

Effective Date: 1/1/2019

Phillips 66 Pipeline LLC

**Borger-Denver Pipeline
Product Specifications**

Current Publication Date: 12/7/2018

Previous Publication Date: 10/6/2017

Revision Notes:

Pour Point specification for #2 ULSD changed for November from -5F to 0F.

Effective Date: 1/1/2019

Phillips 66 Pipeline LLC

Borger-Denver Pipeline Product Specifications

Product Index

Product Name	Destination(s)	Trac66 Product Code(s)
Gasoline, Subgrade, 85 after 10% ETOH addition	PSX Denver & La Junta, CO, Terminals	RA7 (7.8#), RA8 (>9.0#), RA9 (9.0#)
Gasoline, Conventional, 91 octane (no ethanol)	PSX Denver & La Junta, CO, Terminals	P84 (7.8#), P1U (9.0#), P64 (>9.0#)
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Volatility Schedule, Conventional, All Grades	PSX Denver & La Junta, CO, Terminals; NuStar Denver, CO Terminal (Premium Subgrade Only)	Reg. Sub.- RA7 (7.8#), RA8 (>9.0#), RA9 (9.0#) Prem.- P84 (7.8#), P1U (9.0#), P64 (>9.0#) Prem. Sub.- PE4 (7.8#), PE3 (9.0#), PE2 (>9.0#)
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Phillips 66 Pipeline LLC

Destinations:
PSX Denver & La Junta, CO, Terminals

Trac66 Code(s):

RA7 (7.8#), RA8 (>9.0#), RA9 (9.0#)

**Borger-Denver Pipeline
Product Specifications**

Gasoline, Subgrade, 85 after 10% ETOH addition

Property	Test Method	Units	Min	Max	Specific	Note#
Additives	General Note					1
API Gravity (60 Deg F)	D1298, D4052	API	Report			
Appearance	Visual		Clear & Br			2
Basicity	D1093, mod. see note		Pass			3
Benzene	D3606	Vol%		4.0		
Color, Visual	Visual		Undyed			
Copper Strip Corrosion	D130 3 Hr @ 122 F	Rating		1		
Ethanol Blends	General Note					4
Haze, Colonial	D4176 Proc 2	Rating		2		5
Lead (Pb)	D3237, D5059	gPb/gal		0.01		
Mercaptan Sulfur	D3227	Wt%		0.002		6
Mercaptan Sulfur	D4952	Rating	sweet			
NACE Rust test	NACE Rust TM0172	Rating	B+			
Octane, (R+M)/2- AEA	D2699 & 2700		85.0			7
Octane, (R+M)/2- CLEAR	D2699 & 2700		80.5			
Octane, Motor- AEA	D2700		80.0			7
Octane, Motor- CLEAR	D2700		Report			
Octane, Research- AEA	D2699		Report			7
Octane, Research- CLEAR	D2699		Report			
Odor	Non-offensive odor		Pass			8
Oxidation Stability	D525	minutes	240			
Oxygenates	D4815, D5599	Wt%		.05		9
Phosphorus	D3231	g/gal		0.003		
Product Description	See Note					10
Referee Methods	See Note					11
Silver Strip Corrosion	D7667, D7671	Rating		1		
Solvent Washed Gum	D381	mg/100 ml		4		
Sulfur	D2622, D5453, D7039	ppm		80		
Volatility & Distillation	See D4814		see Table			

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Phillips 66 Pipeline LLC

Destinations:
PSX Denver & La Junta, CO, Terminals

Trac66 Code(s):

RA7 (7.8#), RA8 (>9.0#), RA9 (9.0#)

**Borger-Denver Pipeline
Product Specifications**

Gasoline, Subgrade, 85 after 10% ETOH addition

Notes:

1. All additives and their concentrations must be previously approved by the pipeline Regional Fuel Quality Director and must be clearly indicated on the Certificate of Analysis. No intentional addition of MMT, phosphorus, lead, or additives containing other heavy metals is allowed.
2. This product must be clear and bright and visually free from undissolved water, sediment, and particulates.
3. ASTM D1093 should be performed to test for basicity according to the instructions in section 9.3 and 9.4 of the ASTM method using a phenolphthalein indicator solution, except as noted below. Combine 50 ml of the sample, 15 ml of water, and 3 drops of phenolphthalein indicator solution in a clean centrifuge tube, shake vigorously for 30 seconds, let stand for 3 minutes and observe against a white background (the centrifugation step in the ASTM method is not required). See the method for additional details. If a slightly pink to red color is observed in the water phase, the sample shows alkalinity and fails the test. The sample tested should be a lower sample as described in ASTM D4057, "...a spot sample of liquid from the middle of the lower one-third of the tank's content..."
4. For summer gasoline with a maximum RVP specification of less than 9.0 psi (as indicated in the Volatility Table) the following language is applicable:
 - (a) Suitable for the special RVP provisions for ethanol blends that contain between 9 and 10 vol% ethanol.
 - (b) The RVP of this blendstock/gasoline does not exceed 9.0 psi.
 - (c) The use of this gasoline to manufacture a gasoline-ethanol blend containing anything other than between 9 and 10 volume percent ethanol may cause a summertime RVP violation.
5. Compliance with ASTM D4176 will be determined using Procedure 2 at the following temperatures, adjusted seasonally:

February 16 – September 30	55 °F max
October 1– February 15	45 °F max
6. The Mercaptan Sulfur determination may be waived if the fuel is considered sweet by the Doctor Test described in ASTM D 4952.
7. After Ethanol Addition. Ethanol should be added at 10 Vol%.
8. Any gasoline exhibiting an offensive odor and/or containing more than 0.30 wt % dicyclopentadiene will not be accepted for shipment.
9. These fuels may not contain oxygenates, such as ethers and alcohols. The use of non-hydrocarbon blending components in these grades is prohibited.
10. This fuel meets or exceeds all the requirements of ASTM D 4814 (Unleaded Gasoline). This product does not meet EPA additive addition requirements for finished gasoline. This product does not meet the requirements for reformulated gasoline (RFG) and may not be used in any reformulated gasoline covered area.
11. Referee Methods for Gasoline are as follows:
Oxygenates, ASTM D5599; Sulfur, ASTM D2622; Vapor Pressure, ASTM D5191; V/L, ASTM D5188.

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Phillips 66 Pipeline LLC

Destinations:
PSX Denver & La Junta, CO, Terminals

Trac66 Code(s):

P84 (7.8#), P1U (9.0#), P64 (>9.0#)

**Borger-Denver Pipeline
Product Specifications**

Gasoline, Conventional, 91 octane (no ethanol)

Property	Test Method	Units	Min	Max	Specific	Note#
Additives	General Note					1
API Gravity (60 Deg F)	D1298, D4052	API	Report			
Appearance	Visual		Clear & Br			2
Basicity	D1093, mod. see note		Pass			3
Benzene	D3606	Vol%		4.0		
Color, Visual	Visual		Undyed			
Copper Strip Corrosion	D130 3 Hr @ 122 F	Rating		1		
Ethanol Blends	General Note					4
Haze, Colonial	D4176 Proc 2	Rating		2		5
Lead (Pb)	D3237, D5059	gPb/gal		0.01		
Mercaptan Sulfur	D3227	Wt%		0.002		6
Mercaptan Sulfur	D4952	Rating	sweet			
NACE Rust test	NACE Rust TM0172	Rating	B+			
Octane, (R+M)/2	D2699 & 2700		91.0			
Octane, Motor	D2700		82.0			
Octane, Research	D2699		Report			
Odor	Non-offensive odor		Pass			7
Oxidation Stability	D525	minutes	240			
Oxygenates	D4815, D5599	Wt%		.05		8
Phosphorus	D3231	g/gal		0.003		
Product Description	See Note					9
Referee Methods	See Note					10
Silver Strip Corrosion	D7667, D7671	Rating		1		
Solvent Washed Gum	D381	mg/100 ml		4		
Sulfur	D2622, D5453, D7039	ppm		80		
Volatility & Distillation	See D4814		see Table			

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Phillips 66 Pipeline LLC

Destinations:
PSX Denver & La Junta, CO, Terminals

Trac66 Code(s):

P84 (7.8#), P1U (9.0#), P64 (>9.0#)

**Borger-Denver Pipeline
Product Specifications**

Gasoline, Conventional, 91 octane (no ethanol)

Notes:

1. All additives and their concentrations must be previously approved by the pipeline Regional Fuel Quality Director and must be clearly indicated on the Certificate of Analysis. No intentional addition of MMT, phosphorus, lead, or additives containing other heavy metals is allowed.
2. This product must be clear and bright and visually free from undissolved water, sediment, and particulates.
3. ASTM D1093 should be performed to test for basicity according to the instructions in section 9.3 and 9.4 of the ASTM method using a phenolphthalein indicator solution, except as noted below. Combine 50 ml of the sample, 15 ml of water, and 3 drops of phenolphthalein indicator solution in a clean centrifuge tube, shake vigorously for 30 seconds, let stand for 3 minutes and observe against a white background (the centrifugation step in the ASTM method is not required). See the method for additional details. If a slightly pink to red color is observed in the water phase, the sample shows alkalinity and fails the test. The sample tested should be a lower sample as described in ASTM D4057, "...a spot sample of liquid from the middle of the lower one-third of the tank's content..."
4. For summer gasoline with a maximum RVP specification of less than 9.0 psi (as indicated in the Volatility Table) the following language is applicable:
 - (a) Suitable for the special RVP provisions for ethanol blends that contain between 9 and 10 vol% ethanol.
 - (b) The RVP of this blendstock/gasoline does not exceed 9.0 psi.
 - (c) The use of this gasoline to manufacture a gasoline-ethanol blend containing anything other than between 9 and 10 volume percent ethanol may cause a summertime RVP violation.
5. Compliance with ASTM D4176 will be determined using Procedure 2 at the following temperatures, adjusted seasonally:

February 16 – September 30	55 °F max
October 1– February 15	45 °F max
6. The Mercaptan Sulfur determination may be waived if the fuel is considered sweet by the Doctor Test described in ASTM D 4952.
7. Any gasoline exhibiting an offensive odor and/or containing more than 0.30 wt % dicyclopentadiene will not be accepted for shipment.
8. These fuels may not contain oxygenates, such as ethers and alcohols. The use of non-hydrocarbon blending components in these grades is prohibited.
9. This fuel meets or exceeds all the requirements of ASTM D 4814 (Unleaded Gasoline). This product does not meet EPA additive addition requirements for finished gasoline. This product does not meet the requirements for reformulated gasoline (RFG) and may not be used in any reformulated gasoline covered area.
10. Referee Methods for Gasoline are as follows:
Oxygenates, ASTM D5599; Sulfur, ASTM D2622; Vapor Pressure, ASTM D5191; V/L, ASTM D5188.

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Phillips 66 Pipeline LLC

Destinations:
NuStar Denver, CO Terminal

Trac66 Code(s):

PE4 (7.8#), PE3 (9.0#), PE2 (>9.0#)

**Borger-Denver Pipeline
Product Specifications**

Gasoline, Premium Subgrade, 88.5 octane (91 after 10% ETOH addition)

Property	Test Method	Units	Min	Max	Specific	Note#
Additives	General Note					1
API Gravity (60 Deg F)	D1298, D4052	API	Report			
Appearance	Visual		Clear & Br			2
Basicity	D1093, mod. see note		Pass			3
Benzene	D3606	Vol%		4.0		
Color, Visual	Visual		Undyed			
Copper Strip Corrosion	D130 3 Hr @ 122 F	Rating		1		
Ethanol Blends	General Note					4
Haze, Colonial	D4176 Proc 2	Rating		2		5
Lead (Pb)	D3237, D5059	gPb/gal		0.01		
Mercaptan Sulfur	D3227	Wt%		0.002		6
Mercaptan Sulfur	D4952	Rating	sweet			
NACE Rust test	NACE Rust TM0172	Rating	B+			
Octane, (R+M)/2- AEA	D2699 & 2700		91.0			7
Octane, (R+M)/2- CLEAR	D2699 & 2700		88.5			
Octane, Motor- AEA	D2700		82.0			7
Octane, Motor- CLEAR	D2700		Report			
Octane, Research- AEA	D2699		Report			7
Octane, Research- CLEAR	D2699		Report			
Odor	Non-offensive odor		Pass			8
Oxidation Stability	D525	minutes	240			
Oxygenates	D4815, D5599	Wt%		.05		9
Phosphorus	D3231	g/gal		0.003		
Product Description	See Note					10
Referee Methods	See Note					11
Silver Strip Corrosion	D7667, D7671	Rating		1		
Solvent Washed Gum	D381	mg/100 ml		4		
Sulfur	D2622, D5453, D7039	ppm		80		
Volatility & Distillation	See D4814		see Table			

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Phillips 66 Pipeline LLC

Destinations:
NuStar Denver, CO Terminal

Trac66 Code(s):

PE4 (7.8#), PE3 (9.0#), PE2 (>9.0#)

**Borger-Denver Pipeline
Product Specifications**

Gasoline, Premium Subgrade, 88.5 octane (91 after 10% ETOH addition)

Notes:

1. All additives and their concentrations must be previously approved by the pipeline Regional Fuel Quality Director and must be clearly indicated on the Certificate of Analysis. No intentional addition of MMT, phosphorus, lead, or additives containing other heavy metals is allowed.
2. This product must be clear and bright and visually free from undissolved water, sediment, and particulates.
3. ASTM D1093 should be performed to test for basicity according to the instructions in section 9.3 and 9.4 of the ASTM method using a phenolphthalein indicator solution, except as noted below. Combine 50 ml of the sample, 15 ml of water, and 3 drops of phenolphthalein indicator solution in a clean centrifuge tube, shake vigorously for 30 seconds, let stand for 3 minutes and observe against a white background (the centrifugation step in the ASTM method is not required). See the method for additional details. If a slightly pink to red color is observed in the water phase, the sample shows alkalinity and fails the test. The sample tested should be a lower sample as described in ASTM D4057, "...a spot sample of liquid from the middle of the lower one-third of the tank's content..."
4. For summer gasoline with a maximum RVP specification of less than 9.0 psi (as indicated in the Volatility Table) the following language is applicable:
 - (a) Suitable for the special RVP provisions for ethanol blends that contain between 9 and 10 vol% ethanol.
 - (b) The RVP of this blendstock/gasoline does not exceed 9.0 psi.
 - (c) The use of this gasoline to manufacture a gasoline-ethanol blend containing anything other than between 9 and 10 volume percent ethanol may cause a summertime RVP violation.
5. Compliance with ASTM D4176 will be determined using Procedure 2 at the following temperatures, adjusted seasonally:

February 16 – September 30	55 °F max
October 1– February 15	45 °F max
6. The Mercaptan Sulfur determination may be waived if the fuel is considered sweet by the Doctor Test described in ASTM D 4952.
7. After Ethanol Addition. Ethanol should be added at 10 Vol%.
8. Any gasoline exhibiting an offensive odor and/or containing more than 0.30 wt % dicyclopentadiene will not be accepted for shipment.
9. These fuels may not contain oxygenates, such as ethers and alcohols. The use of non-hydrocarbon blending components in these grades is prohibited.
10. This fuel meets or exceeds all the requirements of ASTM D 4814 (Unleaded Gasoline). This product does not meet EPA additive addition requirements for finished gasoline. This product does not meet the requirements for reformulated gasoline (RFG) and may not be used in any reformulated gasoline covered area.
11. Referee Methods for Gasoline are as follows:
Oxygenates, ASTM D5599; Sulfur, ASTM D2622; Vapor Pressure, ASTM D5191; V/L, ASTM D5188.

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Phillips 66 Pipeline LLC

Destinations:

Trac66 Code(s):

Reg. Sub.- RA7 (7.8#), RA8 (>9.0#), RA9 (9.0#)
 Prem.- P84 (7.8#), P1U (9.0#), P64 (>9.0#)
 Prem. Sub.- PE4 (7.8#), PE3 (9.0#), PE2 (>9.0#)

PSX Denver & La Junta, CO, Terminals;
 NuStar Denver, CO Terminal (Premium Subgrade Only)

**Borger-Denver Pipeline
 Product Specifications**

Volatility Schedule, Conventional, All Grades

Month(s)	Class	Pipeline Grade(s)	Clear	E10	E10	Clear	Drive Index	Distillation Requirements, °F					End Pt max	Dist Resid max, %
			RVP max, psi	RVP max, psi	V/L Test Temp min, °F	V/L Test Temp min, °F		10% max	E10 50% min	Clear 50% min	50% max	90% max		
Jan	E-5	D4U, P64	15.0*	16.0	105	105*	1200	122	150	170*	230	365	430	2
Feb	E-5	D4U, P64	15.0*	16.0	105	105*	1200	122	150	170*	230	365	430	2
Feb	D-4	D4U, P64	13.5*	14.5	116	116*	1220	131	150	170*	235	365	430	2
Mar	D-4	D4U, P64	13.5*	14.5	116	116*	1220	131	150	170*	235	365	430	2
Apr	C-3	D4U, P64	11.5*	12.5	116	124*	1230	140	150	170*	240	365	430	2
May	A-3	D4V, P1U	9.0*	10.0	116	124*	1250	158	150	170*	250	374	430	2
Jun	AA-2	D4X, P84	7.8*	8.8	122	133*	1250	158	150	170*	250	374	430	2
Jul	AA-2	D4X, P84	7.8*	8.8	122	133*	1250	158	150	170*	250	374	430	2
Aug	AA-2	D4X, P84	7.8*	8.8	122	133*	1250	158	150	170*	250	374	430	2
Sep 1 - 15	AA-2	D4X, P84	7.8*	8.8	122	133*	1250	158	150	170*	250	374	430	2
Sep 16 - 30	B-2	D4U, P64	10.0*	11.0	122	133*	1240	149	150	170*	245	374	430	2
Oct	C-3	D4U, P64	11.5*	12.5	116	124*	1230	140	150	170*	240	365	430	2
Nov	D-4	D4U, P64	13.5*	14.5	116	116*	1220	131	150	170*	235	365	430	2
Dec	E-5	D4U, P64	15.0*	16.0	105	105*	1200	122	150	170*	230	365	430	2

Volatility dates are approximate; consult the pipeline schedule for detailed requirements. During transition months, certain volatility classes may be required prior to the class being listed in this table in order to turn over downstream tanks. In this case, find the next associated volatility class in the table based on the lowest RVP class that the product meets and use the associated volatility properties (for example, a 9.0 lb RVP shipped in March would be an A-3 class instead of a D-4 class).

Vapor pressure and T50 minimum limits marked with an * apply to the fuel without ethanol. Unmarked limits apply to the fuel with 10 vol% ethanol.

V/L limits may be met on either the clear (no ethanol) gasoline or the E10 gasoline blend, using the values in each corresponding column. Though the State of Colorado only requires that the V/L to be met before the addition of ethanol, the listed E10 specifications should result in the clear fuel meeting the latest version of ASTM D4814. The historical D4814 V/L limits are listed for the clear fuel (as opposed to most current) since these were the values before in the incorporation of gasoline-ethanol blends into the D4814 V/L requirements.

Test Methods: (latest version unless otherwise indicated)

Distillation: ASTM D86, corrected to 760 mm Hg;

Driveability Index: ASTM D4814;

V/L: ASTM D5188, or the estimate method using Appendix X2 of ASTM D4814;

Vapor Pressure: ASTM D5191. For conventional gasoline that meets a summer RVP specification of 9.0 psi or less and which is intended for sale in the summer, EPA requires the use of the EPA equation and also requires that batch reporting of RVP be to 2 decimal places (example; 8.97 psi).

Effective Date: 1/1/2019

Phillips 66 Pipeline LLC

Destinations:
PSX Denver & La Junta, CO, Terminals

Trac66 Code(s):

VA1

**Borger-Denver Pipeline
Product Specifications**

Distillate, #1 Diesel Fuel / Fuel Oil / #1K Kero, Ultra-Low Sulfur (15 ppm max)

Property	Test Method	Units	Min	Max	Specific	Note#
Additives	General Note					1
API Gravity (60 Deg F)	D1298, D4052	API	37			
Appearance	Visual		Clear & Br			2
Ash	D482	Wt %		0.01		
Burning Quality	D187		Pass			
Carbon Res 10% Btms	D524	Wt %		0.10		
Cetane Index by 2-var	D976		40			
Cetane Number	D613, D6890, D7170, D7668		40.0			3
Cloud Pt	D2500, D5771/2/3, D7689	Deg F		-12		
Color, Saybolt	D156, D6045		+21			
Copper Strip Corrosion	D130 2 Hr @ 212 F	Rating		1		
Dist 10 Vol% Rec	D86, D2887, D7345	Deg F		401		4
Dist 50 Vol% Rec	D86, D2887, D7345	Deg F	Report			4
Dist 90 Vol% Rec	D86, D2887, D7345	Deg F		550		4
Dist End Pt	D86, D2887, D7345	Deg F		570		4
Dist IBP	D86, D2887, D7345	Deg F	Report			
Flash Pt	D56, D93, D3828	Deg F	125			
Freeze Pt	D2386, D5972, D7153, D7154	Deg F		-22		
Mercaptan Sulfur	D3227	Wt%		0.003		5
NACE Rust test	NACE Rust TM0172	Rating	B+			
Pour Point	D97 or D5949	Deg F		-25		
Product Description	See Note					6
Referee Methods	See Note					7
Sulfur	D2622, D5453	ppm		11		
Viscosity @ 104F (40C)	D445, 7042	cSt	1.3	1.9		8
Water and Sediment	D2709	Vol%		0.05		

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Phillips 66 Pipeline LLC

Destinations:
PSX Denver & La Junta, CO, Terminals

Trac66 Code(s):

VA1

Borger-Denver Pipeline Product Specifications

Distillate, #1 Diesel Fuel / Fuel Oil / #1K Kero, Ultra-Low Sulfur (15 ppm max)

Notes:

1. All additives and their concentrations must be previously approved by the pipeline Regional Fuel Quality Director and must be clearly indicated on the Certificate of Analysis.
2. This product must be clear and bright and visually free from undissolved water, sediment, and particulates.
3. Where Test Method D613 is not available, Test Method D4737 can be used as an approximation.
4. ASTM D2887 or ASTM D7345 results must be converted to "Predicted D86" results using the correlations found in each test method, and reported in the same way.
5. The Mercaptan Sulfur determination may be waived if the fuel is considered sweet by the Doctor Test described in ASTM D 4952.
6. This fuel meets or exceeds all the requirements of ASTM D975 (Ultra Low Sulfur Grade No. 1-D S15 Diesel Fuel Oil), ASTM D396 (Grade No. 1 Low Sulfur Fuel Oil), and ASTM D3699 (No. 1-K Kerosine), with the possible exception of the lubricity/conductivity requirements in ASTM D975. Additives or further blending may be utilized at downstream locations to meet these requirements.
7. ASTM Referee Methods for Diesel Fuel are as follows:
Cetane Number, ASTM D613; Cloud Pt, ASTM D2500; Distillation, ASTM D86; Flash Point, ASTM D93; Sulfur, ASTM D5453, Viscosity, ASTM D445. (source ASTM D975)
8. Results from Test Method D7042 shall be reported as bias-corrected kinematic viscosity results by application of the correction in Test Method D7042.

Effective Date: 1/1/2019

Phillips 66 Pipeline LLC

Destinations:

PSX Denver & La Junta, CO, Terminals

Trac66 Code(s):

J6

**Borger-Denver Pipeline
Product Specifications**

Distillate, Jet A / JAA (Jet A with JP-8 Additives) / #1 Diesel Fuel, Ultra-Low Sulfur (15 ppm max)

Property	Test Method	Units	Min	Max	Specific	Note#
Acid Number	D3242	mg KOH/g		0.10		
Additives	General Note					1
API Gravity (60 Deg F)	D1298, D4052	API	37.5	50.5		
Appearance	D4176 Proc 1		Pass			2
Aromatics	D1319, D6379	Vol%		25		
Ash	D482	Wt %		0.01		
Carbon Res 10% Btms	D524	Wt %		0.10		
Cetane Index by 2-var	D976		40			
Cetane Number	D613, D6890, D7170, D7668		40.0			3
Cloud Pt	D2500, D5771/2/3, D7689	Deg F		-12		
Color, Saybolt	D156, D6045		+21			
Copper Strip Corrosion	D130 2 Hr @ 212 F	Rating		1		
Dist 10 Vol% Rec	D86, D2887	Deg F		393		4
Dist 50 Vol% Rec	D86, D2887	Deg F	Report			4
Dist 90 Vol% Rec	D86, D2887	Deg F		550		4
Dist End Pt	D86, D2887	Deg F		560		4
Dist IBP	D86, D2887	Deg F	Report			4
Dist Loss	D86	Vol%		1.5		5
Dist Residue	D86	Vol%		1.5		5
Electrical Conductivity	D2624	pS/m	150	600	w/ Stadis 450	6
Electrical Conductivity	D2624	pS/m	Report		wo/ Stadis 450	
Existent Gum	D381	mg/100ml		4.0		
Flash Pt	D56, D93, D3828	Deg F	108			7
Freeze Pt	D2386, D5972, D7153, D7154	Deg F		- 42.5		
Fuel Sys Icing Inhibitor	D5006	Vol%	0.07	0.10	if FSII is present	8
Haze, Colonial	D4176 Proc 2	Rating		2		
JFTOT Press Drop	D3241 @ 275 C	mm Hg		25		
JFTOT Tube Rating	D3241 @ 275 C	Rating		<3		9
Mercaptan Sulfur	D3227	Wt%		0.003		10
MSEP	D3948	Rating	85			
MSEP w/ Stadis 450	D3948	Rating	70		w/ Stadis 450	11
Naphthalenes or Smoke Pt	D1322	mm	20			12
Naphthalenes or Smoke Pt	D1840	Vol%		2.9		12
Net Heat of Combustion	D3338, D4529, D4809	BTU/lb	18,410			
Particulate Matter	D5452	mg/L		1.0		
Pour Point	D97 or D5949	Deg F		-25		
Product Description	See Note					13
Referee Methods	See Note					14

Effective Date: 1/1/2019

Phillips 66 Pipeline LLC

Destinations:
PSX Denver & La Junta, CO, Terminals

Trac66 Code(s):

J6

**Borger-Denver Pipeline
Product Specifications**

Distillate, Jet A / JAA (Jet A with JP-8 Additives) / #1 Diesel Fuel, Ultra-Low Sulfur (15 ppm max)

Property	Test Method	Units	Min	Max	Specific	Note#
Sulfur	D2622, D5453	ppm		11		
Test Tolerances	See Note					15
Viscosity @ -4 F (-20 C)	D445, D7042, D7945	cSt		8.0		16
Viscosity @ 104F (40C)	D445, 7042	cSt	1.3	1.9		16
Water and Sediment	D2709	Vol%		0.05		

Effective Date: 1/1/2019

Phillips 66 Pipeline LLC

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Borger-Denver Pipeline Product Specifications

Distillate, Jet A / JAA (Jet A with JP-8 Additives) / #1 Diesel Fuel, Ultra-Low Sulfur (15 ppm max)

Notes:

1. If the fuel is being sold as Jet A, only those additives specified and within the concentrations noted in the current edition of ASTM D1655 are permitted. Use of additives permitted by ASTM D1655 must be clearly indicated on the Certificate of Analysis. The use of any other additives is prohibited.

If being sold as JAA, this fuel is required by contract to contain fuel system icing inhibitor (FSII), corrosion inhibitor/lubricity improver (CI/LI), and static dissipater additive (SDA) prior to distribution to the Air Force Base. The use of any other additives is prohibited.

FSII shall be added to the fuel and shall be Diethylene Glycol Monomethyl Ether (DiEGME) conforming to the latest revision of ASTM D 4171, Standard Specification for FSII, Type III or MIL-DTL-85470B, Inhibitor, Icing, Fuel System, High Flash, NATO Code Number S-1745.

The CI/LI additive must conform to the latest revision of MIL-PRF-25017, Inhibitor, Corrosion/Lubricity Improver, Fuel Soluble, found in ASSIST and shall be listed in the electronic Qualified Products List (QPL)-25017 located in the Qualified Products Database (QPD) found at <http://assistdocs.com>.

SDA shall be added to the fuel and the conductivity limits of 50 to 600 picosiemens per meter (pS/m) at ambient temperature or 29.4°C (85°F), whichever is lower, unless directed by the procuring activity, shall apply at the custody transfer point. The following electrical conductivity additive is approved: Stadis R 450 marketed by Innospec Fuel Specialties, Newark DE 19702.

2. The fuel shall be clear and bright and free from visual undissolved water, sediment, and suspended matter.

3. Where Test Method D613 is not available, Test Method D4737 can be used as an approximation.

4. For D86, the distillation of jet fuel is run at Group 4 conditions, except Group 3 condenser temperature is used. If D2887 is used, D2887 results shall be converted to estimated D86 results by application of the correlation in the applicable appendix in test method D2887.

5. Distillation residue and loss limits provide control of the distillation process during the use of D86, and they do not apply to D2887. Distillation residue and loss shall be reported as "not applicable" (N/A) when reporting D2887 results.

6. This specification is applicable after the conductivity improver is added at downstream terminals. The conductivity must be between 150 and 600 pS/m at ambient temperature or 85° F, whichever is lower, unless otherwise directed by the procuring activity.

7. Aviation Turbine Fuel Results obtained by D93 can be up to 1C higher than those obtained by the default method (D56). Results obtained by D3828 can be up to 2C lower than those obtained by D56. In case of dispute, D56 shall apply.

8. This specification only applies after fuel is additized with FSII at downstream terminals. FSII test shall be performed using the DiEGME scale of the refractometer.

9. No peacock or abnormal color deposits.

10. The Mercaptan Sulfur determination may be waived if the fuel is considered sweet by the Doctor Test described in ASTM D 4952.

Effective Date: 1/1/2019

Phillips 66 Pipeline LLC

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Trac66 Code(s):

J6

Borger-Denver Pipeline Product Specifications

Distillate, Jet A / JAA (Jet A with JP-8 Additives) / #1 Diesel Fuel, Ultra-Low Sulfur (15 ppm max)

Property	Test Method	Units	Min	Max	Specific	Note#
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11. ASTM D1655 allows for a 70 min MSEP limit when Stadis 450 (conductivity improver) is present at the point of manufacture. MSEP limits are not intended to be used as a sole reason for rejection of the fuel at downstream facilities, but an investigation shall be conducted prior to releasing the fuel if the values do not meet the applicable limit in Table 1 of ASTM D1655.

12. One of the following requirements shall be met:

Smoke Point 27 mm min by ASTM D1322 OR Smoke Point 20 mm min AND Naphthalenes 2.9 Vol% max by ASTM D1840.

13. This fuel meets or exceeds all the requirements of ASTM D 1655 (Jet A), except that for the JAA grade, additional additives are added as required by contract. This fuel also meets or exceeds all of the requirements of ASTM D 975 (Ultra Low Sulfur Grade No.1-D S15 Diesel Fuel Oil), with the possible exception of the lubricity/conductivity requirements in ASTM D975. Additives or further blending may be utilized at downstream locations to meet these requirements.

14. ASTM Referee Methods for Jet A are as follows:

Aromatics, ASTM D1319; Distillation, ASTM D86; Flash Point, ASTM D56; Existent Gum, ASTM D381; Freeze Point, ASTM D2386; Net Heat of Combustion, D 4809; Viscosity, ASTM D445. (ASTM D1655)

For a product satisfying both ASTM D1655 (Jet A) and ASTM D975 (#1 Diesel Fuel Oil), ASTM D56 is considered the referee Flash Point method.

15. Test results shall not exceed the maximum or be less than the minimum values specified (herein). No allowance shall be made for the precision of the test methods. To determine conformance to the specification requirement, a test result may be rounded to the same number of significant figures as in Table 1 using Practice E 29. Where multiple determinations are made, the average result, rounded in accordance with Practice E 29, shall be used. (ASTM D1655 Table 1 Notes)

16. Results from Test Method D7042 shall be reported as bias-corrected kinematic viscosity results by application of the correction in Test Method D7042.

Effective Date: 1/1/2019

Phillips 66 Pipeline LLC

Destinations:

PSX Denver & La Junta, CO, Terminals

Trac66 Code(s):

V95

**Borger-Denver Pipeline
Product Specifications**

Distillate, #2 Diesel Fuel / Fuel Oil, Ultra-Low Sulfur (15 ppm max)

Property	Test Method	Units	Min	Max	Specific	Note#
Additives	General Note					1
API Gravity (60 Deg F)	D1298, D4052	API	30.0			
Appearance	Visual		Clear & Br			2
Ash	D482	Wt %		0.01		
Carbon Res 10% Btms	D524	Wt%		0.30		
Cetane Index by 2-var	D976		40			
Cetane Number	D613, D6890, D7170, D7668		40.0			3
Cloud Pt 1	D2500, D5771/2/3, D7689	Deg F		+5	Jan-Feb	
Cloud Pt 2	D2500, D5771/2/3, D7689	Deg F		+15	Mar	
Cloud Pt 3	D2500, D5771/2/3, D7689	Deg F		+20	Apr-Aug	
Cloud Pt 4	D2500, D5771/2/3, D7689	Deg F		+15	Sep-Oct	
Cloud Pt 5	D2500, D5771/2/3, D7689	Deg F		+5	Nov-Dec	
Color, ASTM	D1500			2.5		
Copper Strip Corrosion	D130 3 Hr @ 122 F	Rating		1		
Dist 10 Vol% Rec	D86, D2887, D7345	Deg F	Report			4
Dist 50 Vol% Rec	D86, D2887, D7345	Deg F	Report			4
Dist 90 Vol% Rec	D86, D2887, D7345	Deg F	540	640		4
Dist End Pt	D86, D2887, D7345	Deg F	Report			4
Dist IBP	D86, D2887, D7345	Deg F	Report			4
Flash Pt	D56, D93, D3828, D7094	Deg F	135			
Haze	D4176 Proc 2	Rating		2		5
NACE Rust test	NACE Rust TM0172	Rating	B+			
Pour Point 1	D97, D5949	Deg F		-5	Jan-Feb	
Pour Point 2	D97, D5949	Deg F		0	Mar	
Pour Point 3	D97, D5949	Deg F		+10	Apr-Aug	
Pour Point 4	D97, D5949	Deg F		0	Sep-Nov	
Pour Point 5	D97, D5949	Deg F		-5	Dec	
Product Description	See Note					6
Referee Methods	See Note					7
Stability	D6468	Pad Rating		5		
Sulfur	D2622, D3120, D5453, D7039	ppm		11		
Viscosity @ 104F (40C)	D445, 7042	cSt	1.9	3.4		8
Water and Sediment	D2709	Vol%		0.05		

Effective Date: 1/1/2019

Phillips 66 Pipeline LLC

Destinations:
PSX Denver & La Junta, CO, Terminals

Trac66 Code(s):

V95

Borger-Denver Pipeline Product Specifications

Distillate, #2 Diesel Fuel / Fuel Oil, Ultra-Low Sulfur (15 ppm max)

Property	Test Method	Units	Min	Max	Specific	Note#
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Notes:

1. All additives and their concentrations must be previously approved by the pipeline Regional Fuel Quality Director and must be clearly indicated on the Certificate of Analysis.
2. This product must be clear and bright and visually free from undissolved water, sediment, and particulates.
3. Where Test Method D613 is not available, Test Method D4737 can be used as an approximation.
4. ASTM D2887 or ASTM D7345 results must be converted to "Predicted D86" results using the correlations found in each test method, and reported in the same way.
5. Product haze must be 2 or less at 77 deg F (ASTM D 4176). Product must meet the specification in the refinery tank and leaving any downstream drying systems.
6. This fuel meets or exceeds all the requirements of ASTM D975 (Ultra Low Sulfur Grade No. 2-D S15 Diesel Fuel Oil) and ASTM D396 (Grade No. 2 Low Sulfur Fuel Oil), with the possible exception of the lubricity/conductivity requirements in ASTM D975. Additives or further blending may be utilized at downstream locations to meet these requirements.
7. ASTM Referee Methods for Diesel Fuel are as follows:
Cetane Number, ASTM D613; Cloud Pt, ASTM D2500; Distillation, ASTM D86; Flash Point, ASTM D93; Sulfur, ASTM D5453, Viscosity, ASTM D445. (source ASTM D975)
8. Results from Test Method D7042 shall be reported as bias-corrected kinematic viscosity results by application of the correction in Test Method D7042.