

22777 Springwoods Village Parkway,
Spring, TX 77389

MARIB14F

	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	3.2	14.9	27.8	14.8	13.9	18.6	6.7
API Gravity,	45.1	120.8	80.6	54.6	43.6	34.8	25.9	10.7
Specific Gravity (60/60F),	0.801	0.561	0.667	0.760	0.808	0.851	0.899	0.995
Carbon, wt %	85.9	82.5	83.7	85.7	86.0	86.5	86.7	86.4
Hydrogen, wt %	13.9	17.5	16.3	14.3	14.0	13.4	12.9	12.3
Pour point, F	(30.1)			(117.4)	(47.8)	23.1	103.5	149.2
Neutralization number (TAN), MG/GM	0.056	0.014	0.014	0.021	0.029	0.055	0.075	0.237
Sulfur, wt%	0.129	0.001	0.005	0.008	0.016	0.088	0.272	0.654
Viscosity at 20C/68F, cSt	1.9	0.4	0.5	0.8	1.8	6.5	117.0	3,878,270.8
Viscosity at 40C/104F, cSt	1.5	0.4	0.4	0.6	1.3	3.9	39.8	168,739.9
Viscosity at 50C/122F, cSt	1.3	0.3	0.4	0.6	1.2	3.1	25.9	48,035.6
Mercaptan sulfur, ppm	6.0	4.8	6.3	5.3	5.8	3.0	0.7	0.0
Nitrogen, ppm	689.2	-	-	0.0	0.4	37.6	1,005.3	5,702.5
CCR, wt%	1.4						0.2	16.9
N-Heptane Insolubles (C7 Asphaltenes), wt%	0.1						-	1.0
Nickel, ppm	4.6							55.2
Vanadium, ppm	1.5							18.4
Calcium, ppm	0.5							
Reid Vapor Pressure (RVP) Whole Crude, psi	9.2							
Hydrogen Sulfide (dissolved), ppm	-							
Salt content, ptb	0.1							
Paraffins, vol %	47.9	100.0	91.3	55.7	45.0	35.5	28.5	2.9
Naphthenes, vol %	29.8	-	8.7	29.6	35.7	45.1	38.9	18.6
Aromatics (FIA), vol %	22.3	-	-	14.7	19.3	19.4	32.6	78.4
Distillation type, TBP								
IBP, F	(27.5)		61.0	165.7	330.6	480.8	651.2	1,001.2
5 vol%, F	80.9		69.7	172.0	336.2	488.1	662.5	1,011.8
10 vol%, F	119.7		78.1	179.0	342.5	496.2	675.3	1,024.0
20 vol%, F	174.4		92.1	192.9	355.6	512.5	701.6	1,050.1
30 vol%, F	224.9		104.1	206.8	369.3	528.9	729.1	1,078.7
40 vol%, F	284.5		114.5	221.0	383.5	545.5	757.7	1,110.2
50 vol%, F	365.5		124.0	235.8	398.4	562.1	787.8	1,145.7
60 vol%, F	471.2		132.9	251.4	413.8	579.0	819.8	1,186.2
70 vol%, F	589.7		141.4	268.5	429.8	596.2	854.7	1,233.9
80 vol%, F	724.7		149.5	287.3	446.2	613.7	894.4	1,292.4
90 vol%, F	904.1		157.3	307.9	463.0	631.6	941.9	1,369.5
95 vol%, F	1,064.7		161.2	318.7	471.5	640.8	969.4	1,421.0
EP, F	1,393.9		164.6	328.8	479.1	649.1	996.8	1,497.6
Freeze point, F				(105.7)	(36.8)	34.1		
Smoke point, mm				28.1	22.7	16.3		
Naphthalenes (D1840), vol%					1.0	6.7		
Viscosity at 100C/212F, cSt	0.8	0.3	0.3	0.4	0.7	1.4	5.9	670.1
Viscosity at 150C/302F, cSt	0.6	0.2	0.2	0.3	0.5	0.8	2.5	65.2
Cetane Index 1990 (D4737),				24.3	42.7	54.8		
Cloud point, F				(113.5)	(43.3)	27.6		
Aniline pt, F					141.1	164.6	194.7	