

NR Grade Regular Gasoline Blendstock (RBOB)

For Blending With 10.0% Denatured Fuel Ethanol
(92% Purity) As Defined In ASTM D4806
VOC-Controlled Region 1 Complex Model Phase II

| Product Property | Test Method | Origin | | | | | Deliveries ^{1/} |
|--|-----------------|----------------|----------------|----------------|----------------|----------------|--------------------------|
| | | Test Results | | | | | |
| | | Minimum | Maximum | | | | |
| Gravity, ° API ^{8/} | D287 | | Report | | | | |
| Color | | | Undyed | | | | |
| Volatility ^{2/9/} | | | | | | | |
| Distillation, ASTM D 86 | <u>Class AA</u> | <u>Class A</u> | <u>Class B</u> | <u>Class C</u> | <u>Class D</u> | <u>Class E</u> | |
| 10% Evaporated °F, max | 158 | 158 | 149 | 140 | 131 | 122 | |
| 50% Evaporated °F, min | 150 | 150 | 150 | 150 | 150 | 150 | |
| 50% Evaporated °F, max | 250 | 250 | 245 | 240 | 235 | 230 | |
| 90% Evaporated °F, max | 374 | 374 | 374 | 365 | 365 | 365 | |
| Final Boiling Point °F, max ^{3/} | 430 | 430 | 430 | 430 | 430 | 430 | |
| Residue, vol% max | 2 | 2 | 2 | 2 | 2 | 2 | |
| Drivability Index, max ASTM D4814 | 1250 | 1250 | 1240 | 1230 | 1220 | 1200 | |
| Vapor/Liquid Ratio = 20:1 °F, min ^{4/} | <u>Class 1</u> | <u>Class 2</u> | <u>Class 3</u> | <u>Class 4</u> | <u>Class 5</u> | | |
| | 129 | 122 | 116 | 107 | 102 | | |
| Vapor Pressure, D5191 ^{2/8/} | | | | | | | |
| E200 (vol%) | D86 | | 30 | 70 | | | |
| E300 (vol%) | D86 | | 70 | 100 | | | |
| Emission Performance Reduction (%) | | | -27.0 | | | | |
| Mercaptan Sulfur, wt % ^{3/} | D3227 | | | 0.003 | | | |
| Copper Corrosion | D130 | | | 1 | | | |
| Silver Corrosion | D7667,7671 | | | | 1 | | |
| Gum, Existent, mg/100 ml | D381 | | | 4 | | 5 | |
| Oxidation Stability, minutes | D525 | 240 | | | | | |
| Octane | | | | | | | |
| RON | D2699 | | Report | | | | |
| MON | D2700 | 82.0 | | | | | |
| (R+M)/2 | | 87.0 | | | | | |
| Phosphorus, g/gal | D3231 | | | 0.003 | | 0.005 | |
| Benzene, wt. % | D3606 | | | 1.3 | | | |
| Aromatics (vol %) ^{4/} | | | | 50 | | | |
| Olefins (vol %) | D1319 | | | 25 | | | |
| Sulfur, ppm | D2622 | | | 80 | | | |
| Oxygen Content wt % ^{5/} | D5599 | 1.5 | | 4.0 | | | |
| Oxygenates, (vol %) ^{8/} | D4815 | | | 0.05 | | | |
| Haze Rating ^{6/, 8/} | D4176 | | | 2 | | 3 | |
| NACE Corrosion ^{8/} | TM0172, D7548 | B+ | | | | | |
| Odor ^{7/, 8/} | | | | Nonoffensive | | | |

NR Grade Regular Gasoline Blendstock (RBOB) (continued)

- 1/ Delivered products meets all applicable requirements at time and place of delivery.
- 2/ Refer to Seasonal Gasoline Volatility Schedule.
- 3/ Mercaptan Sulfur determination is waived if the result of the Doctor Test ASTM D4952 is negative.
- 4/ Refer to test methods in 40 CFR Chapter 1, Part 80.46.
- 5/ Oxygen content must meet a minimum of 1.5 wt. % and a maximum of 4.0 wt. % after blending of denatured fuel ethanol.
- 6/ 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 |
- 7/ Any gasoline exhibiting an offensive odor and/or containing more than 0.30 wt % dicyclopentadiene will not be accepted for shipment.
- 8/ Specifications must be met before blending of denatured fuel except for vapor pressure during the VOC compliance period, March 20th through October 1st, will be reported on the blended fuel.
- 9/ For products blended to meet EPA or state imposed summer VOC requirements, test must be performed for RVP in accordance with procedure described in 40 CFR, PART 80, Appendix E, Method 3.

****NOTE: This RBOB may not be combined with any other RBOB except RBOB having the same requirement for oxygenate type and amount. "Base Gasoline" Not for sale to the ultimate consumer.**

****NOTE: Heavy metals are not allowed to be present.**

****NOTE: All parameters must be met after blending with denatured fuel ethanol unless noted**