

22777 Springwoods Village Parkway,
Spring, TX 77389

BRENT16X

| | 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 | 2.9 | 9.2 | 21.3 | 15.6 | 16.7 | 24.5 | 9.7 |
| API Gravity, | 40.1 | 124.6 | 89.7 | 56.6 | 42.8 | 32.3 | 22.7 | 16.1 |
| Specific Gravity (60/60F), | 0.825 | 0.552 | 0.640 | 0.752 | 0.812 | 0.864 | 0.918 | 0.959 |
| Carbon, wt % | 86.0 | 82.4 | 83.7 | 86.0 | 85.9 | 86.4 | 86.5 | 86.4 |
| Hydrogen, wt % | 13.6 | 17.6 | 16.3 | 14.0 | 14.1 | 13.4 | 12.9 | 12.3 |
| Pour point, F | 13.1 | | | (132.8) | (71.4) | 10.1 | 82.8 | 89.7 |
| Neutralization number (TAN), MG/GM | 0.064 | 0.073 | 0.074 | 0.074 | 0.053 | 0.022 | 0.075 | 0.088 |
| Sulfur, wt% | 0.347 | 0.000 | 0.000 | 0.001 | 0.014 | 0.207 | 0.578 | 1.330 |
| Viscosity at 20C/68F, cSt | 7.0 | 0.4 | 0.5 | 0.8 | 1.7 | 6.9 | 244.7 | 3,337,634.5 |
| Viscosity at 40C/104F, cSt | 3.5 | 0.4 | 0.4 | 0.6 | 1.3 | 4.0 | 66.1 | 137,033.9 |
| Viscosity at 50C/122F, cSt | 2.6 | 0.3 | 0.4 | 0.6 | 1.1 | 3.2 | 39.5 | 38,389.0 |
| Mercaptan sulfur, ppm | 1.0 | 0.1 | 0.4 | 2.3 | 3.4 | 1.2 | 0.2 | 0.0 |
| Nitrogen, ppm | 898.4 | - | - | 0.0 | 0.9 | 45.1 | 933.8 | 5,610.9 |
| CCR, wt% | 2.1 | | | | | | 0.2 | 17.8 |
| N-Heptane Insolubles (C7 Asphaltenes), wt% | 0.2 | | | | | | - | 2.0 |
| Nickel, ppm | 1.2 | | | | | | | 10.9 |
| Vanadium, ppm | 6.3 | | | | | | | 55.9 |
| Calcium, ppm | 0.5 | | | | | | | |
| Reid Vapor Pressure (RVP) Whole Crude, psi | 10.3 | | | | | | | |
| Hydrogen Sulfide (dissolved), ppm | - | | | | | | | |
| Salt content, ptb | - | | | | | | | |
| Paraffins, vol % | 39.6 | 100.0 | 87.5 | 46.1 | 46.7 | 36.3 | 24.3 | 2.8 |
| Naphthenes, vol % | 33.2 | - | 12.5 | 36.8 | 37.2 | 43.0 | 39.7 | 20.9 |
| Aromatics (FIA), vol % | 27.2 | - | - | 17.1 | 16.2 | 20.7 | 36.1 | 76.4 |
| Distillation type, TBP | | | | | | | | |
| IBP, F | (9.1) | | 60.7 | 166.0 | 330.7 | 480.8 | 651.3 | 1,001.1 |
| 5 vol%, F | 83.7 | | 66.9 | 174.3 | 337.2 | 488.2 | 663.5 | 1,011.1 |
| 10 vol%, F | 144.7 | | 71.9 | 183.2 | 344.5 | 496.4 | 677.2 | 1,022.6 |
| 20 vol%, F | 226.4 | | 81.3 | 200.0 | 359.1 | 512.9 | 705.3 | 1,047.5 |
| 30 vol%, F | 299.4 | | 98.1 | 215.9 | 373.7 | 529.4 | 734.5 | 1,075.3 |
| 40 vol%, F | 391.7 | | 104.3 | 231.0 | 388.5 | 546.1 | 764.9 | 1,106.9 |
| 50 vol%, F | 489.4 | | 110.6 | 245.7 | 403.5 | 562.9 | 796.8 | 1,143.6 |
| 60 vol%, F | 589.6 | | 128.4 | 260.4 | 418.6 | 579.8 | 830.6 | 1,187.0 |
| 70 vol%, F | 698.0 | | 138.5 | 275.7 | 433.9 | 597.0 | 866.7 | 1,239.0 |
| 80 vol%, F | 824.3 | | 147.8 | 292.3 | 449.3 | 614.4 | 906.1 | 1,302.8 |
| 90 vol%, F | 994.3 | | 156.6 | 310.6 | 464.6 | 632.0 | 949.8 | 1,382.9 |
| 95 vol%, F | 1,138.4 | | 160.8 | 320.2 | 472.3 | 641.0 | 973.9 | 1,432.4 |
| EP, F | 1,431.0 | | 164.6 | 329.0 | 479.2 | 649.1 | 997.3 | 1,504.3 |
| Freeze point, F | | | | (121.2) | (59.1) | 23.1 | | |
| Smoke point, mm | | | | 29.1 | 23.5 | 16.2 | | |
| Naphthalenes (D1840), vol% | | | | | 3.2 | 11.5 | | |
| Viscosity at 100C/212F, cSt | 1.0 | 0.3 | 0.3 | 0.4 | 0.7 | 1.4 | 7.1 | 527.7 |
| Viscosity at 150C/302F, cSt | 0.5 | 0.2 | 0.2 | 0.3 | 0.5 | 0.8 | 2.7 | 52.6 |
| Cetane Index 1990 (D4737), | | | | 30.7 | 41.9 | 49.1 | | |
| Cloud point, F | | | | (127.7) | (67.9) | 15.9 | | |
| Aniline pt, F | | | | | 132.7 | 146.0 | 173.5 | |