

**FORTIES - SUMMARY OF MAJOR CUTS**

	Whole Crude	Light Naphtha	Medium Naphtha	Heavy Naphtha	Kero	Atm Gas Oil	Light VGO	Heavy VGO	Vacuum Resid	Atm Resid
TBP Temp At Start, °C	Start	10	80	150	200	260	340	450	570	340
TBP Temp At End, °C	End	80	150	200	260	340	450	570	End	End
TBP Temp At Start, °F	Start	55	175	300	400	500	650	850	1050	650
TBP Temp At End, °F	End	175	300	400	500	650	850	1050	End	End
Yield at Start, vol%		4.3	13.4	31.7	43.5	54.2	69.4	83.7	93.1	69.4
Yield at End, vol%		13.4	31.8	43.5	54.2	69.4	83.7	93.1	100.0	100.0
Yield of Cut (wt% of Crude)		7.4	17.2	11.4	10.8	15.9	15.6	10.6	8.3	34.5
Yield of Cut (vol% of Crude)		9.1	18.4	11.8	10.8	15.2	14.3	9.4	6.9	30.6
Gravity, °API	42.1	83.4	54.5	48.1	40.8	34.3	27.3	22.6	12.5	22.3
Specific Gravity	0.8151	0.6584	0.7606	0.7879	0.8211	0.8534	0.8910	0.9183	0.9828	0.9201
Sulfur, wt%	0.25	0.00	0.00	0.00	0.04	0.16	0.41	0.57	1.11	0.63
Mercaptan Sulfur, ppm		2	2	2	2	2	2	1		
Nitrogen, ppm	571			2	4	78	554	1339	3958	1616
Hydrogen, wt%	13.5	16.3	14.0	14.2	13.6	13.3	12.8	12.2	11.1	12.2
Viscosity @ 40 °C (104 °F), cSt	2.41			0.883	1.54	3.81	18.4	157	52692	107
Viscosity @ 50 °C (122 °F), cSt	1.98			0.804	1.33	3.05	13.0	88.4	14500	65.2
Viscosity @ 100 °C (212 °F), cSt	0.953			0.557	0.774	1.36	3.76	13.0	311	12.0
Viscosity @ 135 °C (275 °F), cSt	0.673			0.462	0.592	0.924	2.15	5.82	73.1	5.77
Freeze Point, °C		-89.000	-79.000	-63.000	-43.000	-4.000	28.0			
Freeze Point, °F		-129	-111	-82	-45	24	83			
Pour Point, °C	-15	-95	-84	-68	-46	-10	27	42	53	36
Pour Point, °F	5	-139	-119	-91	-50	14	80	108	127	97
Smoke Point, mm (ASTM)				28	21	15	11	9		
Aniline Point, °C			53	58	65	75	88	98		
Aniline Point, °F			127	136	149	167	190	208		
Total Acid Number, mg KOH/g	0.1			0.0	0.0	0.1	0.3	0.2	0.1	0.2
Cetane Index, ASTM D976				37	47	50				
Diesel Index			69	66	61	57	52	47		
Characterization Factor (K Factor)	12.0	12.8	11.7	11.8	11.8	11.8	11.9	12.2	11.9	11.9
Research Octane Number, Clear		64.1	57.3	41.8						
Motor Octane Number, Clear		62.9	54.8							
Paraffins, vol%		89.0	49.7	45.0	39.2	35.8	31.3	29.3		
Naphthenes, vol%		11.0	33.1	33.5	39.2	39.3	41.2	40.8		
Aromatics, vol%		0.0	17.3	21.4	21.5	24.7	27.4	29.8		
Thiophenes, vol%										
Molecular Weight	183	103	113	144	177	225	313	469	814	403
Gross Heating Value, MM BTU/bbl	5.67	4.82	5.37	5.53	5.70	5.87	6.05	6.18	6.42	6.17
Gross Heating Value, kcal/kg	11050	11640	11210	11120	11030	10900	10770	10690	10360	10640
Gross Heating Value, MJ/kg	46.2	48.7	46.9	46.5	46.2	45.6	45.1	44.7	43.4	44.5
Heptane Asphaltenes, wt%	0.2								2.0	0.5
Micro Carbon Residue, wt%	1.1								13.7	3.3
Ramsbottom Carbon, wt%	1.1								13.0	3.1
Vanadium, ppm	2								22	5
Nickel, ppm	1								11	3
Iron, ppm										

**FORTIES - DISTILLATION SUMMARY**

		Whole Crude	Light Naphtha	Medium Naphtha	Heavy Naphtha	Kero	Atm Gas Oil	Light VGO	Heavy VGO	Vacuum Resid	Atm Resid
TBP Temp At Start, °C			10	80	150	200	260	340	450	570	340
TBP Temp At End, °C			80	150	200	260	340	450	570	End	End
TBP Temp At Start, °F			55	175	300	400	500	650	850	1050	650
TBP Temp At End, °F			175	300	400	500	650	850	1050	End	End
Yield at Start, vol%			4.3	13.4	31.7	43.5	54.2	69.4	83.7	93.1	69.4
Yield at End, vol%			13.4	31.8	43.5	54.2	69.4	83.7	93.1	100.0	100.0
Yield of Cut (wt% of Crude)			7.4	17.2	11.4	10.8	15.9	15.6	10.6	8.3	34.5
Yield of Cut (vol% of Crude)			9.1	18.4	11.8	10.8	15.2	14.3	9.4	6.9	30.6
TBP Distillation, vol%	°C Start		10	80	150	200	260	340	450	570	340
	°C 5%		25	81	151	207	263	348	459	572	352
	°C 10%		29	88	154	210	267	352	463	580	362
	°C 30%		37	99	164	222	283	371	481	616	409
	°C 50%		59	114	176	234	300	392	501	662	464
	°C 70%		66	128	187	244	317	416	523	712	530
	°C 90%		71	139	198	255	334	442	549	758	676
	°C 95%		72	148	201	257	339	448	557	772	765
	°C End		80	170	200	260	340	450	570	End	End
TBP Distillation, vol%	°F Start		50	175	300	400	500	650	850	1050	650
	°F 5%		77	177	304	405	506	658	858	1062	665
	°F 10%		84	191	309	410	513	666	866	1076	684
	°F 30%		98	210	328	432	542	699	898	1140	768
	°F 50%		139	237	348	453	572	738	934	1223	867
	°F 70%		150	263	368	472	603	781	973	1313	986
	°F 90%		159	283	389	491	634	827	1021	1396	1249
	°F 95%		161	299	394	495	642	839	1034	1422	1409
	°F End		175	340	400	500	650	850	1050	End	End