (Ag) 3 hrs @ 122°F (50°C)	D4814-04b Annex A1		1
Dienes (Dicyclopentadiene)			(a)
Doctor Test -OR- Mercaptan Sulfur, wt. % ^(b)	D4952 D3227		Negative 0.002
Driveability Index	D4814		Report
Existent Gum, mg/100 ml After Washing	D381		4
Gravity, °API at 60°F (before blending)	D287, D1298, D4052		Report
Heavy Metals		not allowed	
Octane: RON (after blending) MON (after blending) AKI (R+M)/2 (after blending)	D2699 D2700	Report 82.0 87.0	
Oxidation Stability, Minutes	D525	240	
Oxygen Content, wt. %	D5599, GC-OFID ^{(c)(d)}		0.05 ^(e)
Nace Corrosion	TM0172-2001	B+ (Origin)	
Phosphorous, g/gal.	D3231		0.004 ^(f)
Port Fuel Injector (PFI) and Intake Valve Detergent Additives			(g)
Sulfur, wt. %	D2622 (h)		0.0080

(a) Any gasoline exhibiting an offensive odor or containing more than 0.50 wt. % of dicyclopentadiene will not be accepted for shipment.

(b) Test for mercaptan sulfur not required if Doctor test results are negative.

(c) These product grades can not contain blends of aliphatic ethers (oxygenates). The use of any other non-hydrocarbon blending components is prohibited.

(d) The test methods published in 40 CFR Charter 1, Part 80.46. ASTM D1319 and ASTM D4815 are alternative test methods for aromatics and oxygenates per federal and state regulations.

(e) Parameter must be met before blending with denatured fuel ethanol.

(f) No additives containing phosphorous may be used in this gasoline.

(g) The use of Port Fuel injector (PFI) and intake valve detergent additives is prohibited. This is a base gasoline, not for sale to the ultimate consumer.

(h) Refer to 40 CFR, Part 80.195 (d)(2).

Fungible Specifications For Regular Conventional Blendstock for Oxygenate Blending (CBOB). For Blending with 10% Denatured Fuel Ethanol (92% purity) as Defined in ASTM D4806.
 (continued from previous page)

Product Grade: Regular CBOB
 PPL Product Codes: L Grades (L2, L3, L4)
 Effective Date: April 2009

Test Property	ASTM Test Method	TEST RESULTS	
		Minimum	Maximum
Volatility Distillation Reid Vapor Pressure ⁽ⁱ⁾ Vapor/Liquid Ratio (V/L)	D86 D5191 D2533, D5188		See Table Below

Volatility & Distillation							
Product Grade	Distillation Temperatures, °C(°F) at % Evaporated					RVP psi	V/L Ratio °C(°F) at 20
	10 Vol. %	50 Vol. %		90 Vol. %	End Point		
Code	Max	min	max	max	max	max	min
L2	70 (158)	66 (150)	121 (250)	190 (374)	221 (430)	10.0	49 (120)
L3	60 (140)	66 (150)	116 (240)	185 (365)	221 (430)	12.5	45 (113)
L4	55 (131)	66 (150)	113 (235)	185 (365)	221 (430)	14.5	42 (107)
L5	50 (122)	66 (150)	110 (230)	185 (365)	221 (430)	16.0	37 (99)

⁽ⁱ⁾ During the VOC control period, testing must be performed in accordance with 40 CFR, Part 80.

Fungible Specifications for Conventional Gasoline, 87 antiknock index, non-oxygenated

Product Grade: Conventional Gasoline, 87 Antiknock Index, Non-Oxygenated
 PPL Product Codes: M Grades (M1, M2, M3, M4, M5)
 Effective Date: 3/19/09

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

Test Property	ASTM Test Method	TEST RESULTS	
		Minimum	Maximum
Benzene, wt. %	D3606 or D4053		4.9
Color			Undyed
Corrosion (Cu), 3 hrs. @ 122°F (50°C) ^(a)	D130		1
Corrosion (Ag) 3 hrs @ 122°F (50°C)	D4814-04b Annex A1		1
Dienes (Dicyclopentadiene) ^(b)			
Doctor Test -OR- Mercaptan Sulfur, wt. % ^(c)	D4952 D3227		Negative 0.002
Driveability Index	D4814		Report
Existent Gum, mg/100 ml After Washing	D381		4
Gravity, °API at 60°F	D287, D1298, D4052		Report
Heavy Metals		not allowed	
Octane: RON MON AKI (R+M)/2	D2699 D2700	Report 82.0 87.0	
Oxidation Stability, Minutes	D525	240	
Oxygen Content, wt. % ^(d)	D5599, GC-OFID		0.05
Phosphorous, g/gal.	D3231		0.004
Port Fuel Injector (PFI) and Intake Valve Detergent Additives			^(e)
Sulfur, wt. % M1, M2, M3, M4, M5	D2622 (or equivalent) ^(f)		0.0080

^(a)No additives containing phosphorous may be used in this gasoline. Refer to the section, Approved Additives, page 14, for a list of acceptable gum inhibitors, metal deactivators and corrosion inhibitors.

^(b) Any gasoline exhibiting an offensive odor or containing more than 0.50 wt. % of dicyclopentadiene will not be accepted for shipment.

^(c) Test for mercaptan sulfur not required if Doctor test results are negative.

^(d) These product grades may not contain oxygenates; however, non-oxygenated is defined as having no more than 0.1 wt% oxygen content. The use of any other non-hydrocarbon blending components is prohibited.

^(e) The use of Port Fuel injector (PFI) and intake valve detergent additives is prohibited. This is a base gasoline, not for sale to the ultimate consumer.

^(f) Refer to 40 CFR, Part 80.195 (d)(2).

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Fungible Specifications for Conventional Gasoline, 87 antiknock index, non-oxygenated
(continued from previous page)

Product Grade: Conventional Gasoline, 87 Antiknock Index, Non-Oxygenated
PPL Product Codes: M Grades (M1, M2, M3, M4, M5)
Effective Date: 3/19/09

Test Property	ASTM Test Method	TEST RESULTS	
		Minimum	Maximum
Nace Corrosion	TM0172-2001	B+ (Origin)	
Volatility Distillation Reid Vapor Pressure ^(h) Vapor/Liquid Ratio (V/L)	D86 D5191 D2533, D5188		See Table Below

Volatility & Distillation							
Product Grade	Distillation Temperatures, °C(°F) at % Evaporated				RVP psi	V/L Ratio °C(°F) at 20	
	10 Vol. %	50 Vol. %		90 Vol. %		End Point	max
Code	max	min	max	max	max		
M1	70 (158)	77 (170)	121 (250)	190 (374)	221 (430)	dual	56 (133)
						7.8 without ethanol	
						8.8 with 10% ethanol	
M2	70 (158)	77 (170)	121 (250)	190 (374)	221 (430)	9.0	56 (133)
M3	60 (140)	77 (170)	116 (240)	185 (365)	221 (430)	11.5	51 (124)
M4	55 (131)	77 (170)	113 (235)	185 (365)	221 (430)	13.5	47 (116)
M5	50 (122)	77 (170)	110 (230)	185 (365)	221 (430)	15.0	41 (105)

^(h) During the VOC control period, testing must be performed in accordance with 40 CFR, Part 80, Appendix E, Method 3.

Fungible Specifications For Regular Conventional Blendstock for Oxygenate Blending (CBOB).
For Blending with 10% Denatured Fuel Ethanol (92% purity) as Defined in ASTM D4806.

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.

Product Grade: Regular CBOB
PPL Product Codes: S Grades (S0, S2, S3, S4)
Effective Date: April 1, 2008

Test Property	ASTM Test Method	TEST RESULTS	
		Minimum	Maximum
Benzene, vol. %	D3606		4.9
Color			Undyed
Corrosion (Cu), 3 hrs. @ 122°F (50°C)	D130		1
Corrosion (Ag) 3 hrs @ 122°F (50°C)	D4814-04b Annex A1		1
Dienes (Dicyclopentadiene)			(a)
Doctor Test -OR- Mercaptan Sulfur, wt. % ^(b)	D4952 D3227		Negative 0.002
Driveability Index	D4814		Report
Existent Gum, mg/100 ml After Washing	D381		4
Gravity, °API at 60°F (before blending)	D287, D1298, D4052		Report
Heavy Metals		not allowed	
Octane: RON (after blending) MON (after blending) AKI (R+M)/2 (after blending)	D2699 D2700	Report 82.0 87.0	
Oxidation Stability, Minutes	D525	240	
Oxygen Content, wt. %	D5599, GC-OFID ^{(c)(d)}		0.05 ^(e)
Nace Corrosion	TM0172-2001	B+ (Origin)	
Phosphorous, g/gal.	D3231		0.004 ^(f)
Port Fuel Injector (PFI) and Intake Valve Detergent Additives			(g)
Sulfur, wt. %	D2622 (h)		0.0080

(a) Any gasoline exhibiting an offensive odor or containing more than 0.50 wt. % of dicyclopentadiene will not be accepted for shipment.

(b) Test for mercaptan sulfur not required if Doctor test results are negative.

(c) These product grades can not contain blends of aliphatic ethers (oxygenates). The use of any other non-hydrocarbon blending components is prohibited.

(d) The test methods published in 40 CFR Charter 1, Part 80.46. ASTM D1319 and ASTM D4815 are alternative test methods for aromatics and oxygenates per federal and state regulations.

(e) Parameter must be met before blending with denatured fuel ethanol.

(f) No additives containing phosphorous may be used in this gasoline.

(g) The use of Port Fuel injector (PFI) and intake valve detergent additives is prohibited. This is a base gasoline, not for sale to the ultimate consumer.

(h) Refer to 40 CFR, Part 80.195 (d)(2). There are other regulatory agency requirements for the importer of Atlanta area gasoline into the State of Georgia

Fungible Specifications For Regular Conventional Blendstock for Oxygenate Blending (CBOB).
For Blending with 10% Denatured Fuel Ethanol (92% purity) as Defined in ASTM D4806.

(continued from previous page)

Product Grade: Regular CBOB
 PPL Product Codes: S Grades (S0, S2, S3, S4)
 Effective Date: April 1, 2008

Test Property	ASTM Test Method	TEST RESULTS	
		Minimum	Maximum
Volatility Distillation Reid Vapor Pressure ⁽ⁱ⁾ Vapor/Liquid Ratio (V/L)	D86 D5191 D2533, D5188		See Table Below

Volatility & Distillation							
Product Grade	Distillation Temperatures, °C(°F) at % Evaporated					RVP psi	V/L Ratio °C(°F) at 20
	10 Vol. %	50 Vol. %		90 Vol. %	End Point		
Code	Max	min	max	max	max	max	min
S0	70 (158)	66 (150)	121 (250)	190 (374)	221 (430)	8.0	49 (120)
S2	70 (158)	66 (150)	121 (250)	190 (374)	221 (430)	10.0	49 (120)
S3	60 (140)	66 (150)	116 (240)	185 (365)	221 (430)	12.5	45 (113)
S4	55 (131)	66 (150)	113 (235)	185 (365)	221 (430)	14.5	42 (107)

⁽ⁱ⁾ During the VOC control period, testing must be performed in accordance with 40 CFR, Part 80.

Fungible Specifications For Premium Conventional Blendstock for Oxygenate Blending (CBOB). For Blending with 10% Denatured Fuel Ethanol (92% purity) as Defined in ASTM D4806.

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.

Product Grade: Premium CBOB
PPL Product Codes: T Grades (T0, T2, T3, T4)
Effective Date: April 1, 2008

Test Property	ASTM Test Method	TEST RESULTS	
		Minimum	Maximum
Benzene, vol. %	D3606		4.9
Color			Undyed
Corrosion (Cu), 3 hrs. @ 122°F (50°C)	D130		1
Corrosion (Ag) 3 hrs @ 122°F (50°C)	D4814-04b Annex A1		1
Dienes (Dicyclopentadiene)			(a)
Doctor Test -OR- Mercaptan Sulfur, wt. % ^(b)	D4952 D3227		Negative 0.002
Driveability Index	D4814		Report
Existent Gum, mg/100 ml After Washing	D381		4
Gravity, °API at 60°F (before blending)	D287, D1298, D4052		Report
Heavy Metals		not allowed	
Octane: RON (after blending) MON (after blending) AKI (R+M)/2 (after blending)	D2699 D2700	Report Report 93.0	
Oxidation Stability, Minutes	D525	240	
Oxygen Content, wt. %	D5599, GC-OFID ^{(c)(d)}		0.05 ^(e)
Nace Corrosion	TM0172-2001	B+ (Origin)	
Phosphorous, g/gal.	D3231		0.004 ^(f)
Port Fuel Injector (PFI) and Intake Valve Detergent Additives			^(g)
Sulfur, wt. %	D2622 (h)		0.0080

(a) Any gasoline exhibiting an offensive odor or containing more than 0.50 wt. % of dicyclopentadiene will not be accepted for shipment.

(b) Test for mercaptan sulfur not required if Doctor test results are negative.

(c) These product grades can not contain blends of aliphatic ethers (oxygenates). The use of any other non-hydrocarbon blending components is prohibited.

(d) The test methods published in 40 CFR Charter 1, Part 80.46. ASTM D1319 and ASTM D4815 are alternative test methods for aromatics and oxygenates per federal and state regulations.

(e) Parameter must be met before blending with denatured fuel ethanol.

(f) No additives containing phosphorous may be used in this gasoline.

(g) The use of Port Fuel injector (PFI) and intake valve detergent additives is prohibited. This is a base gasoline, not for sale to the ultimate consumer.

(h) Refer to 40 CFR, Part 80.195 (d)(2). There are other regulatory agency requirements for the importer of Atlanta area gasoline into the State of Georgia

Fungible Specifications For Premium Conventional Blendstock for Oxygenate Blending (CBOB). For Blending with 10% Denatured Fuel Ethanol (92% purity) as Defined in ASTM D4806.

(continued from previous page)

Product Grade: Premium CBOB
 PPL Product Codes: T Grades (T0, T2, T3, T4)
 Effective Date: April 1, 2008

Test Property	ASTM Test Method	TEST RESULTS	
		Minimum	Maximum
Volatility Distillation Reid Vapor Pressure ⁽ⁱ⁾ Vapor/Liquid Ratio (V/L)	D86 D5191 D2533, D5188		See Table Below

Volatility & Distillation							
Product Grade	Distillation Temperatures, °C(°F) at % Evaporated					RVP psi	V/L Ratio °C(°F) at 20
	10 Vol. %	50 Vol. %		90 Vol. %	End Point		
Code	Max	min	max	max	max	max	min
T0	70 (158)	66 (150)	121 (250)	190 (374)	221 (430)	8.0	49 (120)
T2	70 (158)	66 (150)	121 (250)	190 (374)	221 (430)	10.0	49 (120)
T3	60 (140)	66 (150)	116 (240)	185 (365)	221 (430)	12.5	45 (113)
T4	55 (131)	66 (150)	113 (235)	185 (365)	221 (430)	14.5	42 (107)

⁽ⁱ⁾ During the VOC control period, testing must be performed in accordance with 40 CFR, Part 80.

Fungible Specifications for Conventional Gasoline, 93 antiknock index, non-oxygenated

Product Grade: Conventional Gasoline, 93 Antiknock Index, Non-Oxygenated

PPL Product Codes: V Grades (V1, V2, V3, V4, V5)

Effective Date: 3/19/09

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

Test Property	ASTM Test Method	TEST RESULTS	
		Minimum	Maximum
Benzene, wt. %	D3606 or D4053		4.9
Color			Undyed
Corrosion (Cu), 3 hrs. @ 122°F (50°C) ^(a)	D130		1
Corrosion (Ag) 3 hrs @ 122°F (50°C)	D4814-04b Annex A1		1
Dienes (Dicyclopentadiene) ^(b)			
Doctor Test -OR- Mercaptan Sulfur, wt. % ^(c)	D4952 D3227		Negative 0.002
Driveability Index	D4814		Report
Existent Gum, mg/100 ml After Washing	D381		4
Gravity, °API at 60°F	D287, D1298, D4052		Report
Heavy Metals		not allowed	
Octane: RON MON AKI (R+M)/2	D2699 D2700	Report Report 93.0	
Oxidation Stability, Minutes	D525	240	
Oxygen Content, wt. % ^(d)	D4815, D5599, GC-OFID		0.05
Phosphorous, g/gal.	D3231		0.004
Port Fuel Injector (PFI) and Intake Valve Detergent Additives			^(e)
Sulfur, wt. % V1, V2, V3, V4, V5	D2622 (or equivalent) ^(f)		0.0080

^(a) No additives containing phosphorous may be used in this gasoline. Refer to the section, Approved Additives, page 14, for a list of acceptable gum inhibitors, metal deactivators and corrosion inhibitors.

^(b) Any gasoline exhibiting an offensive odor or containing more than 0.50 wt. % of dicyclopentadiene will not be accepted for shipment.

^(c) Test for mercaptan sulfur not required if Doctor test results are negative.

^(d) These product grades may not contain oxygenates; however, non-oxygenated is defined as having no more than 0.1 wt% oxygen content. The use of any other non-hydrocarbon blending components is prohibited.

^(e) The use of Port Fuel injector (PFI) and intake valve detergent additives is prohibited. This is a base gasoline, not for sale to the ultimate consumer.

^(f) Refer to 40 CFR, Part 80.195 (d)(2).

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Fungible Specifications for Conventional Gasoline, 93 antiknock index, non-oxygenated
(continued from previous page)

Product Grade: Conventional Gasoline, 93 Antiknock Index, Non-Oxygenated
PPL Product Codes: V Grades (V1, V2, V3, V4, V5)
Effective Date: 3/19/09

Test Property	ASTM Test Method	TEST RESULTS	
		Minimum	Maximum
Nace Corrosion	TM0172-2001	B+ (Origin)	
Volatility Distillation Reid Vapor Pressure ^(h) Vapor/Liquid Ratio (V/L)	D86 D5191 D2533, D5188		See Table Below

Volatility & Distillation							
Product Grade	Distillation Temperatures, °C(°F) at % Evaporated				RVP psi	V/L Ratio °C(°F) at 20	
	10 Vol. %	50 Vol. %		90 Vol. %		End Point	max
Code	max	min	max	max	max		
V1	70 (158)	77 (170)	121 (250)	190 (374)	221 (430)	dual	56 (133)
						7.8 without ethanol	
						8.8 with 10% ethanol	
V2	70 (158)	77 (170)	121 (250)	190 (374)	221 (430)	9.0	56 (133)
V3	60 (140)	77 (170)	116 (240)	185 (365)	221 (430)	11.5	51 (124)
V4	55 (131)	77 (170)	113 (235)	185 (365)	221 (430)	13.5	47 (116)
V5	50 (122)	77 (170)	110 (230)	185 (365)	221 (430)	15.0	41 (105)

^(h) During the VOC control period, testing must be performed in accordance with 40 CFR, Part 80, Appendix E, Method 3.

Fungible Specifications for Aviation Kerosine, JP-5

Product Grade: Aviation Kerosine, JP-5
PPL Product Code: 52
Effective Date: 2/12/07

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

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Fungible Specifications for Aviation Kerosine, 3000 ppm wt. sulfur max.

Product Grade: Jet-A (3000 ppm wt. sulfur max)
PPL Product Codes: 54 & 56
Effective Date: 2/12/07

Test Property	ASTM Test Method	TEST RESULTS	
		Minimum	Maximum
General Properties			
Clear & Bright ^(a)			
Additives ^(b)			Report
Gravity, °API at 60°F	D287, D1298, D4052	37	51
Net Heat of Combustion (BTU/Pound)	D3338, D4529, D4809	18,400	
Corrosion - 2 hrs. @ 212°F (100°C)	D130		1
MSEP Rating	D3948		
Origin		85	
Delivery		75	
Electrical Conductivity	D2624		Report
Particulate Analysis ^(c)	MIL-T-5624P, D5452		Report
Filtration Time Test			Report
Total Solids			Report
Low Temperature Properties			
Freezing Point, °C	D2386, D5972		-40
Viscosity, cSt @ -4°F (-20°C)	D445		8.0
Volatility			
Flash Point, °F	D56, D3828	108	
Distillation, °F	D86		
10% Recovered			400
50% Recovered		Report	
90% Recovered		Report	
End Point			572
Residue, %			1.5
Loss, %			1.5
Or Simulated Distillation, °F	D2887		
10% Recovered			365
50% Recovered		Report	
90% Recovered		Report	
End Point			644

^(a) This product grade shall be clear and bright and free of suspended matter.

^(b) Only those additives specified and within the concentration noted in Section 5.2 through 5.2.2.1 of the latest ASTM D-1655 are permitted. The use of any other additives is prohibited.

^(c) Report actual values for filtration time test and total solids. The results are for informational purposes only.

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Fungible Specifications for Aviation Kerosine, 3000 ppm wt. sulfur max.
(continued from previous page)

Product Grade: Jet-A (max. 3000 ppm wt. sulfur)
PPL Product Code: 54 & 56
Effective Date: 2/12/07

Test Property	ASTM Test Method	TEST RESULTS	
		Minimum	Maximum
Stability			
Existent Gum, mg/100 ml	D381		7.0
Thermal Stability ^(d) @275°C for Receipt @260°C for Delivery Pressure Drop, mm/hg Tube Deposit Code	D3241		25 <3 ^(e)
Composition Properties			
Sulfur, ppm wt.	D2622, D5433, D7039 ^(f)		3000
Mercaptan Sulfur, wt. % OR Doctor Test ^(g)	D3227 D4952		0.003 Negative
Aromatics, vol. %	D1319		25
Acidity Total Max, mg KOH/g	D974, D3242		0.1
Combustion Properties			
<i>One of the following requirements must be met:</i>			
Smoke Point, mm	D1322	25	
Smoke Point, mm AND Naphthalenes, vol. %	D1322 D1840	18	3.0

^(d) Refer to the latest ASTM D1655.

^(e) No peacock or abnormal color deposits.

^(f) Origin can qualify sulfur content test method per EPA Performance Based Testing Criteria (CFR 80.584). The referee test method will be ASTM D5453.

^(g) Mercaptan sulfur waived if product is negative by Doctor test. Also, Doctor test is not necessary if mercaptan sulfur test is performed.

Fungible Specifications for Aviation Kerosine, JP-8

Product Grade: Aviation Kerosine, JP-8
PPL Product Code: 58
Effective Date: 2/12/07

Shipments of product grade 58 must meet the latest military specification for JP-8

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Fungible Specifications for Ultra Low Sulfur Diesel Fuel

Product Grade: Ultra Low Diesel Fuel, 15 ppm sulfur for Delivery
PPL Product Code: 61/68
Effective Date: 3/19/09

Test Property	ASTM Test Method	TEST RESULTS	
		Minimum	Maximum
Gravity, °API at 60°F	D287, D1298, D4052	30	
Flash Point, Pensky-Martens, °F	D93	130	
Distillation, °F	D86		
50% Recovered			Report
90% Recovered		540	640
End Point			690
or Simulated Distillation, °F	D2887		
50% Recovered			Report
90% Recovered		572	673
End Point			790
Color, ASTM	D1500, D6045		2.5
Color, Visual			Undyed
Viscosity, cSt @ 38°C (100°F)	D445	1.9	4.1
Pour Point, °C (°F) ^(a)	D97, D5949, D5950, D5985		
January – March (cycles 1-14)			-18 (0)
April – August (cycles 15-43)			-12 (+10)
September – December (cycles 44-72)			-18 (0)
Cloud Point, °C (°F)	D2500, D5771, D5772, D5773		
January – March (cycles 1-14)			-9 (+15)
April – August (cycles 15-43)			-7 (+20)
September – December (cycles 44-72)			-9 (+15)
Corrosion - 3 hrs. @ 50°C (122°F)	D130		1
Total Sulfur, ppm wt.	D2622, D5453, D7039 ^(b)		10 Origin 15 Delivery
Cetane Number ^(c)	D613, D6890	40	
Aromatics (Volume %) Or Aromatics by Cetane Index	D1319 D976	40	31.7
Ash, wt. %	D482		0.01
Carbon Residue: Ramsbottom on 10% Bottom	D524		0.35
BS&W, vol. %	D2709 or equivalent		<0.05

^(a) Specifies the fluidity of the distillate at the time and place of origin.

^(b) Origin can qualify sulfur content test method per EPA Performance Based Testing Criteria (CFR 80.584). The referee test method will be ASTM D5453.

^(c) Where cetane number by test method D613 is not available, test method D4737 can be used as an approximation.

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Fungible Specifications for Ultra Low Sulfur Diesel Fuel
(continued from previous page)

Product Grade: Ultra Low Diesel Fuel, 15 ppm sulfur for Delivery
PPL Product Code: 61/68
Effective Date: 3/19/09

Test Property	ASTM Test Method	TEST RESULTS	
		Minimum	Maximum
Thermal Stability, 90 Minutes 150°C Pad Rating, Dupont Scale OR Oxidation Stability, mg/100 ml	D2274		7
Haze Rating @ 25°C (77°F)	D4176 (Procedure 2)		2
Nace Corrosion	TM0172-2001	B+ (Origin)	
Electrical Conductivity, pS/m @ 21°C (70°F)	D2624		250
Additives ^(d)			

^(d)Use of additives and concentration must be approved by carrier. Biodiesel (FAME) is not allowed at origin.

Biodiesel Requirements		
Product Code	Percent Biodiesel (FAME) ^(d)	
	Origin	Destination
61	Not allowed ^(d)	0%
68	Not allowed ^(d)	5%

Fungible Specifications for Low Sulfur Highway Diesel Fuel 500 ppm wt. sulfur max.

Product Grade: Low Sulfur Highway Diesel Fuel (max. 500 ppm wt. sulfur)
PPL Product Codes: 74
Effective Date: 5/8/07

Test Property	ASTM Test Method	TEST RESULTS	
		Minimum	Maximum
Gravity, °API at 60°F	D287, D1298, D4052	30	
Flash Point, Pensky-Martens, °F	D93	130	
Distillation, °F	D86		
90% Recovered		540	640
End Point			690
or Simulated Distillation, °F	D2887		
50% Recovered			Report
90% Recovered		572	673
End Point			790
Color, ASTM	D1500, D6045		2.5
Color, Visual		Cycles 31, 32	Undyed Visible dye
Viscosity, cSt @ 38°C (100°F)	D445	1.9	4.1
Pour Point, °C (°F) ^(a)	D97, D5949, D5950, D5985		
January – March (cycles 1-14)			-18 (0)
April – August (cycles 15-43)			-12 (+10)
September – December (cycles 44-72)			-18 (0)
Cloud Point, °C (°F)	D2500, D5771, D5772, D5773		
January – March (cycles 1-14)			-9 (+15)
April – August (cycles 15-43)			-7 (+20)
September – December (cycles 44-72)			-9 (+15)
Corrosion – 3 hrs. @ 50°C (122°F)	D130		1
Total Sulfur, ppm wt.	D2622, D5453, D7039 ^(b)		420 Origin 500 Delivery
Cetane Number ^(c)	D613, D6890	40	
Aromatics (Volume %)	D1319		31.7
Or Aromatics by Cetane Index	D976	40	
Ash, wt. %	D482		0.01
Carbon Residue: Ramsbottom on 10% Bottom	D524		0.35
BS&W, vol. %	D2709 or equivalent		<0.05

^(a) Specifies the fluidity of the distillate at the time and place of origin.

^(b) Origin can qualify sulfur content test method per EPA Performance Based Testing Criteria (CFR 80.584). The referee test method will be ASTM D5453.

^(c) Where cetane number by test method D613 is not available, test method D4737 can be used as an approximation.

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Fungible Specifications for Low Sulfur Highway Diesel Fuel 500 ppm wt. sulfur max.
 (continued from previous page)

Product Grade: Low Sulfur Highway Diesel Fuel (max. 500 ppm wt. sulfur)
PPL Product Codes: 74
Effective Date: 3/19/09

Test Property	ASTM Test Method	TEST RESULTS	
		Minimum	Maximum
Thermal Stability, 90 Minutes 150°C Pad Rating, Dupont Scale OR	D2274		7
Oxidation Stability, mg/100 ml			2.5
Haze Rating @ 25°C (77°F)	D4176 (Procedure 2)		2
Nace Corrosion	TM0172-2001	B+ (Origin)	
Electrical Conductivity, pS/m @ 21°C (70°F)	D2624		250
Additives ^(d)			

^(d) Use of additives and concentration must be approved by carrier. Biodiesel (FAME) is not allowed at origin.

Fungible Specifications for High Sulfur NRLM Diesel Fuel, 5000 ppm wt. sulfur maximum

Product Grade: High Sulfur NRLM Diesel Fuel (max. 5000 ppm wt. sulfur)
PPL Product Codes: 75, 85
Effective Date: 5/8/07 – discontinued transporting from the origin

Test Property	ASTM Test Method	TEST RESULTS	
		Minimum	Maximum
Gravity, °API at 60°F	D287, D1298, D4052	30	
Flash Point, Pensky-Martens, °F	D93	130	
Distillation, °F	D86		
90% Recovered		540	640
End Point			690
or Simulated Distillation, °F	D2887		
50% Recovered			Report
90% Recovered		572	673
End Point			790
Color, ASTM ^(a)	D1500, D6045		2.5
Color, Visual ^(b)			Dyed
Viscosity, cSt @ 38°C (100°F)	D445	1.9	4.1
Pour Point, °C (°F) ^(c)	D97, D5949, D5950, D5985		
January – March (cycles 1-14)			-18 (0)
April – August (cycles 15-43)			-12 (+10)
September – December (cycles 44-72)			-18 (0)
Cloud Point, °C (°F)	D2500, D5771, D5772, D5773		
January – March (cycles 1-14)			-9 (+15)
April – August (cycles 15-43)			-7 (+20)
September – December (cycles 44-72)			-9 (+15)
Corrosion - 3 hrs. @ 50°C (122°F)	D130		1
Total Sulfur, ppm wt.	D2622, D5453, D7039 ^(d)		5000
Cetane Number ^(e)	D613, D6890	40	
Ash, wt. %	D482		0.01
Carbon Residue: Ramsbottom on 10% Bottom	D524		0.35
BS&W, vol. %	D2709 or equivalent		<0.05

^(a) Results of color measurement before addition of dye.

^(b) See Dye Content Table on page 15.

^(c) Specifies the fluidity of the distillate at the time and place of origin.

^(d) Origin can qualify sulfur content test method per EPA Performance Based Testing Criteria (CFR 80.584). The referee test method will be ASTM D5453.

^(e) Where cetane number by test method D613 is not available, test method D4737B can be used as an approximation.

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Fungible Specifications for High Sulfur NRLM Diesel Fuel, 5000 ppm wt. sulfur maximum
(continued from previous page)

Product Grade: High Sulfur NRLM Diesel Fuel (max. 5000 ppm wt. sulfur)
PPL Product Codes: 75, 85
Effective Date: 5/8/07 – discontinued transporting from the origin

Test Property	ASTM Test Method	TEST RESULTS	
		Minimum	Maximum
Thermal Stability, 90 Minutes 150°C Pad Rating, Dupont Scale OR Oxidation Stability, mg/100 ml	D2274		7
Haze Rating @ 25°C (77°F)	D4176 (Procedure 2)		2.5
Nace Corrosion	TM0172-2001	B+ (Origin)	
Additives ^(f)			

^(f) Use of additives and concentration must be approved by carrier. Biodiesel (FAME) is not allowed at origin.

Dye Content Requirements				
Product Code	Origin ^(h)		Destination ^(h)	IRS Dye Level Injected at Destination By
	Minimum	Maximum	Minimum	
75	VPD ^(g)	0.75 ptb	N/A	Customer
85	VPD ^(g)	0.75 ptb	3.9 ptb	Plantation ⁽ⁱ⁾

^(g) VPD = Visible Presence of Dye, as defined in EPA Low Sulfur Diesel Regulations (40 CFR Parts 80 and 86).

^(h) Units expressed in pounds per thousand barrels spectrally equivalent to Solid Red #26.

⁽ⁱ⁾ Destinations are limited to Plantation delivery facilities with dye injection equipment. See the section entitled *Red Dye for Diesel Fuels and Fuel Oil* on page 15 for a list of locations, and for more information on dye requirements.

Fungible Specifications for NRLM Diesel Fuel 500 ppm wt. sulfur max.

Product Grade: NRLM Diesel Fuel (max. 500 ppm wt. sulfur)
PPL Product Codes: 76, 80
Effective Date: 5/8/07

Test Property	ASTM Test Method	TEST RESULTS	
		Minimum	Maximum
Gravity, °API at 60°F	D287, D1298, D4052	30	
Flash Point, Pensky-Martens, °F	D93	130	
Distillation, °F	D86		
90% Recovered		540	640
End Point			690
or Simulated Distillation, °F	D2887		
50% Recovered			Report
90% Recovered		572	673
End Point			723
Color, ASTM ^(a)	D1500, D6045		2.5
Color, Visual ^(b)		Cycles 31, 32	Undyed Visible dye
Viscosity, cSt @ 38°C (100°F)	D445	1.9	4.1
Pour Point, °C (°F) ^(a)	D97, D5949, D5950, D5985		
January – March (cycles 1-14)			-18 (0)
April – August (cycles 15-43)			-12 (+10)
September – December (cycles 44-72)			-18 (0)
Cloud Point, °C (°F)	D2500, D5771, D5772, D5773		
January – March (cycles 1-14)			-9 (+15)
April – August (cycles 15-43)			-7 (+20)
September – December (cycles 44-72)			-9 (+15)
Corrosion – 3 hrs. @ 50°C (122°F)	D130		1
Total Sulfur, ppm wt.	D2622, D5453, D7039 ^(b)	Cycles 31, 32	420 Origin 500 Delivery 5000 Delivery
Cetane Number ^(c)	D613, D6890	40	
Aromatics (Volume %) Or Aromatics by Cetane Index	D1319 D976	40	31.7
Ash, wt. %	D482		0.01
Carbon Residue: Ramsbottom on 10% Bottom	D524		0.35
BS&W, vol. %	D2709 or equivalent		<0.05

^(a) Specifies the fluidity of the distillate at the time and place of origin.

^(b) Origin can qualify sulfur content test method per EPA Performance Based Testing Criteria (CFR 80.584). The referee test method will be ASTM D5453.

^(c) Where cetane number by test method D613 is not available, test method D4737 can be used as an approximation.

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Fungible Specifications for NRLM Diesel Fuel 500 ppm wt. sulfur max.
(continued from previous page)

Product Grade: NRLM Diesel Fuel (max. 500 ppm wt. sulfur)
PPL Product Codes: 76, 80
Effective Date: 5/8/07

Test Property	ASTM Test Method	TEST RESULTS	
		Minimum	Maximum
Thermal Stability, 90 Minutes 150°C Pad Rating, Dupont Scale OR Oxidation Stability, mg/100 ml	D2274		7
Haze Rating @ 25°C (77°F)	D4176 (Procedure 2)		2
Nace Corrosion	TM0172-2001	B+ (Origin)	
Electrical Conductivity, pS/m @ 21°C (70°F)	D2624		250
Additives ^(d)			

^(d) Use of additives and concentration must be approved by carrier. Biodiesel (FAME) is not allowed at origin.

Dye Content Requirements				
Product Code	Origin		Destination ^(e)	IRS Dye Level Injected at Destination By
	Minimum	Maximum	Minimum	
76		Undyed	Undyed	Customer
80		Undyed	3.9 ptb	Plantation ^(f)

^(e) Units expressed in pounds per thousand barrels spectrally equivalent to Solid Red #26.

^(f) Destinations are limited to Plantation delivery facilities with dye injection equipment. See the section entitled *Red Dye for Diesel Fuels and Fuel Oil* on page 15 for a list of locations, and for more information on dye requirements.

Kinder Morgan Biodiesel Specifications (a) (b)

Product Grade: B99 Biodiesel
 PPL Product Codes: PPL will not transport B99
 Effective Date: 4/3/09

Test Property	Test Method	TEST RESULTS	
		Minimum	Maximum
Acid Number, mg KOH/g	D664		0.50
API Gravity @ 60°F	D 287, D1298, D4052	28	35
Cetane number	D613	47	
Cloud point, °C (°F)	D2500		8°C (46°F) Summer 1°C (34°F) Winter
Cold Soak Filterability, seconds	D6751 (Annex A1)		360 (Summer) 200 (Winter)
Distillation temperature, °C (°F) Atmospheric equivalent temperature 90% recovered	D1160		360°C (680°F)
Flashpoint (closed cup), °C (°F)	D93	93°C (199°F)	
Alcohol Control One of the following must be met: 1. Methanol content, mass % 2. Flashpoint, °C (°F)	EN 14110 D93	130°C (266°F)	0.2
Free glycerin, mass %	D6584		0.020
Total glycerin, mass %	D6584		0.240
Kinematic Viscosity @ 40°C, mm ² /s	D445	3.0	6.0
Methyl Ester, mass %	EN 14103	97	
Monoglyceride content – year round, % ^(c)	EN 14105		0.40
Oxidation Stability, hours @ 110°C (230°F)	EN 14112	4	
Sodium and Potassium combined, ppm (µg/g)	EN 14538		5
Sulfur, mass % (ppm)	D2622, D5453, D7039		10
Water and sediment combined, volume %	D2709		0.050
Water, volume %	D6304		0.040
Haze Rating @ 25°C (77°F)	D4176 (Procedure 2)		1

(a) No Methyl Esters derived from used cooking oil, brown grease, yellow grease, or animal fats.

(b) Supplier must be BQ9000 certified.

(c) Only applicable for Plantation Pipe Line shipments.

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