



# **Tesoro Logistics Northwest Pipeline Product Specification Manual**

Effective 07/01/2018  
Supersedes and Replaces Manual dated 4/01/2017

**TABLE OF CONTENTS**

**Page No.**

**1.0 PRODUCT CODES .....3**

**1.1 Approved Product Codes .....3**

**1.2 Additives.....3**

**1.3 New Product Approval Process .....4**

**2.0 SUPPLIER CERTIFICATION.....4**

**2.1 Supplier Pre-Certification.....4**

**2.2 Gasoline Pre-Certification Form .....5**

**2.3 Diesel Pre-Certification Form .....6**

**2.4 Jet Fuel Pre-Certification Form.....7**

**3.0 RVP COMPLIANCE .....8**

**3.1 RVP/Volatility Schedule .....8**

**4.0 PIPELINE ENTRY SPECIFICATIONS.....9**

**4.1 R1 Gasoline.....9**

**4.2 R4 Gasoline.....10**

**4.3 P0 Gasoline .....11**

**4.4 P8 Gasoline .....12**

**4.5 1D15 Diesel.....13**

**4.6 2D15 Diesel.....14**

**4.7 Jet Fuel .....15**

## 1.0 Product Codes

### 1.1 Approved Product Codes

Product Code	Description	Allowed Destinations	ASTM Market Specification
R1	Regular Unleaded Sub-Octane Gasoline	Burley/Pocatello	D4814-16ee1 Region V
R4	Regular Unleaded Sub-Octane Gasoline	Boise	D4814-16ee1 (Not Region V)
R4	Regular Unleaded Sub-Octane Gasoline	Pasco/Spokane	D4814 (latest Edition)
P0	Premium Unleaded Sub-Octane Gasoline	Pasco/Spokane	D4814 (latest Edition)
P8	Premium Unleaded Sub-Octane Gasoline	Burley/Pocatello/Boise	D4814-16ee1 Region V
1D15	Ultra-Low Sulfur Diesel #1	All	D975-18
2D15	Ultra-Low Sulfur Diesel #2	All	D975-18
JET	Commercial Jet Fuel	All	D1655 (latest Edition)

### 1.2 Additives

Pursuant to TLNP Tariff Rule 70, unless by agreement of TLNP, all products entering the Tesoro Logistics Northwest Pipeline (TLNP) System must be “clean”, that is, the product must not contain, in any concentration, finished product fuel additives (e.g. conductivity improver, lubricity improver) or bio-based materials (e.g. FAME, Biodiesel, Oxygenates). Testing is conducted at the receiving facility to identify any additives not allowed on the pipeline or any contamination. If such additives or contamination is identified, the Batch will be stopped, and the Shipper/Supplier will be contacted to address the issue (refer to Section 2.1).

### 1.3 New Product Approval Process

Should a Shipper desire to transport a product that is not listed in the approved list above, the Shipper must provide a written request to the contact below for TLNP review and consideration.

Contact: Scott Cole or Joe Sweitzer  
 Measurement & QC Specialist  
 Tesoro Logistics  
[r.scott.cole@andeavor.com](mailto:r.scott.cole@andeavor.com)  
[Joseph.G.Sweitzer@andeavor.com](mailto:Joseph.G.Sweitzer@andeavor.com)  
 210-626-6471 Office  
 210-626-7189 Office

The written request shall include:

- A detailed description of product
- Applicable ASTM specifications for the product
- A laboratory Certificate of Analysis for the product
- An initial estimate of batch size and frequency

## 2.0 Supplier Certifications

### 2.1 Supplier Pre-Certification

Beginning on April 1, 2017 and for each batch to be shipped, TLNP requires the Shipper to provide a signed Supplier pre-certification form, together with the supporting Certification of Analysis, at least one (1) hour prior to the batch entering the pipeline.

In case of a sampling performed by TLNP at the pipeline origin determine that a given batch fails to meet the Pipeline Entry Specifications contained herein, the pipeline will be shut down, the batch (or the applicable portion thereof) will be noted as “off spec” and the Shipper of Record will be notified. Once notified, the Shipper of Record shall be accountable for developing a plan for the disposition of the off-spec product inclusive of, but not limited to, the costs of: additional sampling/testing, trucking, product downgrading (re-designation), tank cleaning, pipeline down-time, alternate storage and barge demurrage.

**Tesoro Logistics Northwest Pipeline  
Supplier Pre-Certification  
(Use for R1, R4, P0 or P8 Gasoline)**

**Shipper:** \_\_\_\_\_

**Batch Number:** \_\_\_\_\_

**Product Code:** \_\_\_\_\_

**Destination:** \_\_\_\_\_

**Date Tested:** \_\_\_\_\_

			For TLNP Use Only
Product Property	Test Method	Results	Results
Appearance			
API Gravity			
Octane, (R+M)/2			
RVP, psi			
Oxygen (Wt. %)			
Sulfur, ppm			

**This Product does not meet the requirements for reformulated Gasoline and may not be used in any reformulated Gasoline covered area. This is Base Gasoline - Not for sale to the ultimate customer.**

Shipper has certified this product meets \_\_\_\_\_ Octane when blended with 10% Ethanol.

Shipper hereby certifies that this product meets ASTM D4814 and applicable TLNP pipeline entry specifications.

Authorized Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Please email signed Supplier Pre-Certification to the following parties at least one (1) hour in advance of the scheduled batch start time:

Tesoro Control Center	<a href="mailto:lccrconsole2@tsocorp.com">lccrconsole2@tsocorp.com</a>
Tesoro Salt Lake Pump Station	<a href="mailto:TesoroLgstcCOA@tsocorp.com">TesoroLgstcCOA@tsocorp.com</a>
Tesoro Product Quality	<a href="mailto:r.scott.cole@andeavor.com">r.scott.cole@andeavor.com</a>

## Supplier Pre-Certification (Use for 1D15 or 2D15 Diesel)

**Shipper:** \_\_\_\_\_  
**Batch Number:** \_\_\_\_\_  
**Product Code:** \_\_\_\_\_  
**Destination:** \_\_\_\_\_  
**Date Tested:** \_\_\_\_\_

Product Property	Test Method	Results
Appearance		
API Gravity		
Flash, °F		
Color		
Microseparometer (MSEP)		
Sulfur, ppm		
Conductivity, pS/m		

  

For TLNP Use Only
Results

Shipper hereby certifies that this product meets ASTM D975 and applicable TLNP pipeline entry specifications.

Authorized Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Please email signed Supplier Pre-Certification to the following parties at least one (1) hour in advance of the scheduled batch start time:

Tesoro Control Center  
 Tesoro Salt Lake Pump Station  
 Tesoro Product Quality

[lccrconsole2@tsocorp.com](mailto:lccrconsole2@tsocorp.com)  
[TesoroLgstcCOA@tsocorp.com](mailto:TesoroLgstcCOA@tsocorp.com)  
[r.scott.cole@andeavor.com](mailto:r.scott.cole@andeavor.com)

**Tesoro Logistics Northwest Pipeline  
Supplier Pre-Certification  
(JET - Commercial Jet Fuel)**

**Shipper:** \_\_\_\_\_

**Batch Number:** \_\_\_\_\_

**Product Code:** \_\_\_\_\_

**Destination:** \_\_\_\_\_

**Date Tested:** \_\_\_\_\_

			For TLNP Use Only
Product Property	Test Method	Results	Results
Appearance			
API Gravity			
Saybolt Color			
Flash Point, °F			
Distillation 10% Point, °F			
Distillation End Point, °F			
Freeze Point, °F			
MSEP			
Cu Strip			
Conductivity, pS/m			
E. Gum, mg/100 ml			
JFTOT @ 527° F (275° C)			

Shipper hereby certifies that this product meets ASTM D1655 and applicable TLNP pipeline entry specifications.

Authorized Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Please email signed Supplier Pre-Certification to the following parties at least one (1) hour in advance of the scheduled batch start time:

Tesoro Control Center  
 Tesoro Salt Lake Pump Station  
 Tesoro Product Quality

[lccrconsole2@tsocorp.com](mailto:lccrconsole2@tsocorp.com)  
[TesoroLgstcCOA@tsocorp.com](mailto:TesoroLgstcCOA@tsocorp.com)  
[r.scott.cole@andeavor.com](mailto:r.scott.cole@andeavor.com)

**2.0 RVP Compliance**

## 2.1 RVP/Volatility Schedule

Ship Dates	Idaho Terminals		Washington Terminals	
	Class at P/L origin	Class at Terminal ‡	Class at P/L origin	Class at Terminal ‡
Jan 1–15	E-5 (15.0)	E-5 (15.0)	E-5 (15.0)	E-5 (15.0)
Jan 16–31	E-5 (15.0)	E-5 (15.0)	E-5 (15.0)	E-5 (15.0)
Feb 1–15	E-5 (15.0)	E-5 (15.0)	E-5 (15.0)	E-5 (15.0)
Feb 16–28	D-4 (13.5)	E-5 (15.0)	D-4 (13.5)	E-5 (15.0)
Mar 1–15	D-4 (13.5)	D-4 (13.5)	A-4 (9.0)	D-4 (13.5)
Mar 16–31	A-4 (9.0)	D-4 (13.5)**	A-4 (9.0)	D-4 (13.5)
Apr 1–15	A-3 (9.0)	D-4 (13.5)**	A-4 (9.0)	D-4 (13.5)
Apr 16–30	A-3 (9.0)	A-3 (9.0)	A-4 (9.0)	A-4 (9.0)
May 1–15	A-3 (9.0)	A-3 (9.0)	A-4 (9.0)	A-4 (9.0)
May 16–31	A-2 (9.0)	A-3 (9.0)	A-3 (9.0)	A-4 (9.0)
June 1–15	A-2 (9.0)	A-2 (9.0)	A-3 (9.0)	A-3 (9.0)
June 16–30	A-2 (9.0)	A-2 (9.0)	A-2 (9.0)	A-3 (9.0)
July 1–15	A-2 (9.0)	A-2 (9.0)	A-2 (9.0)	A-2 (9.0)
July 16–31	A-2 (9.0)	A-2 (9.0)	A-2 (9.0)	A-2 (9.0)
Aug 1–15	A-2 (9.0)	A-2 (9.0)	A-2 (9.0)	A-2 (9.0)
Aug 16–31	A-2 (9.0)	A-2 (9.0)	A-2 (9.0)	A-2 (9.0)
Sept 1–15	A-2 (9.0)	A-2 (9.0)	A-2 (9.0)	A-2 (9.0)
Sept 16–30	B-2 (10.0)	B-2 (10.0)	C-3 (11.5)	C-3 (11.5)*
Oct 1–15	C-3 (11.5)	C-3 (11.5)	D-4 (13.5)	D-4 (13.5)*
Oct 16–31	C-3 (11.5)	C-3 (11.5)	D-4 (13.5)	D-4 (13.5)*
Nov 1–15	D-4 (13.5)	D-4 (13.5)	D-4 (13.5)	D-4 (13.5)
Nov 16–30	D-4 (13.5)	D-4 (13.5)	D-4 (13.5)	D-4 (13.5)
Dec 1–15	E-5 (15.0)	E-5 (15.0)	E-5 (15.0)	E-5 (15.0)
Dec 16–31	E-5 (15.0)	E-5 (15.0)	E-5 (15.0)	E-5 (15.0)

‡ Refers to Class designation as specified in ASTM D4814

\* Washington Gasolines not to be delivered into Idaho during these periods.

\*\* Idaho Gasolines not to be delivered into Washington during these periods.

### Gasoline RVP / Volatility Requirements

Vapor Pressure and Distillation Class Requirements									Vapor Lock Class, T V/L °F Min **		
Class	RVP Max. psi	T V/L °F Min	50% Dist. Pt. °F Min	50% Dist. Pt. °F Max	90% Dist. Pt. °F Max	Dist. End Pt. °F Max	Dist. Residue Vol.	DI Max *	Class	Areas except Region Five	Region Five Pocatello & Burley Idaho Only
A	9.0	158	170	250	374	437	2	1250	1	129	129
B	10.0	149	170	245	374	437	2	1240	2	112	122
C	11.5	140	170	240	365	437	2	1230	3	116	116
D	13.5	131	170	235	365	437	2	1220	4	107	116
E	15.0	122	170	230	365	437	2	1200	5	102	105

Note \*: Driveability Index is calculated as follows:

Driveability Index (DI) = 1.5 T10 + 3.0 T50 + 1.0 T90 + 2.4°F (1.33°C) X Ethanol Volume % (Ethanol factor is zero for products delivered without Ethanol).

Note\*\* Per ASTM D4814 Gasoline or blends of oxygenates and gasoline as sold to the consumer, shall meet these limits.

Note: Product must not contain MTBE.



## 4.0 Pipeline Entry Specifications

### 4.1 R1 - Regular Unleaded Sub-Octane Gasoline

Property	ASTM Test Method	Specification Limits
Appearance (Visual)	D4176	Clear & Bright
API Gravity at 60°F	D4052	Report
Octane	D2700, D2699	80.0 min *Note 1
RVP	D5191, D6378, D4953, D5482	Note 2
Distillation		
10% evaporated at °F	D86	Note 2
50% evaporated at °F	D86	Note 2
90% evaporated at °F	D86	Note 2
End Point at °F	D86	Note 2
Residue, vol%	D86	Note 2
Driveability Index, °F	D86	Note 2
V/L Ratio	D4814, D5188	Note 2
Sulfur, ppm	D2622, D5453, D7039, D7220, D6920	80 max
Sulfur, Mercaptan mass %	D3227	0.002 max
Copper Strip Corrosion	D130	#1b max
Silver Strip Corrosion	D7671, D7667	#1
Solvent Washed Gum Content, mg/100 mL	D381	5 max
Oxidation Stability, minutes	D525	240 min
Benzene, wt. %	D3606	4.9 max
Oxygenates, wt. %	D4815, D5599	0.1 max
Hydrocarbon type	D1319	Report

**Note 1: Sub-Octane gasoline is accepted for transport as base gasoline (not for sale to ultimate consumer) and is intended for blending with 10% Ethanol. The refinery Certificate of Analysis, which shall be developed in accordance with ASTM D4814, must include the pre-Ethanol octane test results. The Supplier Pre-Certification form (see Section 2.2 herein) must contain the supplier's attestation that the finished gasoline has been certified to meet the stated pump octane.**

**Note 2: Refer to the RVP/Volatility Schedule in Section 3.1 (pg. 8) herein.**

**This Product does not meet the requirements for reformulated Gasoline and may not be used in any reformulated Gasoline covered area. This is Base Gasoline - Not for sale to the ultimate customer.**

## 4.2 R4 - Regular Unleaded Sub-Octane Gasoline

Property	ASTM Test Method	Specification Limits
Appearance (Visual)	D4176	Clear & Bright
API Gravity at 60°F	D4052	Report
Octane	D2700, D2699	82.0 min *Note 1
RVP	D5191, D6378, D4953, D5482	Note 2
Distillation		
10% evaporated at °F	D86	Note 2
50% evaporated at °F	D86	Note 2
90% evaporated at °F	D86	Note 2
End Point at °F	D86	Note 2
Residue, vol%	D86	Note 2
Driveability Index, °F	D86	Note 2
V/L Ratio	D4814, D5188	Note 2
Sulfur, ppm	D2622, D5453, D7039, D7220, D6920	80 max
Sulfur, Mercaptan mass %	D3227	0.002 max
Copper Strip Corrosion	D130	#1b max
Silver Strip Corrosion	D7671, D7667	#1
Solvent Washed Gum Content, mg/100 mL	D381	5 max
Oxidation Stability, minutes	D525	240 min
Benzene, wt. %	D3606	4.9 max
Oxygenates, wt. %	D4815, D5599	0.1 max
Hydrocarbon type	D1319	Report

**Note 1:** Sub-Octane gasoline is accepted for transport as base gasoline (not for sale to ultimate consumer) and is intended for blending with 10% Ethanol. The refinery Certificate of Analysis, which shall be developed in accordance with ASTM D4814, must include the pre-Ethanol octane test results. The Supplier Pre-Certification form (see Section 2.2 herein) must contain the supplier's attestation that the finished gasoline has been certified to meet the stated pump octane.

**Note 2:** Refer to the RVP/Volatility Schedule in Section 3.1 (pg. 8) herein.

**This Product does not meet the requirements for reformulated Gasoline and may not be used in any reformulated Gasoline covered area. This is Base Gasoline - Not for sale to the ultimate customer.**

### 4.3 P0 - Premium Unleaded Sub-Octane Gasoline

Property	ASTM Test Method	Specification Limits
Appearance (Visual)	D4176	Clear & Bright
API Gravity at 60°F	D4052	Report
Octane	D2700, D2699	88.0 min *Note 1
RVP	D5191, D6378, D4953, D5482	Note 2
Distillation		
10% evaporated at °F	D86	Note 2
50% evaporated at °F	D86	Note 2
90% evaporated at °F	D86	Note 2
End Point at °F	D86	Note 2
Residue, vol%	D86	Note 2
Driveability Index, °F	D86	Note 2
V/L Ratio	D4814, D5188	Note 2
Sulfur, ppm	D2622, D5453, D7039, D7220, D6920	80 max
Sulfur, Mercaptan mass %	D3227	0.002 max
Copper Strip Corrosion	D130	#1b max
Silver Strip Corrosion	D7671, D7667	#1
Solvent Washed Gum Content, mg/100 mL	D381	5 max
Oxidation Stability, minutes	D525	240 min
Benzene, wt. %	D3606	4.9 max
Oxygenates, wt. %	D4815, D5599	0.1 max
Hydrocarbon type	D1319	Report

**Note 1:** Sub-Octane gasoline is accepted for transport as base gasoline (not for sale to ultimate consumer) and is intended for blending with 10% Ethanol. The refinery Certificate of Analysis, which shall be developed in accordance with ASTM D4814, must include the pre-Ethanol octane test results. The Supplier Pre-Certification form (see Section 2.2 herein) must contain the supplier's attestation that the finished gasoline has been certified to meet the stated pump octane.

**Note 2:** Refer to the RVP/Volatility Schedule in Section 3.1 (pg. 8) herein.

**This Product does not meet the requirements for reformulated Gasoline and may not be used in any reformulated Gasoline covered area. This is Base Gasoline - Not for sale to the ultimate customer.**

#### 4.4 P8 - Premium Unleaded Sub-Octane Gasoline

Property	ASTM Test Method	Specification Limits
Appearance (Visual)	D4176	Clear & Bright
API Gravity at 60°F	D4052	Report
Octane	D2700, D2699	86.0 min *Note 1
RVP	D5191, D6378, D4953, D5482	Note 2
Distillation		
10% evaporated at °F	D86	Note 2
50% evaporated at °F	D86	Note 2
90% evaporated at °F	D86	Note 2
End Point at °F	D86	Note 2
Residue, vol%	D86	Note 2
Driveability Index, °F	D86	Note 2
V/L Ratio	D4814, D5188	Note 2
Sulfur, ppm	D2622, D5453, D7039, D7220, D6920	80 max
Sulfur, Mercaptan mass %	D3227	0.002 max
Copper Strip Corrosion	D130	#1b max
Silver Strip Corrosion	D7671, D7667	#1
Solvent Washed Gum Content, mg/100 mL	D381	5 max
Oxidation Stability, minutes	D525	240 min
Benzene, wt. %	D3606	4.9 max
Oxygenates, wt. %	D4815, D5599	0.1 max
Hydrocarbon type	D1319	Report

**Note 1: Sub-Octane gasoline is accepted for transport as base gasoline (not for sale to ultimate consumer) and is intended for blending with 10% Ethanol. The refinery Certificate of Analysis, which shall be developed in accordance with ASTM D4814, must include the pre-Ethanol octane test results. The Supplier Pre-Certification form (see Section 2.2 herein) must contain the supplier's attestation that the finished gasoline has been certified to meet the stated pump octane.**

**Note 2: Refer to the RVP/Volatility Schedule in Section 3.1 (pg. 8) herein.**

**This Product does not meet the requirements for reformulated Gasoline and may not be used in any reformulated Gasoline covered area. This is Base Gasoline - Not for sale to the ultimate customer.**

#### 4.5 1D15 - Ultra-Low Sulfur Diesel #1

Property	ASTM Test Method	Specification Limits
Appearance (Visual)	D4176	Clear & Bright
Water & Sediment, % vol	D2709	0.05 max
Color – Saybolt	D1500,	2.5 max
Ash, % mass	D482	0.01 max
Cetane Number	D613, D4737a	40 min
Cetane Index <b>OR</b>	D976	40 min
Aromatics, vol%	D1319	35 max
Sulfur, ppm	D2622, D5453, D7039, D7220	11 max
Copper Strip at 122°F	D130	#3 max
Distillation		
90% recovered at °F	D86, D2887, D7345	550 max
End Point at °F	D86, D2887, D7345	698 max
Residue, vol%	D86, D2887, D7345	Report
Loss, vol%	D86, D2887, D7345	Report
Flash Point, °F	D93a, D3828, D7094	105 min
API Gravity at 60°F	D4052	Report
Cloud Point, °F	D3117, D5771, D5772, D5773, D7689	-30 max
Viscosity at 104°F, mm <sup>2</sup> /s	D445, D7042	1.3 min / 2.1max
Haze at 70°F	D4176	2 max
Rams bottom Carbon Residue, %mass	D524	0.15 max
Thermal Stability, % reflectance	D6468	80 min

**Note: The following tests may be run at the pipeline origin as a control check and, as such, it may be prudent for Shippers/Producers to run/report the same for comparative purposes:**

Filterability	D4539	Report
Cold Filter Plugging Point	D6371	Report
Conductivity, pS/m	D2624, D2654	10 max
Microseparometer Rating	D3948, D7224	85 min

## 4.6 2D15 - Ultra-Low Sulfur Diesel #2

Property	ASTM Test Method	Specification Limits	
Appearance (Visual)	D4176	Clear & Bright	
Water & Sediment, % vol	D2709	0.05 max	
Color – Saybolt	D1500, D6045	2.5 max	
Ash, % mass	D482	0.01 max	
Cetane Number	D613, D4737a	40 min	
Cetane Index <b>OR</b>	D976	40 min	
Aromatics, vol%	D1319	35 max	
Sulfur, ppm	D2622, D5453, D7039, D7220	11 max	
Sulfur, % mass	D2622	0.0011 wt % max	
Copper Strip at 122°F	D130	#3 max	
Distillation			
90% recovered at °F	D86, D2887, D7345	540 min - 640 max	
End Point at °F	D86, D2887, D7345	698 max	
Residue, vol%	D86, D2887, D7345	Report	
Loss, vol%	D86, D2887, D7345	Report	
Flash Point, °F	D93a, D3828, D7094	130 min	
API Gravity at 60°F	D4052	Report	
Viscosity at 104°F, mm <sup>2</sup> /s	D445, D7042	1.9 min - 4.1 max	
Haze	D4176	2 max	
Rams bottom Carbon Residue, %mass	D524	0.35 max	
Thermal Stability, % reflectance	D6468	80 min	
Cloud Point, °F	D3117, D5771, D5772, D5773, D7689	Dates	Max
		9/1 - 9/30	+24
		10/1 - 2/28	+6
		3/1 - 3/31	+17
		4/1 - 8/31	+32
Pour Point, °F	D97, D5949, D7346, D6749, D6892, D5950	Dates	Max
		9/1 - 9/30	+15
		10/1 - 2/28	-15
		3/1 - 3/31	0
		4/1 - 8/31	+20

**Note: The following tests may be run at the pipeline origin as a control check and, as such, it may be prudent for Shippers/Producers to run/report the same for comparative purposes:**

Filterability	D4539	Report
Cold Filter Plugging Point	D6371	Report
Conductivity, pS/m	D2624, D2654	10 max
Microseparometer Rating	D3948, D7224	85 min

## 4.7 JET - Commercial Jet Fuel

Property	ASTM Test Method	Specification Limits
Appearance (Visual)	D4176	Clear & Bright
Color – Saybolt	D156	+12 min
Acidity, total mg KOH/g	D3242	0.10 max
Aromatics, vol%	D1319	25 max
	D6379	26.5 max
Sulfur, total mass %	D1266, D2622, D4294, 5453	0.30 max
Sulfur, Mercaptan mass %	D3227	0.003 max
Distillation		
10% recovered at °F	D86, D2887, D7345	401 max
End Point at °F	D86, D2887, D7345	572 max
Residue, vol%	D86, D2887, D7345	1.5 max
Loss, vol%	D86, D2887, D7345	1.5 max
Flash Point, °F	D56, D93, D3828	108 min
Density at 60°F, kg/m <sup>3</sup>	D4052	775 min - 840 max
API Gravity at 60°F	D1298	37 min - 51 max
Freezing Point, °F	D2386, D5972, D7153, D7154	-40 max
Viscosity at 4°F, mm <sup>2</sup> /s	D445, D7042, D7945	8.0 max
Specific Energy, net, btu/lb	D3338, D4529, D4809	18,400 min
Smoke Point, mm	D1322	18.0 min
Naphthalenes, vol%	D1840	3.0 max
Copper Strip at 212°F	D130	No. 1 max
Thermal Stability (JFTOT at 527°F)		
Differential Pressure, mmHg	D3241	25 max
Tube Deposit Rating	D3241	<3 max
Filter membrane gravimetric, mg/L	D2276, D5452	1.0 max
Existent Gum, mg/100 ml	D381, IP 540	7 max
Microseparometer Rating	D3948, D7224	85 min
Conductivity, pS/m	D2624	10 max

**Note: The following tests may be run at the pipeline origin as a control check and, as such, it may be prudent for Shippers/Producers to run/report the same for comparative purposes:**

Filterability	D4539	Report
Cold Filter Plugging Point	D6371	Report