

## EXPLORER ORIGIN SPECIFICATIONS

The following are instructions governing the quality of products offered for shipment as Fungible Products.

### **Introduction:**

The American Society for Test Materials (ASTM) latest test methods will apply for all testing of products unless otherwise indicated in the specifications or required by federal, state or local regulations. .

### **General:**

1. Workmanship -The finished product shall be free of undissolved water, sediment or other foreign materials in suspension and shall be clear and bright in origin shipping tanks. Top, middle, and bottom samples may not vary more than 1.0° API from the gravity of the composite.  
The product temperature of shipping tanks must not exceed 100° F.
2. Two hours prior to lifting, Shipper will be required to furnish to Explorer a Certificate of Analysis warranting to Explorer that all the product scheduled for transportation as a Fungible product meets the required specifications established by Explorer. Explorer may sample and test shipments of Fungible products prior to acceptance, and in the event of variance between Shipper's certificate and Explorer's test, the latter shall prevail.

**Acceptance of Fungible products into Explorer prior to receipt of the Certificate of Analysis or testing of products by Explorer during receipt of shipment does not constitute a waiver of product specification requirements, nor relieve the shipper of the responsibility for furnishing a Certificate of Analysis to Explorer.**

3. All product shipped must be an EPA certified fuel unless it is specifically designated as a Blend Stock, Specialty Grade or Transmix.
4. Explorer may sample and have tested each batch of fungible products for specifications tests. **The expense of sampling and testing any off specification product will be for the Shippers account.**
5. Any tests performed by Explorer are for Explorer's information and shall in no way relieve Shipper of the necessity for compliance with specifications.
6. If any of the test data obtained in the examination of scheduled shipments are questionable, a recheck will be made.
7. Explorer reserves the right to reject any products into their fungible stream when a sample obtained from any tank level or line sample at origins is found

to deviate from the Shipper's Certificate of Analysis. Products not meeting fungible specifications may be moved as segregated batches and the Shipper will be so advised.

8. Explorer reserves the right to sample and check the water level below any product in tankage, including tank lines, scheduled for shipment. Water in tank lines is to be drained prior to pumping.
9. Explorer reserves the right to reject gasolines, jet fuels, fuel oils and any other products scheduled for shipment that contain water or other impurities in accordance with Item 10 of current FERC tariff. This includes undissolved water, haze, or cloudy conditions present in samples from origin tankage or at points of custody transfer at origin locations. Fuel oils will be considered acceptable if they pass a maximum #2 haze (ASTM D4176) rating in origin tankage or at points of custody transfer at origin locations. Distillates may not exceed 250 ppm of water as measured by D-6304. Gasoline may not exceed 250 ppm of water as measured by D-6304. Jet Fuel may not exceed 150 ppm of water as measured by D-6304. Explorer may require the shipper to remove the water received, and/or invoice the shipper for water disposal and associated costs.
10. Heavy metals are not allowed to be present.
11. Perform quarterly oversight testing to ensure that levels of phosphorous do not exceed allowable limits. Phosphorous, grams /gal ASTM D3231 max. 0.004. (1ppm)
12. Gasoline grades may not contain oxygenates, such as ethers and alcohols. The use of any non-hydrocarbon blending component is prohibited. Origin max. for MTBE is .25 vol% before blending.
13. Biodiesel is not allowed to be present at origin.

FUNGIBLE SPECIFICATIONS

CODE 1A

DILUENT UNREFINED

“This product does not meet the requirements for gasoline”

ASTM TEST	SPECIFICATIONS	MINIMUM	MAXIMUM	
PRODUCT PROPERTY	METHOD			(1,4)
Gravity, API @ 60°F	D287, D1298, D4052	60	86	
Density	Kg/m3 D4052	640	755	
Color	UNDYED			
BS&W	Vol% D95		0.5	
Total Suspended Solids	mg/l D4807		10	
Corrosion (Cu) 3 Hrs. @ 122°F	D130	1a	1	
H2S Liquid wppm	D5623		10	
Doctor or:	D4952	Negative		(2)
Mercaptan Sulfur wppm	D5623		175	
C1, C2, C3				
Sulfur, (ppmw)	D2622, D5453, D7039		3000	
Gum, mg/100ml after washing	D381		4	
Gum, mg/100ml unwashed	D381	Report		
Benzene, vol. %	D3606, D4053		1.6	
Oxidation Stability - Minutes	D525	240		
Appearance @ 70°F				(3)
Odor Nonoffensive				(5)
Reid Vapor Pressure	D5191		14.94	
Saybolt Color	D156	+20		
Olefins Vol %	D5443		.51	
Oxygenates wppm	D6729 D4815		100	
Paraffins Vol %	D5443		90	
Naphthenes Vol %	D5443	report		
Aromatics Vol %	D5443	2		
Organic Chlorides wppm	D4929		<1.0	
Isobutane % V/V	D6730		0.70	
n-Butane % V/V	D6730		03.0	
Extract water Ph	D2110	report		
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Octane:	RON: Minimum	D2699	Report	
	MON: Minimum	D2700	Report	
	(R+M)/2 (AKI):	Minimum	60	
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- (1) Deliveries may be higher or lower by normal testing and handling tolerance. All tests should be the most current version or the version specified by federal, state, or local government.
- (2) Mercaptan Sulfur waived if fuel is negative by doctor test.
- (3) This product shall be free from undissolved water, sediment or other foreign materials in suspension.
- (4) This product must be oxygenate free. Non hydrocarbon blending components are not allowed.
- (5) Any Gasoline exhibiting an offensive odor and/or poses a personal health hazard and/or contains more than 0.30 wt. % dicyclopentadiene will not be accepted for shipment.

FUNGIBLE SPECIFICATIONS

CODE 1B

DILUENT UNREFINED

“This product does not meet the requirements for gasoline”

ASTM TEST	SPECIFICATIONS	MINIMUM	MAXIMUM	
PRODUCT PROPERTY	METHOD			(1,4)
Gravity, API @ 60°F	D287, D1298, D4052	51	90	
Density	Kg/m3 D4052	640	755	
Color	UNDYED			
BS&W	Vol% D95		0.5	
Total Suspended Solids	mg/l D4807		10	
Corrosion (Cu) 3 Hrs. @ 122°F	D130	1a	1	
Corrosion (Ag) 3 Hrs. @ 122°F	D4814	0	1	
H2S Liquid wtppm	D5623		10	
Doctor or:	D4952	Negative		(2)
Mercaptan Sulfur wtppm	D5623		175	
C1, C2, C3				
Sulfur, (ppmwt)	D2622, D5453, D7039		350	
Gum, mg/100ml after washing	D381		4	
Gum, mg/100ml unwashed	D381	Report		
Benzene, vol. %	D3606, D4053		1.6	
Oxidation Stability - Minutes	D525	240		
Appearance @ 70°F				(3)
Odor	Nonoffensive			(5)
Reid Vapor Pressure	D5191		14.94	
Saybolt Color	D156	+20		
Olefins Vol %	D5443		.51	
Oxygenates wppm	D6729 D4815		100	
Paraffins Vol %	D5443		90	
Naphthenes Vol %	D5443	report		
Aromatics Vol %	D5443	2		
Organic Chlorides wppm	D4929		<1.0	
Isobutane % V/V	D6730		0.70	
n-Butane % V/V	D6730		03.0	
Extract water Ph	D2110	report		

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Octane:	RON: Minimum	D2699	Report
	MON: Minimum	D2700	Report
	(R+M)/2 (AKI):	Minimum	60

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- (1) Deliveries may be higher or lower by normal testing and handling tolerance. All tests should be the most current version or the version specified by federal, state, or local government.
- (2) Mercaptan Sulfur waived if fuel is negative by doctor test.
- (3) This product shall be free from undissolved water, sediment or other foreign materials in suspension.
- (4) This product must be oxygenate free. Non hydrocarbon blending components are not allowed.
- (5) Any Gasoline exhibiting an offensive odor and/or poses a personal health hazard and/or contains more than 0.30 wt. % dicyclopentadiene will not be accepted for shipment.

CONVENTIONAL PREMIUM GASOLINE  
HOUSTON - DALLAS, TX AREAS

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

<u>PRODUCT PROPERTY</u>	<u>ASTM TEST METHOD</u>	<u>SPECIFICATIONS</u> (1)	
		<u>MINIMUM</u>	<u>MAXIMUM</u>
Gravity, API @ 60°F	D287, D1298, D4052		Report
Color			Undyed
Corrosion (Cu) 3 Hrs. @ 122°F	D130		1
Corrosion (Ag) 3 Hrs. @ 122°F	D4814		1
Gum, mg/100ml after washing	D381		4
Gum, mg/100ml unwashed	D381	Report	
Doctor or:	D4952		Negative (2)
Mercaptan Sulfur wt. %	D3227		0.002
Sulfur, (ppm wt.)	D2622, D5453, D7039		80
Benzene, vol. %	D3606, D4053		3.8
Oxidation Stability - Minutes	D525	240	
Appearance @ 70°F			(3)
Oxygen, wt. %	D4815, D5599		0.10 (4)
Odor	Nonoffensive		(5)

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Octane:	RON: Minimum	D2699	Report
	MON: Minimum	D2700	Report
	(R+M)/2 (AKI):	Minimum	93.0

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Volatility - Refer to Section 3	3-A
Distillation - Refer to Section 3	3-A
Drivability Index (Origin) - Refer to Section 3	3-A
Reid Vapor Pressure – Refer to Appendix F	(6)
Additives: Gum Inhibitors, Metal Deactivators, Refer to Section 3	3-B

- (1) Deliveries may be higher or lower by normal testing and handling tolerance.
- (2) Mercaptan Sulfur waived if fuel is negative by doctor test.
- (3) This product shall be free from undissolved water, sediment or other foreign materials in suspension.
- (4) This product must be oxygenate free. Non hydrocarbon blending components are not allowed.
- (5) Any Gasoline exhibiting an offensive odor and/or poses a personal health hazard and/or contains more than 0.30 wt. % dicyclopentadiene will not be accepted for shipment.
- (6) For product blended to meet state or EPA imposed summer RVP requirements, tests must be performed in accordance with the procedures described in 40 CFR, Part 80. Product must meet state, local or EPA specifications at destination.

Vapor pressure requirements at destination are based on ASTM Standard D4814 EPA and/or State standards. Due to intransit times for destinations, Explorer will publish Reid Vapor Pressure schedules by cycle number for origin locations.

The Reid Vapor Pressures published by cycle number are estimations based on Explorer intransit time and federal and state volatility laws applicable within the designated distribution areas.

Shipper terminals should monitor inventories to ensure that motor gasolines comply with federal and state volatility requirements



CONVENTIONAL PREMIUM GASOLINE  
CENTRAL MISSOURI - SOUTHERN ILLINOIS

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

<u>PRODUCT PROPERTY</u>	<u>ASTM TEST METHOD</u>	<u>SPECIFICATIONS (1)</u>	
		<u>MINIMUM</u>	<u>MAXIMUM</u>
Gravity, API @ 60°F	D287, D1298, D4052		Report
Color			Undyed
Corrosion (Cu) 3 Hrs. @ 122°F	D130		1
Corrosion (Ag) 3 Hrs. @ 122°F	D4814		1
Gum, mg/100ml after washing	D381		4
Gum, mg/100ml unwashed	D381	Report	
Doctor or:	D4952		Negative (2)
Mercaptan Sulfur wt. %	D3227		0.002
Sulfur, (ppm wt.)	D2622, D5453, D7039		80
Benzene, vol. %	D3606, D4053		3.8
Oxidation Stability - Minutes	D525	240	
Appearance @ 70°F			(3)
Oxygen, wt. %	D4815, D5599		0.10 (4)
Odor	Nonoffensive		(5)

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Octane:	RON: Minimum	D2699	Report
	MON: Minimum	D2700	Report
	(R+M)/2 (AKI):	Minimum	93.0

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Volatility - Refer to Section 3	3-A
Distillation - Refer to Section 3	3-A
Drivability Index (Origin) - Refer to Section 3	3-A
Reid Vapor Pressure – Refer to Appendix F	(6)
Additives: Gum Inhibitors, Metal Deactivators, Refer to Section 3	3-B

- (1) Deliveries may be higher or lower by normal testing and handling tolerance. All tests should be the most current version or the version specified by federal, state, or local government.
- (2) Mercaptan Sulfur waived if fuel is negative by doctor test.
- (3) This product shall be free from undissolved water, sediment or other foreign materials in suspension.
- (4) This product must be oxygenate free. Non hydrocarbon blending components are not allowed.
- (5) Any Gasoline exhibiting an offensive odor and/or poses a personal health hazard and/or contains more than 0.30 wt. % dicyclopentadiene will not be accepted for shipment.
- (6) For product blended to meet state or EPA imposed summer RVP requirements, tests must be performed in accordance with the procedures described in 40 CFR, Part 80. Product must meet state, local or EPA specifications at destination.

Vapor pressure requirements at destination are based on ASTM Standard D4814 EPA and/or State standards. Due to intransit times for destinations, Explorer will publish Reid Vapor Pressure schedules by cycle number for origin locations.

The Reid Vapor Pressures published by cycle number are estimations based on Explorer intransit time and federal and state volatility laws applicable within the designated distribution areas.

Shipper terminals should monitor inventories to ensure that motor gasolines comply with federal and state volatility requirements

CONVENTIONAL REGULAR GASOLINE  
HOUSTON - DALLAS, TX AREAS

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

<u>PRODUCT PROPERTY</u>	<u>ASTM TEST METHOD</u>	<u>SPECIFICATIONS (1)</u>	
		<u>MINIMUM</u>	<u>MAXIMUM</u>
Gravity, API @ 60°F	D287 D1298, D4052		Report
Color		UNDYED	
Corrosion (Cu) 3 Hrs. @ 122°F	D130		1
Corrosion (Ag) 3 Hrs. @ 122°F	D4814		1
Gum, mg/100ml after washing	D381		4
Gum, mg/100ml unwashed	D381	Report	
Doctor	D4952		Negative (2)
or: Mercaptan Sulfur wt. %	D3227		0.002
Sulfur, (ppmw)	D2622, D5453, D7039		80
Benzene, vol. %	D3606, D4053		3.8
Oxidation Stability - Minutes	D525	240	
Appearance @ 70°F			(3)
Oxygen, wt. %	D4815, D5599		0.10 (4)
Odor	Nonoffensive		(5)

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Octane:	RON:	D2699	Report
	MON:	D2700	82.0
	(R+M)/2 (AKI):		87.0

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Volatility - Refer to Section 3	3-A
Distillation - Refer to Section 3	3-A
Drivability Index (Origin) - Refer to Section 3	3-A
Reid Vapor Pressure – Refer to Appendix F	(6)
Additives: Gum Inhibitors, Metal Deactivators, Refer to Section 3	3-B

- (1) Deliveries may be higher or lower by normal testing and handling tolerance. All tests should be the most current version or the version specified by federal, state, or local government.
- (2) Mercaptan Sulfur waived if fuel is negative by doctor test.
- (3) This product shall be free from undissolved water, sediment or other foreign materials in suspension.
- (4) This product must be oxygenate free. Non hydrocarbon blending components are not allowed.
- (5) Any Gasoline exhibiting an offensive odor and/or poses a personal health hazard and/or contains more than 0.30 wt. % dicyclopentadiene will not be accepted for shipment.
- (6) For products blended to meet EPA or state imposed summer requirements, test must be performed for RVP in accordance with procedure described in 40 CFR, PART 80, Appendix E, Method 3.

Vapor pressure requirements at destination are based on ASTM Standard D4814 EPA and/or State standards. Due to intransit times for destinations, Explorer will publish Reid Vapor Pressure schedules by cycle number for origin locations.

The Reid Vapor Pressures published by cycle number are estimations based on Explorer intransit time and federal and state volatility laws applicable within the designated distribution areas.

Shipper terminals should monitor inventories to ensure that motor gasolines comply with federal and state volatility requirements.

HOUSTON-DALLAS TEXAS AREAS

CONVENTIONAL REGULAR GASOLINE BLENDSTOCK (CBOB)  
FOR BLENDING WITH 10% DENATURED FUEL ETHANOL  
(92% PURITY) AS DEFINED IN ASTM D4806

The following parameters apply before blending with denatured fuel ethanol unless noted.

<u>PRODUCT PROPERTY</u>	<u>ASTM TEST METHOD</u>	<u>SPECIFICATIONS (1)</u>	
		<u>MINIMUM</u>	<u>MAXIMUM</u>
Gravity, API @ 60°F	D287, D1298, D4052		Report
Color			UNDYED
Corrosion (Cu) 3 Hrs. @ 122°F	D130		1
Corrosion (Ag) 3 Hrs. @ 122°F	D4814		1
Gum, mg/100ml after washing	D381		4
Gum, mg/100ml unwashed	D381	Report	
Doctor	D4952		Negative (2)
or: Mercaptan Sulfur wt %	D3227		0.002
Sulfur, (ppmw)	D2622, D5453, D7039		80
Benzene, wt. %	D3606		3.8
Oxidation Stability - Minutes	D525	240	
Appearance @ 70°F			(3)
Oxygen, wt%	D4815, D5599		0.10 (4)
Odor	Nonoffensive		(5)
Octane: RON:	D2699	Report	
MON: Minimum	D2700	79.0	
(R+M)/2 (AKI):		83.0	

The following parameters apply after blending with denatured fuel ethanol:

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Octane: RON:	D2699	Report
MON: Minimum	D2700	82.0
(R+M)/2 (AKI):		87.0

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Distillation	D86	
Volatility - Refer to Section 3		3-A
Distillation - Refer to Section 3		3-A
Drivability Index (Origin) - Refer to Section 3		3-A
Reid Vapor Pressure – Refer to Appendix F		(6)
Additives: Gum Inhibitors, Metal Deactivators, Refer to Section 3		3-B

CODE 44

- (1) Deliveries may be higher or lower by normal testing and handling tolerance. All tests should be the most current version or the version specified by federal, state, or local government.
- (2) Mercaptan Sulfur waived if fuel is negative by doctor test.
- (3) This product shall be free from undissolved water, sediment or other foreign material in suspension.
- (4) This product must be oxygenate free. Non hydrocarbon blending components are not allowed.
- (5) Any Gasoline exhibiting an offensive odor and/or poses a personal health hazard and/or contains more than 0.30 wt. % dicyclopentadiene will not be accepted for shipment.
- (6) For product blended to meet state or EPA imposed summer RVP requirements, tests must be performed in accordance with the procedures described in 40 CFR, Part 80. Product must meet state, local or EPA specifications at destination.

Vapor pressure requirements at destination are based on ASTM Standard D4814 EPA and/or State standards. Due to intransit times for destinations, Explorer will publish Reid Vapor Pressure schedules by cycle number for origin locations.

The Reid Vapor Pressures published by cycle number are estimations based on Explorer intransit time and federal and state volatility laws applicable within the designated distribution areas.

Shipper terminals should monitor inventories to ensure that motor gasolines comply with federal and state volatility requirements

NORTHERN ILLINOIS - INDIANA AREAS  
CENTRAL MISSOURI - SOUTHERN ILLINOIS

CONVENTIONAL REGULAR GASOLINE BLENDSTOCK (CBOB)  
FOR BLENDING WITH 10% DENATURED FUEL ETHANOL  
(92% PURITY) AS DEFINED IN ASTM D4806

The following parameters apply before blending with denatured fuel ethanol unless noted.

PRODUCT PROPERTY	ASTM TEST METHOD	SPECIFICATIONS (1)	
		MINIMUM	MAXIMUM
Gravity, API @ 60°F	D287, D1298, D4052		Report
Color			UNDYED
Corrosion (Cu) 3 Hrs. @ 122°F	D130		1
Corrosion (Ag) 3 Hrs. @ 122°F	D4814		1
Gum, mg/100ml after washing	D381		4
Gum, mg/100ml unwashed	D381	Report	
Doctor	D4952		Negative (2)
or: Mercaptan Sulfur wt %	D3227		0.002
Sulfur, (ppmwt)	D2622, D5453, D7039		80
Benzene, vol. %	D3606		3.8
Oxidation Stability - Minutes	D525	240	
Appearance @ 70°F			(3)
Oxygen, wt%	D4815, D5599		0.10 (4)
Odor	Nonoffensive		(5)
Octane: RON:	D2699	Report	
MON: Minimum	D2700	79.0	
(R+M)/2 (AKI):		83.0	

The following parameters apply after blending with denatured fuel ethanol:

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Octane: RON:	D2699	Report	
MON: Minimum	D2700	82.0	
(R+M)/2 (AKI):		87.0	

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Distillation	D86		
Volatility - Refer to Section 3			3-A
Distillation - Refer to Section 3			3-A
Drivability Index (Origin) - Refer to Section 3			3-A
Reid Vapor Pressure – Refer to Appendix F			(6)
Additives: Gum Inhibitors, Metal Deactivators, Refer to Section 3			3-B

- (1) Deliveries may be higher or lower by normal testing and handling tolerance. All tests should be the most current version or the version specified by federal, state, or local government.
- (2) Mercaptan Sulfur waived if fuel is negative by doctor test.
- (3) This product shall be free from undissolved water, sediment or other foreign material in suspension.
- (4) This product must be oxygenate free. Non hydrocarbon blending components are not allowed.
- (5) Any Gasoline exhibiting an offensive odor and/or poses a personal health hazard and/or contains more than 0.30 wt. % dicyclopentadiene will not be accepted for shipment.
- (6) For product blended to meet state or EPA imposed summer RVP requirements, tests must be performed in accordance with the procedures described in 40 CFR, Part 80. Product must meet state, local or EPA specifications at destination.

Vapor pressure requirements at destination are based on ASTM Standard D4814 EPA and/or State standards. Due to intransit times for destinations, Explorer will publish Reid Vapor Pressure schedules by cycle number for origin locations.

The Reid Vapor Pressures published by cycle number are estimations based on Explorer intransit time and federal and state volatility laws applicable within the designated distribution areas.

Shipper terminals should monitor inventories to ensure that motor gasolines comply with federal and state volatility requirements



CENTRAL MISSOURI -ILLINOIS – INDIANASUB-OCTANE GASOLINE BLENDSTOCK (SUB)  
FOR BLENDING WITH 10% DENATURED FUEL ETHANOL OR OTHER OCTANE  
IMPROVERS(92% PURITY) AS DEFINED IN ASTM D4806The following parameters apply before blending with denatured fuel ethanol unless noted.

<u>PRODUCT PROPERTY</u>	<u>ASTM TEST METHOD</u>	<u>SPECIFICATIONS (1)</u>	
		<u>MINIMUM</u>	<u>MAXIMUM</u>
Gravity, API @ 60°F	D287, D1298, D4052		Report
Color			UNDYED
Corrosion (Cu) 3 Hrs. @ 122°F	D130		1
Corrosion (Ag) 3 Hrs. @ 122°F	D4814		1
Gum, mg/100ml after washing	D381		4
Gum, mg/100ml unwashed	D381	Report	
Doctor	D4952		Negative (2)
or: Mercaptan Sulfur wt %	D3227		0.002
Sulfur, (ppmwt)	D2622, D5453, D7039		80
Benzene, vol. %	D3606		3.8
Oxidation Stability - Minutes	D525	240	
Haze Rating	D4176		2
Appearance @ 70°F			(3)
Oxygen, wt%	D4815, D5599		0.10 (4)
Odor	Nonoffensive		(5)
Octane:	RON: D2699	Report	
	MON: Minimum D2700	79.0	
	(R+M)/2 (AKI):	83.0	

The following parameters apply after blending with denatured fuel ethanol:

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Octane:	RON: D2699	Report
	MON: Minimum D2700	82.0
	(R+M)/2 (AKI):	87.0

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Distillation	D86	
Volatility - Refer to Section 3		3-A
Distillation - Refer to Section 3		3-A
Drivability Index (Origin) - Refer to Section 3		3-A
Reid Vapor Pressure – Refer to Appendix F		(6)
Additives: Gum Inhibitors, Metal Deactivators, Refer to Section 3		3-B

CODE 4M

- (1) Deliveries may be higher or lower by normal testing and handling tolerance. All tests should be the most current version or the version specified by federal, state, or local government.
- (2) Mercaptan Sulfur waived if fuel is negative by doctor test.
- (3) This product shall be free from undissolved water, sediment or other foreign material in suspension.
- (4) This product must be oxygenate free. Non hydrocarbon blending components are not allowed.
- (5) Any Gasoline exhibiting an offensive odor and/or poses a personal health hazard and/or contains more than 0.30 wt. % dicyclopentadiene will not be accepted for shipment.
- (6) For product blended to meet state or EPA imposed summer RVP requirements, tests must be performed in accordance with the procedures described in 40 CFR, Part 80. Product must meet state, local or EPA specifications at destination.

Vapor pressure requirements at destination are based on ASTM Standard D4814 EPA and/or State standards. Due to intransit times for destinations, Explorer will publish Reid Vapor Pressure schedules by cycle number for origin locations.

The Reid Vapor Pressures published by cycle number are estimations based on Explorer intransit time and federal and state volatility laws applicable within the designated distribution areas.

Shipper terminals should monitor inventories to ensure that motor gasolines comply with federal and state volatility requirements

CONVENTIONAL REGULAR GASOLINE  
NORTHERN ILLINOIS - INDIANA AREAS  
CENTRAL MISSOURI - SOUTHERN ILLINOIS

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

<u>PRODUCT PROPERTY</u>	<u>ASTM TEST</u>		<u>SPECIFICATIONS</u> (1)	
	<u>METHOD</u>		<u>MINIMUM</u>	<u>MAXIMUM</u>
Gravity, API @ 60°F	D287, D1298, D4052			Report
Color				UNDYED
Corrosion (Cu) 3 Hrs. @ 122°F	D130			1
Corrosion (Ag) 3 Hrs. @ 122°F	D4814Annex A1	1		
Gum, mg/100ml after washing	D381			4
Gum, mg/100ml unwashed	D381		Report	
Doctor	D4952			Negative (2)
or: Mercaptan Sulfur wt %	D3227			0.002
Sulfur, (ppmw)	D2622, D5453, D7039			80
Benzene, wt. %	D3606, D4053			4.9
Oxidation Stability - Minutes	D525		240	
Appearance @ 70°F				(3)
Oxygen, wt%	D4815, D5599		0.10	(4)
Odor	Nonoffensive			(5)
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Octane:	RON:	D2699		Report
	MON:	D2700		82.0
	(R+M)/2 (AKI):			87.0
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Volatility - Refer to Section 3				3-A
Distillation - Refer to Section 3				3-A
Drivability Index (Origin) - Refer to Section 3				3-A
Reid Vapor Pressure – Refer to Section 3				3-B (6)
Additives: Gum Inhibitors, Metal Deactivators, Refer to Section 3				3-B

- (1) Deliveries may be higher or lower by normal testing and handling tolerance. All tests should be the most current version or the version specified by federal, state, or local government.
- (2) Mercaptan Sulfur waived if fuel is negative by doctor test.
- (3) This product shall be free from undissolved water, sediment or other foreign materials in suspension. See Page 3-2 Paragraph 8.
- (4) This product must be oxygenate free. Non hydrocarbon blending components are not allowed.
- (5) Any Gasoline exhibiting an offensive odor and/or poses a personal health hazard and/or contains more than 0.30 wt. % dicyclopentadiene will not be accepted for shipment.
- (6) For products blended to meet EPA or state imposed summer RVP requirements, test must be performed for RVP in accordance with procedure described in 40 CFR, PART 80, Appendix E, Method 3.

Vapor pressure requirements at destination are based on ASTM Standard D4814 EPA and/or State standards. Due to intransit times for destinations, Explorer will publish Reid Vapor Pressure schedules by cycle number for origin locations.

The Reid Vapor Pressures published by cycle number are estimations based on Explorer intransit time and federal and state volatility laws applicable within the designated distribution areas.

Shipper terminals should monitor inventories to ensure that motor gasolines comply with federal and state volatility requirements.

REFORMULATED PREMIUM GASOLINE BLENDSTOCK (PBOB)  
FOR BLENDING WITH 10% DENATURED FUEL ETHANOL  
(92% PURITY) AS DEFINED IN ASTM D4806  
VOC-CONTROLLED REGION 1 COMPLEX MODEL PHASE II  
HOUSTON-DALLAS AREA

The following parameters apply before blending with denatured fuel ethanol:

<u>PRODUCT PROPERTY</u>	<u>ASTM TEST METHOD</u>	<u>MINIMUM</u>	<u>MAXIMUM</u> (1)
Gravity, API @ 60°F	D287, D1298, D4052		Report
Color			UNDYED
Corrosion (Cu) 3 Hrs. @ 122°F	D130		1
Corrosion (Ag) 3 Hrs. @ 122°F	D4814		1
Gum, mg/100ml after washing	D381		4
Gum, mg/100ml unwashed	D381	Report	
Doctor	D4952		Negative (2)
or: Mercaptan Sulfur wt %	D3227		0.002
Oxidation Stability - Minutes	D525	240	
Appearance @ 70°F			(3)
Oxygen, wt. % Neat		Report	(4)
Odor		Nonoffensive	(5)

The following parameters apply after blending with denatured fuel ethanol:

Sulfur, (ppmwt)	D2622, D5453, D7039		80
Benzene, vol. %	D3606		1.30
Aromatics (vol %)	D5769, D5599		50.0 (6)
Olefins (vol %)	D1319		25.0
Oxygen, wt. % Blended	D4815, D5599	1.7	4.0 (7)
Emission Performance Reduction (%)		27.0	
E200 (vol %)	D86	30.0	70.0
E300 (vol %)	D86	70.0	100.0

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Octane:	RON:	D2699	Report	
	MON:	D2700	Report	
	(R+M)/2 (AKI):		93.0	(8)

---

Volatility - Refer to Section 3	3-A
Distillation - Refer to Section 3	3-A
Drivability Index (Origin) - Refer to Section 3	3-A
Reid Vapor Pressure – Refer to Appendix F	
Additives: Gum Inhibitors, Metal Deactivators, Refer to Section 3	3-B

**NOTE: This RBOB may not be combined with any other RBOB except RBOB having the same requirement for oxygenate type and amount.**

CODE 3C

- (1) Deliveries may be higher or lower by normal testing and handling tolerance. All tests should be the most current version or the version specified by federal, state, or local government.
- (2) Mercaptan Sulfur waived if fuel is negative by doctor test.
- (3) This product shall be free from undissolved water, sediment or other foreign materials in suspension. See page 3-2 Paragraph 8.
- (4) This product must be oxygenate free. Non hydrocarbon blending components are not allowed
- (5) Any Gasoline exhibiting an offensive odor and/or poses a personal health hazard and/or contains more than 0.30 wt. % dicyclopentadiene will not be accepted for shipment
- (6) Refer to test methods published in 40 CFR Chapter 1, Part 80.46. ASTM methods D1319 and D4815 may be used in accordance with Federal and State laws.
- (7) Refer to test method published in 40 CFR, Part 80, Appendix E, Method 3.
- (8)
  - a. This product must be blended with 10% by volume Denatured Fuel Grade Ethanol.
  - b. Federal RFG maximum and minimum testing requirement will apply to the final blends of this product.
  - c. This product, when blended with 10% volume percent of Denatured Fuel Grade Ethanol, and must have a Benzene level of 1.3 volume % or lower and have an Oxygen content of at least 1.7% but not more than 4.0% by wt.

REFORMULATED PREMIUM GASOLINE BLENDSTOCK (PBOB)  
FOR BLENDING WITH 10% DENATURED FUEL ETHANOL  
(92% PURITY) AS DEFINED IN ASTM D4806  
NON-VOC-CONTROLLED REGION 1 COMPLEX MODEL PHASE II  
HOUSTON-DALLAS AREA

The following parameters apply before blending with denatured fuel ethanol:

<u>PRODUCT PROPERTY</u>	<u>ASTM TEST METHOD</u>	<u>MINIMUM</u>	<u>MAXIMUM</u> (1)
Gravity, API @ 60°F	D287, D1298, D4052		Report
Color			UNDYED
Corrosion (Cu) 3 Hrs. @ 122°F	D130		1
Corrosion (Ag) 3 Hrs. @ 122°F	D4814		1
Gum, mg/100ml after washing	D381		4
Gum, mg/100ml unwashed	D381	Report	
Doctor	D4952		Negative (2)
or: Mercaptan Sulfur wt %	D3227		0.002
Oxidation Stability - Minutes	D525	240	
Appearance @ 70°F			(3)
Oxygen, wt. % Neat		Report	(4)
Odor		Nonoffensive	(5)

The following parameters apply after blending with denatured fuel ethanol:

Sulfur, (ppmwt)	D2622, D5453, D7039		80
Benzene, wt. %	D3606		1.30
Aromatics (vol %)	D5769, D5599		50.0 (6)
Olefins (vol %)	D1319		25.0
Oxygen, wt. % Blended	D4815, D5599	1.7	4.0 (7)
E200 (vol %)	D86	30.0	70.0
E300 (vol %)	D86	70.0	100.0

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Octane:	RON:	D2699	Report	
	MON:	D2700	Report	
	(R+M)/2 (AKI):		93.0	(8)

---

Volatility - Refer to Section 3	3-A
Distillation - Refer to Section 3	3-A
Drivability Index (Origin) - Refer to Section 3	3-A
Reid Vapor Pressure – Refer to Appendix F	
Additives: Gum Inhibitors, Metal Deactivators, Refer to Section 3	3-B

**NOTE: This RBOB may not be combined with any other RBOB except RBOB having the same requirement for oxygenate type and amount.**

CODE 3D

- (1) Deliveries may be higher or lower by normal testing and handling tolerance. All tests should be the most current version or the version specified by federal, state, or local government.
- (2) Mercaptan Sulfur waived if fuel is negative by doctor test.
- (3) This product shall be free from undissolved water, sediment or other foreign materials in suspension. See page 3-2 Paragraph 8.
- (4) This product must be oxygenate free. Non hydrocarbon blending components are not allowed
- (5) Any Gasoline exhibiting an offensive odor and/or poses a personal health hazard and/or contains more than 0.30 wt. % dicyclopentadiene will not be accepted for shipment
- (6) Refer to test methods published in 40 CFR Chapter 1, Part 80.46. ASTM methods D1319 and D4815 may be used in accordance with Federal and State laws.
- (7) Refer to test method published in 40 CFR, Part 80, Appendix E, Method 3.
- (8)
  - a. This product must be blended with 10% by volume Denatured Fuel Grade Ethanol.
  - b. Federal RFG maximum and minimum testing requirement will apply to the final blends of this product.
  - c. This product, when blended with 10% volume percent of Denatured Fuel Grade Ethanol, and must have a Benzene level of 1.3 volume % or lower and have an Oxygen content of at least 1.7% but not more than 4.0% by wt.



REFORMULATED PREMIUM GASOLINE BLENDSTOCK (PBOB) \*\*  
FOR BLENDING WITH 10% DENATURED FUEL ETHANOL  
(92% PURITY) AS DEFINED IN ASTM D4806  
VOC-CONTROLLED REGION 1 COMPLEX MODEL PHASE II  
ST. LOUIS AREA

The following parameters apply before blending with denatured fuel ethanol:

<u>PRODUCT PROPERTY</u>	<u>ASTM TEST METHOD</u>	<u>MINIMUM</u>	<u>MAXIMUM</u> (1)
Gravity, API @ 60°F	D287, D1298, D4052		Report
Color			UNDYED
Corrosion (Cu) 3 Hrs. @ 122°F	D130		1
Corrosion (Ag) 3 Hrs. @ 122°F	D4814		1
Gum, mg/100ml after washing	D381		4
Gum, mg/100ml unwashed	D381	Report	
Doctor	D4952		Negative (2)
or: Mercaptan Sulfur wt %	D3227		0.002
Oxidation Stability - Minutes	D525	240	
Appearance @ 70°F			(3)
Oxygen, wt. % Neat		Report	(4)
Odor		Nonoffensive	(5)

The following parameters apply after blending with denatured fuel ethanol:

Sulfur, (ppmwt)	D2622, D5453, D7039		80
Benzene, wt. %	D3606		1.30
Aromatics (vol %)	D5769, D5599		50.0 (6)
Olefins (vol %)	D1319		25.0
Oxygen, wt. % Blended	D4815, D5599	1.7	4.0 (7)
Emission Performance Reduction (%)		27.0	
E200 (vol %)	D86	30.0	70.0
E300 (vol %)	D86	70.0	100.0

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Octane:	RON:	D2699	Report	
	MON:	D2700	Report	
	(R+M)/2 (AKI):		93.0	(8)

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Volatility - Refer to Section 3	3-A
Distillation - Refer to Section 3	3-A
Drivability Index (Origin) - Refer to Section 3	3-A
Reid Vapor Pressure – Refer to Appendix F	
Additives: Gum Inhibitors, Metal Deactivators, Refer to Section 3	3-B

**NOTE: This RBOB may not be combined with any other RBOB except RBOB having the same requirement for oxygenate type and amount.**

CODE 3S

- (1) Deliveries may be higher or lower by normal testing and handling tolerance. All tests should be the most current version or the version specified by federal, state, or local government.
- (2) Mercaptan Sulfur waived if fuel is negative by doctor test.
- (3) This product shall be free from undissolved water, sediment or other foreign materials in suspension. See page 3-2 Paragraph 8.
- (4) This product must be oxygenate free. Non hydrocarbon blending components are not allowed
- (5) Any Gasoline exhibiting an offensive odor and/or poses a personal health hazard and/or contains more than 0.30 wt. % dicyclopentadiene will not be accepted for shipment
- (6) Refer to test methods published in 40 CFR Chapter 1, Part 80.46. ASTM methods D1319 and D4815 may be used in accordance with Federal and State laws.
- (7) Refer to test method published in 40 CFR, Part 80, Appendix E, Method 3.
- (8)
  - a. This product must be blended with 10% by volume Denatured Fuel Grade Ethanol.
  - b. Federal RFG maximum and minimum testing requirement will apply to the final blends of this product.
  - c. This product, when blended with 10% volume percent of Denatured Fuel Grade Ethanol, and must have a Benzene level of 1.3 volume % or lower and have an Oxygen content of at least 1.7% but not more than 4.0% by wt.

REFORMULATED PREMIUM GASOLINE BLENDSTOCK (PBOB)  
FOR BLENDING WITH 10% DENATURED FUEL ETHANOL  
(92% PURITY) AS DEFINED IN ASTM D4806  
NON-VOC-CONTROLLED COMPLEX MODEL PHASE II  
ST. LOUIS AREA

The following parameters apply before blending with denatured fuel ethanol:

<u>PRODUCT PROPERTY</u>	<u>ASTM TEST METHOD</u>	<u>MINIMUM</u>	<u>MAXIMUM</u> (1)
Gravity, API @ 60°F	D287, D1298, D4052		Report
Color			UNDYED
Corrosion (Cu) 3 Hrs. @ 122°F	D130		1
Corrosion (Ag) 3 Hrs. @ 122°F	D4814		1
Gum, mg/100ml after washing	D381		4
Gum, mg/100ml unwashed	D381	Report	
Doctor	D4952		Negative (2)
or: Mercaptan Sulfur wt %	D3227		0.002
Oxidation Stability - Minutes	D525	240	
Appearance @ 70°F			(3)
Oxygen, wt. % Neat		Report	(4)
Odor		Nonoffensive	(5)

The following parameters apply after blending with denatured fuel ethanol:

Sulfur, (ppmwt)	D2622, D5453, D7039		80
Benzene, wt. %	D3606		1.30
Aromatics (vol %)	D5769, D5599		50.0 (6)
Olefins (vol %)	D1319		25.0
Oxygen, wt. % Blended	D4815, D5599	1.7	4.0 (7)
E200 (vol %)	D86	30.0	70.0
E300 (vol %)	D86	70.0	100.0

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Octane:	RON:	D2699	Report	
	MON:	D2700	Report	
	(R+M)/2 (AKI):		93.0	(8)

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Volatility - Refer to Section 3	3-A
Distillation - Refer to Section 3	3-A
Drivability Index (Origin) - Refer to Section 3	3-A
Reid Vapor Pressure – Refer to Appendix F	
Additives: Gum Inhibitors, Metal Deactivators, Refer to Section 3	3-B

**NOTE: This RBOB may not be combined with any other RBOB except RBOB having the same requirement for oxygenate type and amount.**

CODE 3T

- (1) Deliveries may be higher or lower by normal testing and handling tolerance. All tests should be the most current version or the version specified by federal, state, or local government.
- (2) Mercaptan Sulfur waived if fuel is negative by doctor test.
- (3) This product shall be free from undissolved water, sediment or other foreign materials in suspension. See page 3-2 Paragraph 8.
- (4) This product must be oxygenate free. Non hydrocarbon blending components are not allowed
- (5) Any Gasoline exhibiting an offensive odor and/or poses a personal health hazard and/or contains more than 0.30 wt. % dicyclopentadiene will not be accepted for shipment
- (6) Refer to test methods published in 40 CFR Chapter 1, Part 80.46. ASTM methods D1319 and D4815 may be used in accordance with Federal and State laws.
- (7) Refer to test method published in 40 CFR, Part 80, Appendix E, Method 3.
- (8)
  - a. This product must be blended with 10% by volume Denatured Fuel Grade Ethanol.
  - b. Federal RFG maximum and minimum testing requirement will apply to the final blends of this product.
  - c. This product, when blended with 10% volume percent of Denatured Fuel Grade Ethanol, and must have a Benzene level of 1.3 volume % or lower and have an Oxygen content of at least 1.7% but not more than 4.0% by wt.

REFORMULATED PREMIUM GASOLINE BLENDSTOCK (PBOB)  
FOR BLENDING WITH 10% DENATURED FUEL ETHANOL  
(92% PURITY) AS DEFINED IN ASTM D4806  
VOC-CONTROLLED REGION 2 COMPLEX MODEL PHASE II  
CHICAGO AREA

The following parameters apply before blending with denatured fuel ethanol:

<u>PRODUCT PROPERTY</u>	<u>ASTM TEST</u> <u>METHOD</u>	<u>MINIMUM</u>	<u>MAXIMUM</u> (1)
Gravity, API @ 60°F	D287, D1298, D4052		Report
Color			UNDYED
Corrosion (Cu) 3 Hrs. @ 122°F	D130		1
Corrosion (Ag) 3 Hrs. @ 122°F	D4814		1
Gum, mg/100ml after washing	D381		4
Gum, mg/100ml unwashed	D381	Report	
Doctor	D4952		Negative (2)
or: Mercaptan Sulfur wt %	D3227		0.002
Oxidation Stability - Minutes	D525	240	
Appearance @ 70°F			(3)
Oxygen, wt. % Neat		Report	(4)
Odor		Nonoffensive	(5)

The following parameters apply after blending with denatured fuel ethanol:

Sulfur, (ppmwt)	D2622, D5453, D7039		80
Benzene, wt. %	D3606		1.30
Aromatics (vol %)	D5769, D5599		50.0 (6)
Olefins (vol %)	D1319		25.0
Oxygen, wt. % Blended	D4815, D5599	1.7	4.0 (7)
Emission Performance Reduction (%)		25.4	
E200 (vol %)	D86	30.0	70.0
E300 (vol %)	D86	70.0	100.0

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Octane:	RON:	D2699	Report	
	MON:	D2700	Report	
	(R+M)/2 (AKI):		93.0	(8)

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Volatility - Refer to Section 3	3-A
Distillation - Refer to Section 3	3-A
Drivability Index (Origin) - Refer to Section 3	3-A
Reid Vapor Pressure – Refer to Appendix F	
Additives: Gum Inhibitors, Metal Deactivators, Refer to Section 3	3-B

**NOTE: This RBOB may not be combined with any other RBOB except RBOB having the same requirement for oxygenate type and amount.**

CODE 3U

- (1) Deliveries may be higher or lower by normal testing and handling tolerance. All tests should be the most current version or the version specified by federal, state, or local government.
- (2) Mercaptan Sulfur waived if fuel is negative by doctor test.
- (3) This product shall be free from undissolved water, sediment or other foreign materials in suspension. See page 3-2 Paragraph 8.
- (4) This product must be oxygenate free. Non hydrocarbon blending components are not allowed
- (5) Any Gasoline exhibiting an offensive odor and/or poses a personal health hazard and/or contains more than 0.30 wt. % dicyclopentadiene will not be accepted for shipment
- (6) Refer to test methods published in 40 CFR Chapter 1, Part 80.46. ASTM methods D1319 and D4815 may be used in accordance with Federal and State laws.
- (7) Refer to test method published in 40 CFR, Part 80, Appendix E, Method 3.
- (8) a. This product must be blended with 10% by volume Denatured Fuel Grade Ethanol.
  - b. Federal RFG maximum and minimum testing requirement will apply to the final blends of this product.
  - c. This product, when blended with 10% volume percent of Denatured Fuel Grade Ethanol, and must have a Benzene level of 1.3 volume % or lower and have an Oxygen content of at least 1.7% but not more than 4.0% by wt.

REFORMULATED PREMIUM GASOLINE BLENDSTOCK (PBOB)  
FOR BLENDING WITH 10% DENATURED FUEL ETHANOL  
(92% PURITY) AS DEFINED IN ASTM D4806  
NON-VOC-CONTROLLED COMPLEX MODEL PHASE II  
CHICAGO AREA

The following parameters apply before blending with denatured fuel ethanol:

<u>PRODUCT PROPERTY</u>	<u>ASTM TEST METHOD</u>	<u>MINIMUM</u>	<u>MAXIMUM</u> (1)
Gravity, API @ 60°F	D287, D1298, D4052		Report
Color			UNDYED
Corrosion (Cu) 3 Hrs. @ 122°F	D130		1
Corrosion (Ag) 3 Hrs. @ 122°F	D4814		1
Gum, mg/100ml after washing	D381		4
Gum, mg/100ml unwashed	D381	Report	
Doctor	D4952		Negative (2)
or: Mercaptan Sulfur wt %	D3227		0.002
Oxidation Stability - Minutes	D525	240	
Appearance @ 70°F			(3)
Oxygen, wt. % Neat		Report	(4)
Odor		Nonoffensive	(5)

The following parameters apply after blending with denatured fuel ethanol:

Sulfur, (ppmwt)	D2622, D5453, D7039		80
Benzene, wt. %	D3606		1.30
Aromatics (vol %)	D5769, D5599		50.0 (6)
Olefins (vol %)	D1319		25.0
Oxygen, wt. % Blended	D4815, D5599	1.7	4.0 (7)
E200 (vol %)	D86	30.0	70.0
E300 (vol %)	D86	70.0	100.0

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Octane:	RON:	D2699	Report	
	MON:	D2700	Report	
	(R+M)/2 (AKI):		93.0	(8)

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Volatility - Refer to Section 3	3-A
Distillation - Refer to Section 3	3-A
Drivability Index (Origin) - Refer to Section 3	3-A
Reid Vapor Pressure – Refer to Appendix F	
Additives: Gum Inhibitors, Metal Deactivators, Refer to Section 3	3-B

**NOTE: This RBOB may not be combined with any other RBOB except RBOB having the same requirement for oxygenate type and amount.**

CODE 3X

- (1) Deliveries may be higher or lower by normal testing and handling tolerance. All tests should be the most current version or the version specified by federal, state, or local government.
- (2) Mercaptan Sulfur waived if fuel is negative by doctor test.
- (3) This product shall be free from undissolved water, sediment or other foreign materials in suspension. See page 3-2 Paragraph 8.
- (4) This product must be oxygenate free. Non hydrocarbon blending components are not allowed
- (5) Any Gasoline exhibiting an offensive odor and/or poses a personal health hazard and/or contains more than 0.30 wt. % dicyclopentadiene will not be accepted for shipment
- (6) Refer to test methods published in 40 CFR Chapter 1, Part 80.46. ASTM methods D1319 and D4815 may be used in accordance with Federal and State laws.
- (7) Refer to test method published in 40 CFR, Part 80, Appendix E, Method 3.
- (8)
  - a. This product must be blended with 10% by volume Denatured Fuel Grade Ethanol.
  - b. Federal RFG maximum and minimum testing requirement will apply to the final blends of this product.
  - c. This product, when blended with 10% volume percent of Denatured Fuel Grade Ethanol, and must have a Benzene level of 1.3 volume % or lower and have an Oxygen content of at least 1.7% but not more than 4.0% by wt.



REFORMULATED REGULAR GASOLINE BLENDSTOCK (RBOB)  
FOR BLENDING WITH 10% DENATURED FUEL ETHANOL  
(92% PURITY) AS DEFINED IN ASTM D4806  
VOC-CONTROLLED REGION 1 COMPLEX MODEL PHASE II  
HOUSTON-DALLAS AREA

The following parameters apply before blending with denatured fuel ethanol:

<u>PRODUCT PROPERTY</u>	<u>ASTM TEST</u>		(1)
	<u>METHOD</u>	<u>MINIMUM</u>	<u>MAXIMUM</u>
Gravity, API @ 60°F	D287, D1298, D4052		Report
Color			UNDYED
Corrosion (Cu) 3 Hrs. @ 122°F	D130		1
Corrosion (Ag) 3 Hrs. @ 122°F	D4814		1
Gum, mg/100ml after washing	D381		4
Gum, mg/100ml unwashed	D381	Report	
Doctor	D4952		Negative (2)
or: Mercaptan Sulfur wt %	D3227		0.002
Oxidation Stability - Minutes	D525	240	
Appearance @ 70°F			(3)
Oxygen, wt. % Neat	Report		(4)
Odor	Nonoffensive		(5)

The following parameters apply after blending with denatured fuel ethanol:

Sulfur, (ppmwt)	D2622, D5453, D7039		80
Benzene, wt. %	D3606		1.30
Aromatics (vol %)	D5769, D5599		50.0 (6)
Olefins (vol %)	D1319		25.0
Oxygen, wt. % Blended	D4815, D5599	1.7	4.0 (7)
Emission Performance Reduction (%)			27.0
E200 (vol %)	D86	30.0	70.0
E300 (vol %)	D86	70.0	100.0
-----			
Octane:	RON:	D2699	Report
	MON:	D2700	82.0
	(R+M)/2 (AKI):		87.0 (8)

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Volatility - Refer to Section 3	3-A
Distillation - Refer to Section 3	3-A
Drivability Index (Origin) - Refer to Section 3	3-A
Reid Vapor Pressure – Refer to Appendix F	
Additives: Gum Inhibitors, Metal Deactivators, Refer to Section 3	3-B

**NOTE: This RBOB may not be combined with any other RBOB except RBOB having the same requirement for oxygenate type and amount.**

CODE 4C

- (1) Deliveries may be higher or lower by normal testing and handling tolerance. All tests should be the most current version or the version specified by federal, state, or local government.
- (2) Mercaptan Sulfur waived if fuel is negative by doctor test.
- (3) This product shall be free from undissolved water, sediment or other foreign materials in suspension. See page 3-2 Paragraph 8.
- (4) This product must be oxygenate free. Non hydrocarbon blending components are not allowed
- (5) Any Gasoline exhibiting an offensive odor and/or poses a personal health hazard and/or contains more than 0.30 wt. % dicyclopentadiene will not be accepted for shipment
- (6) Refer to test methods published in 40 CFR Chapter 1, Part 80.46. ASTM methods D1319 and D4815 may be used in accordance with Federal and State laws.
- (7) Refer to test method published in 40 CFR, Part 80, Appendix E, Method 3.
- (8) a. This product must be blended with 10% by volume Denatured Fuel Grade Ethanol.
  - b. Federal RFG maximum and minimum testing requirement will apply to the final blends of this product.
  - c. This product, when blended with 10% volume percent of Denatured Fuel Grade Ethanol, and must have a Benzene level of 1.3 volume % or lower and have an Oxygen content of at least 1.7% but not more than 4.0% by wt.

REFORMULATED REGULAR GASOLINE BLENDSTOCK (RBOB)  
FOR BLENDING WITH 10% DENATURED FUEL ETHANOL  
(92% PURITY) AS DEFINED IN ASTM D4806  
NON-VOC-CONTROLLED REGION 1 COMPLEX MODEL PHASE II  
HOUSTON-DALLAS AREA

The following parameters apply before blending with denatured fuel ethanol:

<u>PRODUCT PROPERTY</u>	<u>ASTM TEST METHOD</u>	<u>MINIMUM</u>	<u>MAXIMUM</u> (1)
Gravity, API @ 60°F	D287, D1298, D4052		Report
Color			UNDYED
Corrosion (Cu) 3 Hrs. @ 122°F	D130		1
Corrosion (Ag) 3 Hrs. @ 122°F	D4814		1
Gum, mg/100ml after washing	D381		4
Gum, mg/100ml unwashed	D381	Report	
Doctor	D4952		Negative (2)
or: Mercaptan Sulfur wt %	D3227		0.002
Oxidation Stability - Minutes	D525	240	
Appearance @ 70°F			(3)
Oxygen, wt. % Neat		Report	(4)
Odor		Nonoffensive	(5)

The following parameters apply after blending with denatured fuel ethanol:

Sulfur, (ppmwt)	D2622, D5453, D7039		80
Benzene, wt. %	D3606		1.30
Aromatics (vol %)	D5769, D5599		50.0 (6)
Olefins (vol %)	D1319		25.0
Oxygen, wt. % Blended	D4815, D5599	1.7	4.0 (7)
E200 (vol %)	D86	30.0	70.0
E300 (vol %)	D86	70.0	100.0

---

Octane:	RON:	D2699	Report	
	MON:	D2700	82.0	
	(R+M)/2 (AKI):		87.0	(8)

---

Volatility - Refer to Section 3	3-A
Distillation - Refer to Section 3	3-A
Drivability Index (Origin) - Refer to Section 3	3-A
Reid Vapor Pressure – Refer to Appendix F	
Additives: Gum Inhibitors, Metal Deactivators, Refer to Section 3	3-B

**NOTE: This RBOB may not be combined with any other RBOB except RBOB having the same requirement for oxygenate type and amount.**

CODE 4D

- (1) Deliveries may be higher or lower by normal testing and handling tolerance. All tests should be the most current version or the version specified by federal, state, or local government.
- (2) Mercaptan Sulfur waived if fuel is negative by doctor test.
- (3) This product shall be free from undissolved water, sediment or other foreign materials in suspension. See page 3-2 Paragraph 8.
- (4) This product must be oxygenate free. Non hydrocarbon blending components are not allowed
- (5) Any Gasoline exhibiting an offensive odor and/or poses a personal health hazard and/or contains more than 0.30 wt. % dicyclopentadiene will not be accepted for shipment
- (6) Refer to test methods published in 40 CFR Chapter 1, Part 80.46. ASTM methods D1319 and D4815 may be used in accordance with Federal and State laws.
- (7) Refer to test method published in 40 CFR, Part 80, Appendix E, Method 3.
- (8) a. This product must be blended with 10% by volume Denatured Fuel Grade Ethanol.
  - b. Federal RFG maximum and minimum testing requirement will apply to the final blends of this product.
  - c. This product, when blended with 10% volume percent of Denatured Fuel Grade Ethanol, and must have a Benzene level of 1.3 volume % or lower and have an Oxygen content of at least 1.7% but not more than 4.0% by wt.

REFORMULATED REGULAR GASOLINE BLENDSTOCK (RBOB)  
FOR BLENDING WITH 10% DENATURED FUEL ETHANOL  
(92% PURITY) AS DEFINED IN ASTM D4806  
NON-VOC-CONTROLLED COMPLEX MODEL PHASE II  
CHICAGO AREA

The following parameters apply before blending with denatured fuel ethanol:

<u>PRODUCT PROPERTY</u>	<u>ASTM TEST METHOD</u>	<u>MINIMUM</u>	<u>(1) MAXIMUM</u>
Gravity, API @ 60°F	D287, D1298, D4052		Report
Color			UNDYED
Corrosion (Cu) 3 Hrs. @ 122°F	D130		1
Corrosion (Ag) 3 Hrs. @ 122°F	D4814		1
Gum, mg/100ml after washing	D381		4
Gum, mg/100ml unwashed	D381	Report	
Doctor	D4952		Negative (2)
or: Mercaptan Sulfur wt %	D3227		0.002
Oxidation Stability - Minutes	D525	240	
Appearance @ 70°F			(3)
Oxygen, wt. % Neat		Report	(4)
Odor		Nonoffensive	(5)

The following parameters apply after blending with denatured fuel ethanol:

Sulfur, (ppmw)	D2622, D5453, D7039		80
Benzene, wt. %	D3606		1.30
Aromatics (vol %)	D5769, D5599		50.0 (6)
Olefins (vol %)	D1319		25.0
Oxygen, wt. % Blended	D4815, D5599	1.7	4.0 (7)
E200 (vol %)	D86	30.0	70.0
E300 (vol %)	D86	70.0	100.0

---

Octane:	RON:	D2699	Report	
	MON:	D2700	82.0	
	(R+M)/2 (AKI):		87.0	(8)

---

Volatility - Refer to Section 3	3-A
Distillation - Refer to Section 3	3-A
Drivability Index (Origin) - Refer to Section 3	3-A
Reid Vapor Pressure – Refer to Appendix F	
Additives: Gum Inhibitors, Metal Deactivators, Refer to Section 3	3-B

**NOTE: This RBOB may not be combined with any other RBOB except RBOB having the same requirement for oxygenate type and amount.**

CODE 4X

- (1) Deliveries may be higher or lower by normal testing and handling tolerance. All tests should be the most current version or the version specified by federal, state, or local government.
- (2) Mercaptan Sulfur waived if fuel is negative by doctor test.
- (3) This product shall be free from undissolved water, sediment or other foreign materials in suspension. See page 3-2 Paragraph 8.
- (4) This product must be oxygenate free. Non hydrocarbon blending components are not allowed
- (5) Any Gasoline exhibiting an offensive odor and/or poses a personal health hazard and/or contains more than 0.30 wt. % dicyclopentadiene will not be accepted for shipment
- (6) Refer to test methods published in 40 CFR Chapter 1, Part 80.46. ASTM methods D1319 and D4815 may be used in accordance with Federal and State laws.
- (7) Refer to test method published in 40 CFR, Part 80, Appendix E, Method 3.
- (8) a. This product must be blended with 10% by volume Denatured Fuel Grade Ethanol.
  - b. Federal RFG maximum and minimum testing requirement will apply to the final blends of this product.
  - c. This product, when blended with 10% volume percent of Denatured Fuel Grade Ethanol, and must have a Benzene level of 1.3 volume % or lower and have an Oxygen content of at least 1.7% but not more than 4.0% by wt.

REFORMULATED REGULAR GASOLINE BLENDSTOCK (RBOB)  
FOR BLENDING WITH 10% DENATURED FUEL ETHANOL  
(92% PURITY) AS DEFINED IN ASTM D4806  
VOC-CONTROLLED REGION 2 COMPLEX MODEL PHASE II  
CHICAGO AREA

The following parameters apply before blending with denatured fuel ethanol:

<u>PRODUCT PROPERTY</u>	<u>ASTM TEST</u> <u>METHOD</u>	<u>MINIMUM</u>	<u>MAXIMUM</u> <u>Report</u>	(1)
Gravity, API @ 60°F	D287, D1298, D4052			
Color			UNDYED	
Corrosion (Cu) 3 Hrs. @ 122°F	D130		1	
Corrosion (Ag) 3 Hrs. @ 122°F	D4814		1	
Gum, mg/100ml after washing	D381		4	
Gum, mg/100ml unwashed	D381	Report		
Doctor	D4952		Negative	(2)
or: Mercaptan Sulfur wt %	D3227		0.002	
Oxidation Stability - Minutes	D525	240		
Appearance @ 70°F				(3)
Oxygen, wt. % Neat		Report		(4)
Odor		Nonoffensive		(5)

The following parameters apply after blending with denatured fuel ethanol:

Sulfur, (ppmwt)	D2622, D5453, D7039		80	
Benzene, wt. %	D3606		1.30	
Aromatics (vol %)	D5769, D5599		50.0	(6)
Olefins (vol %)	D1319		25.0	
Oxygen, wt. % Blended	D4815, D5599	1.7	4.0	(7)
Emission Performance Reduction (%)		25.4		
E200 (vol %)	D86	30.0	70.0	
E300 (vol %)	D86	70.0	100.0	

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Octane:	RON:	D2699	Report	
	MON:	D2700	82.0	
	(R+M)/2 (AKI):		87.0	(8)

---

Volatility - Refer to Section 3	3-A
Distillation - Refer to Section 3	3-A
Drivability Index (Origin) - Refer to Section 3	3-A
Reid Vapor Pressure – Refer to Appendix F	
Additives: Gum Inhibitors, Metal Deactivators, Refer to Section 3	3-B

**NOTE: This RBOB may not be combined with any other RBOB except RBOB having the same requirement for oxygenate type and amount.**

CODE 4U

- (1) Deliveries may be higher or lower by normal testing and handling tolerance. All tests should be the most current version or the version specified by federal, state, or local government.
- (2) Mercaptan Sulfur waived if fuel is negative by doctor test.
- (3) This product shall be free from undissolved water, sediment or other foreign materials in suspension. See page 3-2 Paragraph 8.
- (4) This product must be oxygenate free. Non hydrocarbon blending components are not allowed
- (5) Any Gasoline exhibiting an offensive odor and/or poses a personal health hazard and/or contains more than 0.30 wt. % dicyclopentadiene will not be accepted for shipment
- (6) Refer to test methods published in 40 CFR Chapter 1, Part 80.46. ASTM methods D1319 and D4815 may be used in accordance with Federal and State laws.
- (7) Refer to test method published in 40 CFR, Part 80, Appendix E, Method 3.
- (8)
  - a. This product must be blended with 10% by volume Denatured Fuel Grade Ethanol.
  - b. Federal RFG maximum and minimum testing requirement will apply to the final blends of this product.
  - c. This product, when blended with 10% volume percent of Denatured Fuel Grade Ethanol, and must have a Benzene level of 1.3 volume % or lower and have an Oxygen content of at least 1.7% but not more than 4.0% by wt.



REFORMULATED REGULAR GASOLINE BLENDSTOCK (RBOB)  
FOR BLENDING WITH 10% DENATURED FUEL ETHANOL  
(92% PURITY) AS DEFINED IN ASTM D4806  
VOC-CONTROLLED REGION 1 COMPLEX MODEL PHASE II  
ST. LOUIS AREA

The following parameters apply before blending with denatured fuel ethanol:

<u>PRODUCT PROPERTY</u>	<u>ASTM TEST METHOD</u>	<u>MINIMUM</u>	<u>MAXIMUM</u> (1)
Gravity, API @ 60°F	D287, D1298, D4052		Report
Color			UNDYED
Corrosion (Cu) 3 Hrs. @ 122°F	D130		1
Corrosion (Ag) 3 Hrs. @ 122°F	D4814		1
Gum, mg/100ml after washing	D381		4
Gum, mg/100ml unwashed	D381	Report	
Doctor	D4952		Negative (2)
or: Mercaptan Sulfur wt %	D3227		0.002
Oxidation Stability - Minutes	D525	240	
Appearance @ 70°F			(3)
Oxygen, wt. % Neat		Report	(4)
Odor		Nonoffensive	(5)

The following parameters apply after blending with denatured fuel ethanol:

Sulfur, (ppmwt)	D2622, D5453, D7039		80
Benzene, wt. %	D3606		1.30
Aromatics (vol %)	D5769, D5599		50.0 (6)
Olefins (vol %)	D1319		25.0
Oxygen, wt. % Blended	D4815, D5599	1.7	4.0 (7)
Emission Performance Reduction (%)		27.0	
E200 (vol %)	D86	30.0	70.0
E300 (vol %)	D86	70.0	100.0

---

Octane:	RON:	D2699	Report	
	MON:	D2700	82.0	
	(R+M)/2 (AKI):		87.0	(8)

---

Volatility - Refer to Section 3	3-A
Distillation - Refer to Section 3	3-A
Drivability Index (Origin) - Refer to Section 3	3-A
Reid Vapor Pressure – Refer to Appendix F	
Additives: Gum Inhibitors, Metal Deactivators, Refer to Section 3	3-B

**NOTE: This RBOB may not be combined with any other RBOB except RBOB having the same requirement for oxygenate type and amount.**

CODE 4S

- (1) Deliveries may be higher or lower by normal testing and handling tolerance. All tests should be the most current version or the version specified by federal, state, or local government.
- (2) Mercaptan Sulfur waived if fuel is negative by doctor test.
- (3) This product shall be free from undissolved water, sediment or other foreign materials in suspension. See page 3-2 Paragraph 8.
- (4) This product must be oxygenate free. Non hydrocarbon blending components are not allowed
- (5) Any Gasoline exhibiting an offensive odor and/or poses a personal health hazard and/or contains more than 0.30 wt. % dicyclopentadiene will not be accepted for shipment
- (6) Refer to test methods published in 40 CFR Chapter 1, Part 80.46. ASTM methods D1319 and D4815 may be used in accordance with Federal and State laws.
- (7) Refer to test method published in 40 CFR, Part 80, Appendix E, Method 3.
- (8) a. This product must be blended with 10% by volume Denatured Fuel Grade Ethanol.
  - b. Federal RFG maximum and minimum testing requirement will apply to the final blends of this product.
  - c. This product, when blended with 10% volume percent of Denatured Fuel Grade Ethanol, and must have a Benzene level of 1.3 volume % or lower and have an Oxygen content of at least 1.7% but not more than 4.0% by wt.

REFORMULATED REGULAR GASOLINE BLENDSTOCK (RBOB)  
FOR BLENDING WITH 10% DENATURED FUEL ETHANOL  
(92% PURITY) AS DEFINED IN ASTM D4806  
NON-VOC-CONTROLLED COMPLEX MODEL PHASE II  
ST. LOUIS AREA

The following parameters apply before blending with denatured fuel ethanol:

<u>PRODUCT PROPERTY</u>	<u>ASTM TEST METHOD</u>	<u>MINIMUM</u>	<u>MAXIMUM</u> (1)
Gravity, API @ 60°F	D287, D1298, D4052		Report
Color			UNDYED
Corrosion (Cu) 3 Hrs. @ 122°F	D130		1
Corrosion (Ag) 3 Hrs. @ 122°F	D4814		1
Gum, mg/100ml after washing	D381		4
Gum, mg/100ml unwashed	D381	Report	
Doctor	D4952		Negative (2)
or: Mercaptan Sulfur wt %	D3227		0.002
Oxidation Stability - Minutes	D525	240	
Appearance @ 70°F			(3)
Oxygen, wt. % Neat		Report	(4)
Odor		Nonoffensive	(5)

The following parameters apply after blending with denatured fuel ethanol:

Sulfur, (ppmwt)	D2622, D5453, D7039		80
Benzene, wt. %	D3606		1.30
Aromatics (vol %)	D5769, D5599		50.0 (6)
Olefins (vol %)	D1319		25.0
Oxygen, wt. % Blended	D4815, D5599	1.7	4.0 (7)
E200 (vol %)	D86	30.0	70.0
E300 (vol %)	D86	70.0	100.0

---

Octane:	RON:	D2699	Report	
	MON:	D2700	82.0	
	(R+M)/2 (AKI):		87.0	(8)

---

Volatility - Refer to Section 3	3-A
Distillation - Refer to Section 3	3-A
Drivability Index (Origin) - Refer to Section 3	3-A
Reid Vapor Pressure – Refer to Appendix F	
Additives: Gum Inhibitors, Metal Deactivators, Refer to Section 3	3-B

**NOTE: This RBOB may not be combined with any other RBOB except RBOB having the same requirement for oxygenate type and amount.**

CODE 4T

- (1) Deliveries may be higher or lower by normal testing and handling tolerance. All tests should be the most current version or the version specified by federal, state, or local government.
- (2) Mercaptan Sulfur waived if fuel is negative by doctor test.
- (3) This product shall be free from undissolved water, sediment or other foreign materials in suspension. See page 3-2 Paragraph 8.
- (4) This product must be oxygenate free. Non hydrocarbon blending components are not allowed
- (5) Any Gasoline exhibiting an offensive odor and/or poses a personal health hazard and/or contains more than 0.30 wt. % dicyclopentadiene will not be accepted for shipment
- (6) Refer to test methods published in 40 CFR Chapter 1, Part 80.46. ASTM methods D1319 and D4815 may be used in accordance with Federal and State laws.
- (7) Refer to test method published in 40 CFR, Part 80, Appendix E, Method 3.
- (8) a. This product must be blended with 10% by volume Denatured Fuel Grade Ethanol.
  - b. Federal RFG maximum and minimum testing requirement will apply to the final blends of this product.
  - c. This product, when blended with 10% volume percent of Denatured Fuel Grade Ethanol, and must have a Benzene level of 1.3 volume % or lower and have an Oxygen content of at least 1.7% but not more than 4.0% by wt.

## Explorer Pipeline Section 3-A

Distillation and Volatility Requirements before blending with 10% Ethanol

	<u>CLASS</u>					
	<u>AA</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>
Distillation: ASTM D86						
10% Evap. °F Max	158	158	149	140	131	122
50% Evap. °F Min Blended	150	150	150	150	150	150
50% Evap. °F Min	170	170	170	170	170	170
50% Evap. °F Max	250	250	245	240	235	230
90% Evap. °F Max	374	374	374	365	365	365
End Point, °F Max	430	430	430	430	430	430
Residue, % Max	2	2	2	2	2	2
*Vapor Pressure (VP)	7.8	9.0	10.0	11.5	13.5	15.0
Vapor Pressure Blended	8.8	10.0	11.0	12.5	14.5	15.5
Drivability Index, Blended °F Max	1250	1250	1240	1230	1220	1200

**\*\*V/L @ 20, Min. Temp. degree F  
ASTM D5188**

**Neat:**

Class 1	Class 2	Class 3	Class 4	Class 5	Class 6
<b>140</b>	<b>133</b>	<b>124</b>	<b>116</b>	<b>105</b>	<b>95</b>

**Blended:**

Class 1	Class 2	Class 3	Class 4	Class 5	Class 6
<b>129</b>	<b>122</b>	<b>116</b>	<b>107</b>	<b>102</b>	<b>95</b>

\* For products blended to meet EPA or state imposed volatility requirements, Reid Vapor Pressure (RVP) tests must be performed in accordance with methods published in 40 CFR Part 80 1476-14490 Vol. 58 No. 50

\*\* D5188 is the referee test method.

### **Section 3.0**

For products blended to meet EPA or state imposed summer requirements, test must be performed for RVP in accordance with procedure described in 40 CFR, PART 80, Appendix E, Method 3.

Vapor pressure requirements at destination are based on ASTM Standard D4814 EPA and/or State standards. Due to intransit times for destinations, Explorer will publish Reid Vapor Pressure schedules by cycle number for origin locations.

The Reid Vapor Pressures published by cycle number are estimations based on Explorer intransit time and federal and state volatility laws applicable within the designated distribution areas.

Shipper terminals should monitor inventories to ensure that motor gasolines comply with federal and state volatility requirements.

## Explorer Pipeline Section 3-B

### Additives for Gasoline

#### I. Gum Inhibitors and Metal Deactivators

Shipments of gasolines may, but are not required to contain the following:

N,N' di-secondary butyl para-phenylenediamine  
N,N' disalicydene-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-diamthylpenyl)-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

#### II. Corrosion Inhibitors

All products shipped on Explorer Pipeline, with the exception of all grades of Aviation Kerosene, are required to meet a minimum level of corrosion protection. The concentration of inhibitor dosage will be controlled to meet a minimum rating of B+ (less than 5% of test surface rusted) before blending with denatured fuel ethanol (where applicable) as determined by NACE Standard TMO172, Test Method-Antirust Properties of Petroleum Products Pipeline Cargoes.

Unleaded Gasolines shipped on Explorer Pipeline may contain only the following corrosion inhibitors:

Afton	Hi TEC	Lubrizol	8014
Aqua	11CH7	Mid	MCC
Corexi	526	Mobil	C-
Ethyl	58		
Innospec	DCI-4A, DCI6A,DCI-11,DCI30		
Nalco	5403,5405,EC5624A		
Spec-Aid	8Q22,8Q1018Q123ULS		
Tola	245, 249, 351, 3232, 3232D		
Uniche	7500, 7501, 751		
UO	Unicor		

- III. The use of Port Fuel Injections (PFI) and intake valve detergent additives is prohibited.
- IV. No additives or corrosion inhibitors containing phosphorus may be used in the gasoline. Phosphorous, as measured by ASTM D3231 shall not exceed 0.004 gms/gal.
- V. All Explorer Fungible Gasolines are “Bases-Gasoline and are not for sale to the ultimate consumer.”



FUNGIBLE SPECIFICATIONS

CODES 51  
54

FUNGIBLE AVIATION TURBINE FUEL  
JET A

<u>PRODUCT PROPERTY</u>	<u>ASTM TEST METHOD</u>	<u>EXPLORER ORIGIN SPECIFICATIONS (1)</u>		
		<u>MINIMUM</u>	<u>MAXIMUM</u>	<u>NOTES</u>
<u>General Properties</u>				
Gravity, °API @ 60°F	D287, D1298, D4052	37	51	
Net Heat of Combustion, BTU/Pound	D3338, D4529, D4809	18,400		a.
Corrosion, Copper Strip, 2 Hrs. @ 212°F	D130		No. 1	
MSEP (WSIM) Origin	D3948, D7224	85		
Destination		75		
Electrical Conductivity	D2624		10	Report
Particulate contaminant				
Mg/Gal	D2276		Report	
Water Reaction:	D1094			
Interface Rating			1b	
Color, Saybolt (Origin)	D156, D6045	20		
Total Sulfur, ppm.	D4294, D2622, D5453, D7039		1500	
Color, Saybolt (Destination)	D156, D6045	18		
Appearance				b.
Additives				c. & d.
<u>Low Temperature Properties</u>				
Freezing Point, °C	D2386, D5972		-40.0	
Viscosity, cSt 104°F (40°C)	D445 D7042		1.9	
Viscosity, cSt -4°F (-20°C)	D445 D7042		8.0	
<u>Volatility</u>				
Flash Point, °F Origin	D56, D3828	108		e.
Destination		100		
Distillation, Temp., C °(F)	D86			h.
10% Recovered			205 (400)	
50% Recovered			Report	
90% Recovered			288 (550)	
Final Boiling Point, °F			300 (572)	
Distillation Residue, Vol. %			1.5	
Distillation Loss, Vol. %			1.5	

CODES 51  
54

<u>PRODUCT PROPERTY</u>	<u>ASTM TEST METHOD</u>	<u>EXPLORER ORIGIN SPECIFICATIONS (1)</u>		<u>NOTES</u>
		<u>MINIMUM</u>	<u>MAXIMUM</u>	
or Simulated Distillation C (F)	D2887			h.
<u>10% recovery</u>			185 (365)	
<u>50% recovery</u>		report		
<u>90% recovery</u>			304 (579)	
<u>End Point</u>			340 (644)	
<u>Stability</u>				
Existent Gum, mg/100 ml	D381		7.0	
Thermal Stability:	D3241			f.
Filter Pressure Drop, mm Hg			25	
Tube Deposit			<3	
No Peacock or Abnormal Color Deposits				

Composition Properties

Sulfur, Total wt%	D7039 or D5453 D2622 or D4294		0.150	
Doctor Test	D4952		Negative	
Sulfur, Mercaptan	D3227		0.003	g.
Aromatics, Vol. %	D1319		25	
Acidity, Total Max, mg KOH/g	D3242		0.1	

Combustion Properties

One of the following requirements shall be met:

(1) Luminometer No.	D1740	45
(2) Smoke Point, mm	D1322	25.0
(3) Smoke Point, mm	D1322	18.0

AND

Naphthalenes, Vol. %	D1840	3.0
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- (1) Deliveries may be higher or lower by normal testing and handling tolerance.
- (a.) For all grades use either Eq 1 or Table 1 in test method D 4529 or Eq 2 in Test Method D 3338. Test Method D 4809 may be used as an alternative. In case of dispute, Test Method D4809 shall be used.
- (b.) Product shall be clear and bright and free of suspended water and sediment. See Page 3-2 paragraph 8.
- (c.) No additives other than anti-oxidants and metal deactivators as set forth in ASTM D1655 (latest edition) Section 5.2.1 and 5.2.2 shall be permitted. The use of these additives requires advance approval from Explorer Pipeline prior to delivery into the pipeline. The use of these additives must be clearly stated on the C of A. Explorer Pipeline reserves the right to refuse shipment of product containing these additives. The use of any other additives is prohibited.
- (d.) No rust inhibitor shall be injected into this product unless approved by all shippers.
- (e.) Method D56 is the preferred method. In case of a dispute D56 will apply.
- (f.) **At origin, Thermal Stability test (JFTOT) shall be conducted for 2.5 hours at a control temperature of 275° C. At destination, test shall be conducted for 2.5 hours at a control temperature of 260°C.** Tube deposits shall always be reported by Visual Method: a rating by the Tube Deposit Rating (TDR) optical density method is desirable, but not mandatory.
- (g.) The Mercaptan Sulfur determination may be waived if the fuel is considered sweet by the doctor test described in 4.2 of ASTM D235.
- (h.) Physical or Simulated distillation can be used. ASTM D 86 will be the referee test method.

FUNGIBLE SPECIFICATIONS

CODES 75  
7V

ULTRA LOW SULFUR FUEL OIL  
FUNGIBLE ULTRA LOW SULFUR FUEL OIL

EXPLORER ORIGIN

<u>PRODUCT PROPERTY</u>	<u>ASTM TEST METHOD</u>	<u>SPECIFICATIONS (1)</u>		
		<u>MINIMUM</u>	<u>MAXIMUM</u>	<u>NOTES</u>
Gravity, API	D287, D4052	30		
Flash Point, °F				
Pensky-Marten	D93	130		
Distillation C (F)	D86			
50%		Report		
90%		282 (540)	338 (640)	
End Point			366 (690)	
Or Simulated Distillation C (F)	D2887			
50% recovered			Report	
90% recovered		300 (572)	356 (673)	
End Point			421 (790)	
Color, ASTM	D1500, D6045		2.5	
Color, Visual		Undyed		
Viscosity, cSt @ 104°F (40°C)	D445 D7042	1.9	4.1	
Pour Point, °F	D97, D5949, D5950, D5985		See Page 3-50	
Cloud Point, °F	D2500, D5771 D5772, D5773		See Page 3-50	
Corrosion, 3 Hrs. @ 122 °F	D130		1	
Total Sulfur, % by wt.	D4294, D2622, D5453, D7039			
28" Origin			0.0011	(2)
Lake Charles, Port Neches			0.0011	(2)
Cetane Index	D976	40		
Cetane Index	D4737			
	Procedure A	40.0		(3)
Cetane Number	D613, D6890	40.0		
Ash, % by wt.	D482		0.01	
Carbon Residue: Ramsbottom				
on 10% Bottom	D524		0.35	
Water & Sediment				(4)
Thermal Stability mg/100ml.	D2274		2.5	
300°F Pad rating, DuPont scale			7	
Thermal stability Reflectance	D6468	(W) 75		
Reading Min.		(Y) 82		
Oxidation Stability	D2274			
mg/100 ml			2.5	
Haze Rating @ 77°F (25°C)	D4176			
	Procedure 2		2	
Additives:	Corrosion Inhibitors: Page 3-51			

NOTES:

- (1) Ultra Low Sulfur Diesel Fuel to meet EPA Standards.
- (2) Per 40 CFR 80.580 (b) (3) any method certified under 80.585 may be used. Explorer will accept any EPA qualified method.
- (3) Aromatics by D1319 of 35 vol% max. may be used as an alternative.
- (4) This product shall be free from undissolved water, sediment or other foreign materials in suspension. See Page 3-2 Paragraph 8.
- (5) On System #10 the Houston to Dallas 10" pipeline, diesel fuel may contain up to 5% Bio-Diesel. Locations affected are: North Houston (NH1), Bryan Terminal (BR1), Hearne Terminal (HR1), Waco Terminal (WA2 & WA4), Arlington Terminal (AR1 & AT1), Fort Worth Terminals (FT1, FM1, and FW1), Grapevine/Southlake Terminals (GR1, GR3, GR5) and Dallas/Singleton Terminals (DT1 & DT2).

FUNGIBLE ULTRA LOW SULFUR FUEL OIL BLENDSTOCK FOR BLENDING TO MEET TEXAS  
L.E.D. SPECIFICATIONS

<u>PRODUCT PROPERTY</u>	<u>ASTM TEST METHOD</u>	<u>MINIMUM</u>	<u>EXPLORER ORIGIN SPECIFICATIONS (1)</u>	
			<u>MAXIMUM</u>	<u>NOTES</u>
Gravity, API	D287, D4052, D1298	30		
Flash Point, °F				
Pensky-Marten	D93	130		
Distillation C (F)	D86			
50%		Report		
90%		282 (540)	338 (640)	
End Point			366 (690)	
Or Simulated Distillation C (F)	D2887			
50% recovered			Report	
90% recovered		300 (572)	356 (673)	
End Point			421 (790)	
Color, ASTM	D1500, D6045		2.5	
Color, Visual		Undyed		
Viscosity, cSt @ 104°F (40°C)	D445 D7042	1.9	4.1	
Pour Point, °F	D97, D5949, D5950, D5985		See Page 3-50	
Cloud Point, °F	D2500, D5771 D5772, D5773		See Page 3-50	
Corrosion, 3 Hrs. @ 122 °F	D130		1	
Total Sulfur, % by wt.	D4294, D2622, D5453, D7039			
28" Origin			0.0011	(2)
Lake Charles, Port Neches			0.0011	(2)
Cetane Index	D976	40		
Cetane Index	D4737 Procedure A	40.0		(3)
Cetane Number	D613, D6890	40.0		
Ash, % by wt.	D482		0.01	
Carbon Residue: Ramsbottom on 10% Bottom	D524		0.35	
Water & Sediment				(4)
Thermal Stability mg/100ml. 300°F Pad rating, DuPont scale	D2274		2.5	
Thermal stability Reflectance Reading Min.	D6468	(W) 75 (Y) 82		
Oxidation Stability mg/100 ml	D2274		2.5	
Haze Rating @ 77°F (25°C)	D4176 Procedure 2		2	
Additives:	Corrosion Inhibitors: Page 3-51			

NOTES:

- (1) Ultra Low Sulfur Diesel Fuel to meet EPA Standards.
- (2) Per 40 CFR 80.580 (b) (3) any method certified under 80.585 may be used. Explorer will accept any EPA qualified method.
- (3) Aromatics by D1319 of 35 vol% max. may be used as an alternative
- (4) This product shall be free from undissolved water, sediment or other foreign materials in suspension. See Page 3-2 Paragraph 8
- (5) On System #10 the Houston to Dallas 10" pipeline, diesel fuel may contain up to 5% Bio-Diesel. Locations affected are: North Houston (NH1), Bryan Terminal (BR1), Hearne Terminal (HR1), Waco Terminal (WA2 & WA4), Arlington Terminal (AR1 & AT1), Fort Worth Terminals (FT1, FM1, and FW1), Grapevine/Southlake Terminals (GR1, GR3, GR5) and Dallas/Singleton Terminals (DT1 & DT2).

FUNGIBLE SPECIFICATIONS

<u>PRODUCT PROPERTY</u>	BIODIESEL		CODE	
	<u>FUNGIBLE BIODIESEL</u>		EXPLORER ORIGIN	
	<u>ASTM TEST</u>	<u>METHOD (1)</u>	<u>MINIMUM</u>	<u>MAXIMUM</u>
Gravity, API	D1298, D4052	report	report	
Distillation °C (°F)				
90%	D1160		360 (680)	
Corrosion, 3 Hrs. @ 50°C	D130		1B	
Cloud Point °C (°F)	D2500			
Summer			10 (50)	(2)
Winter			2 (35.6)	(2)
Water and Sediment, vol %	D2709		0.05	
Haze Rating @ 77°F (25°C)	D4176			
	Procedure2		1	
Viscosity, cSt @ 104°F (40°C)	D445,D7042	1.9	6.0	
Carbon Residue, mass %	D4530		0.05	
Phosphorous, mass %	D4951		0.001	
Sulfur, ppm	D5453		11	
Cetane number	D613	47		
	D6304,			
Water, mass %	E203		0.035	
Free glycerin, mass %	D6584		0.020	
Monoglyceride content, mass %	D6584			
Summer			0.700	(2)
Winter			0.400	(2)
Total Glycerin, mass %	D6584		0.240	
Acid Number, mg KOH/g	D664		0.5	
Cold Soak Filterability, seconds	D7501			
Summer			360	(2)
Winter			200	(2)
Sulfated Ash, mass %	D874		0.020	
Alcohol Control, one of the following:				
1. Methanol Content, mass %	EN14110		0.200	
2. Flashpoint, °C (°F)	D93	130°C (266°F)		
Flashpoint (closed cup), °C (°F)	D93	93°C (199°F)		
Oxidation Stability	EN15751			
hrs @ 110°C (230°F)		6		
Sodium and Potassium combined	EN14538			
ppm, (µg/g)			5	
Calcium and Magnesium combined	EN14538			
ppm, (µg/g)			5	

Additional Specifications

1. Product must pass ASTM D6751 standards



2. No methyl esters derived from palm oil, brown grease, or yellow grease  
(Distilled ME from Palm Oil, UCO, and DCO upon approval)
3. Supplier must be BQ9000 certified
4. All product must pass through a 20 micron filter at loading
5. All product must be undyed

NOTES

(1) This shall be the referee method. Others as allowable under ASTM D6751

(2)

January	Winter	
February	Winter	
March*	Summer	Transition month: Product cannot be 100% summer specification
April	Summer	
May	Summer	
June	Summer	
July	Summer	
August	Summer	
September	Summer	
October	Summer	
November*	Summer	Transition month: Product cannot be 100% summer specification
December	Winter	

CODES: 75, 77, 7V

**SPECIFICATIONS FOR POUR POINT & CLOUD POINT**

<b><u>MONTH</u></b>	<b><u>CYCLE</u></b>	<b><u>POUR PT. °F MAX.</u></b>	<b><u>CLOUD PT. °F MAX.</u></b>
Jan.	01 ---- 06	0	+15
Feb.	07----- 12	0	+15
Mar.	13----- 18	0	+15
Apr.	19----- 24	+10	+20
May	25----- 30	+10	+20
Jun.	31----- 36	+10	+20
Jul.	37----- 42	+10	+20
Aug.	43----- 48	+10	+20
Sep.	49----- 54	0	+15
Oct.	55----- 60	0	+15
Nov.	61----- 66	0	+15
Dec.	67----- 72	0	+15

**ADDITIVE REQUIREMENTS FOR FUEL OIL DISTILLATE SPECIFICATIONS**

**I. Corrosion Inhibitors**

All products shipped on Explorer Pipeline, with the exception of all grades of Aviation Kerosene, are required to meet a minimum level of corrosion protection. 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 Standards TMO172, Test Method-Antirust Properties of Petroleum Products Pipeline Cargoes.

Fuel Oil Distillate shipped on Explorer Pipeline may contain only the following corrosion inhibitors:

Tolad	4410	Lubrizol	8017	SPEC-AID	8Q110
Tolad	4415	Mobil	C-605		ULS
Corexit	5267	Nalco	5403	Spec-Aid	8Q123
DuPont	DCI-4A	Nalco	5405		ULS
				SPEC-AID	8Q22
DuPont	DCI-6	Nalco	5406	Tolad	245
DuPont	DCI-6A	Nalco	5400-A	Tolad	249
DuPont	DCI-11	Nalco	EC5414A	Unichem	7500
DuPont	DCI-17	Nalco	EC5415A	Unichem	7501
DuPont	AFA-1	Nalco	EC5416A		
DuPont	DMA-4			Unichem	7510
Ethyl HI Tec	580			UOP Unicor	
Lubrizol	8014			UOP Unicor J	
MidContinental				UOP Unicor PL	
Chemical	MCC5001				

**II. Static Dissipater Additives**

Fuel Oil shipments may; but are not required to, contain static dissipater additive. The only approved SDA for use on Explorer Pipeline is “Innospec Stadis 450”. SDA is prohibited from all Kerosene grades. The origin maximum concentration of Stadis 450 is 0.75 mg/l, and the origin maximum conductivity allowed is 250 pS/m at 21 degrees C (70 F) by ASTM D2624.

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