

NANHAI LIGHT - 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%		1.0	4.9	16.2	26.9	38.2	55.8	81.0	91.4	55.8
Yield at End, vol%		4.9	16.2	26.9	38.2	55.8	81.0	91.4	100.0	100.0
Yield of Cut (wt% of Crude)		3.2	10.2	9.9	10.9	17.6	26.1	11.2	10.4	47.7
Yield of Cut (vol% of Crude)		4.0	11.3	10.7	11.3	17.6	25.2	10.4	8.6	44.2
Gravity, °API	40.1	83.3	59.3	53.3	47.1	40.4	34.3	28.3	10.0	27.6
Specific Gravity	0.8246	0.6587	0.7416	0.7655	0.7924	0.8234	0.8533	0.8857	1.0001	0.8894
Sulfur, wt%	0.06	0.00	0.00	0.01	0.02	0.04	0.07	0.09	0.22	0.11
Mercaptan Sulfur, ppm		2	2	2	2	2				
Nitrogen, ppm	626			0	3	23	122	810	4797	1303
Hydrogen, wt%		16.3	16.3	15.8	15.2	14.6	13.9	13.2		
Viscosity @ 40 °C (104 °F), cSt	6			1.07	1.75	4.06	11.7	56	1.47E+08	101
Viscosity @ 50 °C (122 °F), cSt	5.00			0.931	1.48	3.29	8.86	40.3	6.06E+06	61.9
Viscosity @ 100 °C (212 °F), cSt	1.96			0.566	0.791	1.52	3.25	12.3	2710	11.7
Viscosity @ 135 °C (275 °F), cSt	1.27			0.431	0.584	1.05	2.04	7.09	255	5.66
Freeze Point, °C			-87.000	-59.000	-26.000	8.00	42.0	52.0		
Freeze Point, °F			-125	-74	-14	46	107	125		
Pour Point, °C	32		-93	-63	-32	4	38	49	72	41
Pour Point, °F	90		-136	-81	-25	40	100	121	162	106
Smoke Point, mm (ASTM)				40	36	28	25			
Aniline Point, °C				67	74	86	101	113		
Aniline Point, °F				152	166	187	214	235		
Total Acid Number, mg KOH/g	0.08			0.0	0.0	0.1	0.1	0.2		
Cetane Index, ASTM D976				48	59	62				
Diesel Index				81	78	76	74	67		
Characterization Factor (K Factor)	12.4	12.8	12.0	12.2	12.2	12.3	12.5	12.6	11.9	12.3
Research Octane Number, Clear		67.2	36.3	0.8						
Motor Octane Number, Clear		65.8								
Paraffins, vol%		90.0	66.5	76.5	75.9	66.3	61.6			
Naphthenes, vol%		10.0	29.0	17.7	17.3	21.4	21.8			
Aromatics, vol%		0.0	4.3	5.8	6.8	11.7	15.5			
Thiophenes, vol%				0.0	0.1	0.5	1.1			
Molecular Weight	254	103	121	148	184	240	336	476	846	377
Gross Heating Value, MM BTU/bbl	5.75	4.82	5.28	5.42	5.57	5.74	5.90	6.07	6.53	6.07
Gross Heating Value, kcal/kg	11080	11640	11320	11230	11160	11070	10990	10870	10360	10840
Gross Heating Value, MJ/kg	46.4	48.7	47.4	47.0	46.7	46.3	46.0	45.5	43.4	45.4
Heptane Asphaltenes, wt%	1.2								11.7	2.6
Micro Carbon Residue, wt%	2.0								19.1	4.2
Ramsbottom Carbon, wt%	1.9								18.1	4.0
Vanadium, ppm	0								4	1
Nickel, ppm	2								20	4
Iron, ppm	0								1	0

NANHAI LIGHT - 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%		1.0	4.9	16.2	26.9	38.2	55.8	81.0	91.4	55.8
Yield at End, vol%		4.9	16.2	26.9	38.2	55.8	81.0	91.4	100.0	100.0
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Yield of Cut (vol% of Crude)		4.0	11.3	10.7	11.3	17.6	25.2	10.4	8.6	44.2
TBP Distillation, vol%	°C Start	10	80	150	200	260	340	450	570	340
	°C 5%	23	90	152	208	264	348	457	572	353
	°C 10%	28	92	154	211	269	354	461	582	362
	°C 30%	38	103	164	222	288	376	476	626	399
	°C 50%	60	123	174	233	305	397	494	677	437
	°C 70%	66	138	187	243	321	417	518	723	499
	°C 90%	71	143	198	254	336	441	548	767	673
	°C 95%	72	146	202	257	340	447	557		777
	°C End	80	150	200	260	340	450	570	End	End
TBP Distillation, vol%	°F Start	50	175	300	400	500	650	850	1050	650
	°F 5%	74	194	305	406	508	659	855	1062	668
	°F 10%	82	198	309	411	517	669	862	1080	683
	°F 30%	100	218	327	431	551	708	888	1158	750
	°F 50%	140	254	346	451	581	746	921	1250	819
	°F 70%	150	281	368	470	610	782	965	1333	931
	°F 90%	159	289	389	490	637	825	1019	1413	1243
	°F 95%	161	295	395	494	644	836	1034		1430
	°F End	175	310	400	500	650	850	1050	End	End