

## Cabinda Crude Oil Assay

WHOLE CRUDE	
Gravity, °API	32.5
Specific Gravity	0.86
Sulfur, wt %	0.12
Nitrogen, ppm	2030
Pour Point °F	57.4
Pour Point °C	14.1
Acid Number, mg KOH/g	0.06
Back-Blended Acid, mg KOH/g	0.08
Viscosity @ 40 °C (104 °F), cSt	13.1
Viscosity @ 50 °C (122 °F), cSt	9.84
Asphaltenes, C7, %	0.16
Nickel, ppm	17.2
Vanadium, ppm	2.11
Characterization Factor, K	12.23

TBP YIELDS, VOL %	
Butanes and Lighter	1.98
Light Gasoline (55-175 °F)	4.69
Light Naphtha (175-300 °F)	9.74
Heavy Naphtha (300-400 °F)	7.45
Kerosene (400-500 °F)	8.58
Atm. Gas Oil (500-650 °F)	13.64
Lt Vacuum Gas Oil (650-800 °F)	13.51
Hvy Vacuum Gas Oil (800-1050 °F)	19.18
Vacuum Residuuum (1050 °F+)	21.24

LIGHT GASOLINE (55-175 °F)	
Gravity, °API	83.3
Specific Gravity	0.66
Mercaptan Sulfur, ppm	9.28
Octane Number, Research, Clear	71.6

LIGHT NAPHTHA (175-300 °F)	
Gravity, °API	58
Specific Gravity	0.75
Mercaptan Sulfur, ppm	51.9
Naphthenes, vol %	41.84
Aromatics, vol %	7.89
Octane Number, Research, Clear	56.7

HEAVY NAPHTHA (300-400 °F)	
Gravity, °API	49.4
Specific Gravity	0.78
Sulfur, wt %	0.04
Mercaptan Sulfur, ppm	47.3
Naphthenes, vol %	41.84
Aromatics, vol %	7.36
Smoke Point, mm (ASTM)	31.9

KEROSENE (400-500 °F)	
Gravity, °API	41.4
Specific Gravity	0.82
Sulfur, wt %	0.03
Mercaptan Sulfur, ppm	19
Naphthenes, vol %	46.81
Aromatics, vol %	12.52
Freezing Point, °F	-30.8
Freezing Point, °C	-34.9
Smoke Point, mm (ASTM)	25.5
Acid Number, mg KOH/g	0.09
Viscosity @ 50 °C (122 °F), cSt	1.56

ATM. GAS OIL (500-650 °F)	
Gravity, °API	35.9
Specific Gravity	0.85
Sulfur, wt %	0.07
Nitrogen, ppm	109
Acid Number, mg KOH/g	0.18
Pour Point °F	24.1
Pour Point °C	-4.4
Viscosity @ 50 °C (122 °F), cSt	3.47
Cetane Index	60.4
Characterization Factor, K	11.97

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ATM. RESIDUUM (650 °F+)	
Yield, vol%	53.92
Gravity, °API	20.4
Specific Gravity	0.93
Sulfur, wt %	0.18
Nitrogen, ppm	3450
MCR, wt%	6.27
Asphaltenes, C7, %	0.27
Nickel, ppm	29.5
Vanadium, ppm	3.62
Pour Point °F	85.4
Pour Point °C	29.7
Viscosity @ 50 °C (122 °F), cSt	277
Viscosity @ 100 °C (212 °F), cSt	33.1
Characterization Factor, K	12.19

LT VAC. GAS OIL (650-800 °F)	
Gravity, °API	30.1
Specific Gravity	0.88
Sulfur, wt %	0.11
Nitrogen, ppm	514
Naphthenes, vol %	49.77
Paraffins, vol%	30.45
Pour Point °F	73.3
Pour Point °C	22.9
Acid Number, mg KOH/g	0.2
Aniline Point, °F	196
Aniline Point, °C	91.1
Hydrogen, wt%	13.1
Viscosity @ 50 °C (122 °F), cSt	11.6
Viscosity @ 100 °C (212 °F), cSt	3.62
Characterization Factor, K	12.09

HVY VAC. GAS OIL (800-1050 °F)	
Gravity, °API	23.3
Specific Gravity	0.91
Sulfur, wt %	0.16
Nitrogen, ppm	1850
Pour Point °F	113.5
Pour Point °C	45.3
Acid Number, mg KOH/g	0.07
Aniline Point, °F	211.6
Aniline Point, °C	99.8
Hydrogen, wt%	12.61
Viscosity @ 50 °C (122 °F), cSt	80.5
Viscosity @ 100 °C (212 °F), cSt	13.1
Characterization Factor, K	12.17

VACUUM RESIDUUM (1050 °F+)	
Yield, vol%	21.24
Gravity, °API	12.4
Specific Gravity	0.98
Sulfur, wt %	0.25
Nitrogen, ppm	6440
Hydrogen, wt%	11.81
MCR, wt%	14.9
Asphaltenes, C7, %	0.64
Nickel, ppm	70.9
Vanadium, ppm	8.68
Pour Point °F	100.5
Pour Point °C	38.1
Viscosity @ 50 °C (122 °F), cSt	86900
Viscosity @ 100 °C (212 °F), cSt	1290
Viscosity @ 135 °C (275 °F), cSt	214
Cutter, vol% in Fuel Oil	30.7
Fuel Oil Yield, vol%	30.7
Characterization Factor, K	12.1