

22777 Springwoods Village Parkway,
Spring, TX 77389

ERHA14X

| | Whole crude | Butane and Lighter IBP - 60F | Lt. Naphtha C5 - 165F | Hvy Naphtha 165 - 330F | Kerosene 330 - 480F | Diesel 480 - 650F | Vacuum Gas Oil 650 - 1000F | Vacuum Residue 1000F+ |
|--|-------------|------------------------------|-----------------------|------------------------|---------------------|-------------------|----------------------------|-----------------------|
| Cut volume, % | 100.0 | 1.8 | 5.4 | 17.0 | 19.2 | 24.4 | 26.3 | 5.9 |
| API Gravity, | 35.4 | 127.6 | 80.8 | 54.1 | 40.4 | 30.3 | 20.6 | 16.9 |
| Specific Gravity (60/60F), | 0.848 | 0.546 | 0.667 | 0.762 | 0.823 | 0.874 | 0.930 | 0.954 |
| Carbon, wt % | 86.7 | 82.4 | 83.9 | 86.1 | 86.4 | 87.1 | 87.3 | 86.6 |
| Hydrogen, wt % | 13.1 | 17.6 | 16.1 | 13.9 | 13.6 | 12.8 | 12.3 | 12.2 |
| Pour point, F | 13.1 | | | (134.4) | (64.3) | 10.6 | 80.7 | 97.1 |
| Neutralization number (TAN), MG/GM | 0.321 | 0.046 | 0.044 | 0.056 | 0.079 | 0.196 | 0.679 | 0.748 |
| Sulfur, wt% | 0.170 | 0.000 | 0.000 | 0.004 | 0.042 | 0.158 | 0.290 | 0.569 |
| Viscosity at 20C/68F, cSt | 5.5 | 0.4 | 0.5 | 0.8 | 2.0 | 8.2 | 410.2 | 1,194,828.4 |
| Viscosity at 40C/104F, cSt | 3.4 | 0.3 | 0.4 | 0.6 | 1.5 | 4.6 | 96.7 | 64,590.8 |
| Viscosity at 50C/122F, cSt | 2.8 | 0.3 | 0.4 | 0.6 | 1.3 | 3.6 | 55.0 | 20,100.3 |
| Mercaptan sulfur, ppm | 1.2 | 0.1 | 0.7 | 2.0 | 1.1 | 0.5 | 0.1 | 0.0 |
| Nitrogen, ppm | 754.9 | - | - | 0.3 | 11.1 | 126.6 | 1,279.1 | 5,263.1 |
| CCR, wt% | 0.8 | | | | | | 0.2 | 11.4 |
| N-Heptane Insolubles (C7 Asphaltenes), wt% | 0.0 | | | | | | - | 0.1 |
| Nickel, ppm | 4.2 | | | | | | | 63.1 |
| Vanadium, ppm | 0.1 | | | | | | | 1.5 |
| Calcium, ppm | 0.6 | | | | | | | |
| Reid Vapor Pressure (RVP) Whole Crude, psi | 6.0 | | | | | | | |
| Hydrogen Sulfide (dissolved), ppm | - | | | | | | | |
| Salt content, ptb | 13.9 | | | | | | | |
| Paraffins, vol % | 30.6 | 100.0 | 79.8 | 39.7 | 38.3 | 27.1 | 13.7 | 3.8 |
| Naphthenes, vol % | 39.7 | - | 20.2 | 43.1 | 39.8 | 45.6 | 43.0 | 21.2 |
| Aromatics (FIA), vol % | 29.7 | - | - | 17.1 | 22.0 | 27.3 | 43.3 | 75.1 |
| Distillation type, TBP | | | | | | | | |
| IBP, F | (22.9) | | 60.9 | 166.0 | 330.9 | 480.8 | 651.1 | 1,000.9 |
| 5 vol%, F | 137.4 | | 68.7 | 174.4 | 339.0 | 488.3 | 660.7 | 1,009.1 |
| 10 vol%, F | 194.6 | | 73.6 | 183.3 | 347.8 | 496.4 | 671.8 | 1,018.7 |
| 20 vol%, F | 289.7 | | 83.4 | 200.3 | 364.9 | 512.7 | 694.8 | 1,039.3 |
| 30 vol%, F | 381.6 | | 102.0 | 216.7 | 381.2 | 528.8 | 719.4 | 1,062.5 |
| 40 vol%, F | 456.8 | | 111.5 | 232.8 | 396.6 | 544.9 | 745.7 | 1,088.8 |
| 50 vol%, F | 524.3 | | 129.6 | 248.8 | 411.5 | 561.1 | 774.3 | 1,119.4 |
| 60 vol%, F | 591.9 | | 137.7 | 264.8 | 425.8 | 577.7 | 805.7 | 1,155.8 |
| 70 vol%, F | 668.8 | | 145.2 | 281.1 | 439.8 | 594.8 | 841.2 | 1,200.9 |
| 80 vol%, F | 764.3 | | 152.2 | 297.4 | 453.5 | 612.5 | 882.6 | 1,259.9 |
| 90 vol%, F | 904.3 | | 158.8 | 313.8 | 466.9 | 630.8 | 933.2 | 1,344.0 |
| 95 vol%, F | 1,030.3 | | 161.9 | 321.9 | 473.5 | 640.3 | 963.9 | 1,404.1 |
| EP, F | 1,361.1 | | 164.7 | 329.2 | 479.3 | 649.0 | 996.1 | 1,492.3 |
| Freeze point, F | | | | (122.5) | (52.5) | 22.6 | | |
| Smoke point, mm | | | | 31.8 | 21.4 | 10.5 | | |
| Naphthalenes (D1840), vol% | | | | | 2.7 | 8.7 | | |
| Viscosity at 100C/212F, cSt | 1.3 | 0.2 | 0.3 | 0.4 | 0.7 | 1.6 | 8.5 | 383.7 |
| Viscosity at 150C/302F, cSt | 0.8 | 0.2 | 0.2 | 0.3 | 0.5 | 0.9 | 3.0 | 44.5 |
| Cetane Index 1990 (D4737), | | | | 26.8 | 38.6 | 44.8 | | |
| Cloud point, F | | | | (130.2) | (59.5) | 15.1 | | |
| Aniline pt, F | | | | | 133.5 | 149.3 | 171.4 | |