

**ENTERPRISE PRODUCTS OPERATING LLC****Mid-America, Seminole, and Chaparral Pipelines Y-Grade Specification**

COMPONENT	TEST METHOD	SPECIFICATION
Total Methane ⁽⁵⁾⁽⁷⁾	GPA 2186	0.5 Liq. Vol.% max.
Methane % of Ethane ⁽⁵⁾⁽⁷⁾	GPA 2186	1.5 Liq. Vol.% max.
Aromatics	GPA 2186	10.0 Liq. Vol.% max. (of C5+)
Olefins	GPA 2186	1.0 Liq. Vol.% max. ⁽¹⁾
Vapor Pressure at 100 deg. F	ASTM D2598	600 psig max.
Copper Strip Corrosion	ASTM D1838	No. 1 ⁽²⁾⁽³⁾
Volatile Sulfur	ASTM D2784 or ASTM D5623	150 ppm wt. max.
Carbon Dioxide ⁽⁸⁾	GPA 2186	0.35 Liq. Vol. % max. (of Ethane)
Hydrogen Sulfide	ASTM D2420 or ASTM D5623	Pass
Carbonyl Sulfide	ASTM D5623	15 ppm wt. max. (in contained C3)
Distillation End Point	ASTM D86	375 deg. F. max. ⁽⁴⁾
Saybolt Color Number	ASTM D156 or ASTM D6045	+27 min. ⁽⁴⁾
Water Content	Visual	No Free Water @ 34 deg. F
Prod. Temp. (>65 mole% Ethane)	Thermometer	90 deg. F. max.
Prod. Temp. (<65 mole% Ethane)	Thermometer	110 deg. F. max.
Halides (including Fluorides)	ASTM D7359	1 ppm wt. max.(in nC4)
Methanol ⁽⁶⁾	ASTM D7423	200 ppm wt. max

ON TEST METHODS: Method numbers listed above, beginning with the letter "D", are American Society for Testing and Materials (ASTM), Standard Test Procedures. The most recent year's revision for the procedures will be used.

CONTAMINANTS: The specification defines only the basic purity for this product. The product is to be free of any contamination that might render the product unusable for its commonly used applications. Specific contaminants include (but are not limited to) dirt, rust, scale, and all other types of solid contaminants, caustic, amines, chlorides, heavy metals, oxygenates, inerts, and any component added to the product to enhance the ability to meet the specifications.

1. Propylene limited to 5.0 Liq. Vol. % max. of contained Propane, Butylene limited to 0.35 Liq. Vol. % max. of contained Butanes, and Butadiene limited to 0.01 Liq. Vol. % max. of contained Butanes.
2. Caution – Use a corrosion cylinder rated at a minimum of 1500 psig.
3. The use of corrosion masking agents is strictly prohibited.
4. Distillation and color to be run on that portion of the mixture having a boiling point of 70° F and greater at atmospheric pressure.
5. The product is off-specification if both (1) the methane, including nitrogen and oxygen, to total components > 0.5 Liq Vol. % and (2) the methane, including nitrogen and oxygen, to ethane >1.5 Liq. Vol. %.
6. This is a component specification for product received from injectors to the pipeline.
7. Specification is applicable where methane greater than 0.01 Liq. Vol. % and ethane greater than 0.02 Liq. Vol. %.
8. Specification is applicable where ethane greater than 0.02 Liq. Vol. % and carbon dioxide greater than 0.01 Liq. Vol. %.