

SOLAR TECHNOLOGY SYSTEMS.

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ANALYSIS	CRUDE	Naphtha 1	Naphtha 2	Naphtha 3	Naphtha 4	Kerosene	Light Diesel	Heavy Diesel	Light Dist.	Medium Dist.	Heavy Dist.	Atmospheric Residue	Vacuum Bottom
	°C	15-60	60-107	107-152	152-199	199-249	249-315	315-371	371-427	427-482	482-518	518+	518+
	°F	59-140	140-225	225-305	305-390	390-480	480-600	600-700	700-800	800-900	900-965	700+	965+
API 15.6°C (60°F)	18.8	90.7	65.9	55.1	45.8	35.6	27.0	21.8	17.5	15.0	12.0	5.5	0.9
Density at 15.0°C (g/cc)	0.9406	0.6368	0.7167	0.7581	0.7977	0.8464	0.8922	0.9223	0.9488	0.9656	0.9857	1.0322	1.0674
Sulfur (%w)	1.969	<0.015	<0.015	<0.015	0.050	0.218	0.696	1.262	1.782	1.986	2.340	2.845	3.62
Residual Carbon micro (%w)	13.39								<0.10	0.14	1.42	22.34	33.95
Acid Number (mg KOH/g)	0.229		0.157	<0.100	0.104	<0.100	<0.100	0.233				0.472	
Reid Vapour Pressure RVP (psi)	3.42	18.55	3.86	0.98	0.37								
Pour Point (°C)	-30					<-33	<-33	-3	27	33	39	72	>170
Viscosity Gravity Constant (VGC)	0.882												
Heptane Insoluble (%w)	11.94								0.06	0.07	0.12	19.98	29.73
Factor K (UOP)	11.64	12.93	12.06	11.79	11.60	11.38	11.18	11.18	11.29	11.33	11.35		
Temperature 1 °C	40					40	40	40	40	80	80	80	120
Kinematic Viscosity @ 11 °C (cSt)	225.60					1.80	4.14	15.26	91.14	36.69	161.89	41923.43	1010606.36
Temperature 2 °C	50					5.0	5.0	5.0	5.0	100	100	100	140
Kinematic Viscosity @ 12°C (cSt)	125.05					1.54	3.27	10.39	49.55	16.67	55.23	6696.02	116597.38
V50	30.04					5-10	12.26	20.14	27.19	29.93	34.85	45.91	55.08
Ash (%w)	0.072											0.055	
BSW (%v)	0.10												
Salt (lb/1000 BLS)	0.74												
Vanadium (ppm)	319.95								<0.007	0.07	0.73	531.00	845.90
Nickel (ppm)	76.72								<0.0005	0.01	0.17	125.05	197.10
Sodium (ppm)	2.87											33.72	61.52
Iron (ppm)	3.54											8.25	14.37
Copper (ppm)	<0.01											<0.01	0.20
Aluminum (ppm)	0.31											1.12	1.45
Magnesium (ppm)	0.11											0.32	0.63
Calcium (ppm)	0.49											3.38	6.22
Wax Content (%w)	4.91											2.79	2.60
Flash Point (°C)	5.0				34.0	75.0	120.0	167.0					
<b>DISTILLATION IN FRACTION</b>		<b>Simulated (°C)</b>				<b>D - 86 (°C)</b>				<b>D-1160 (°C)</b>			<b>Simulated (°C)</b>
I.B.P.	22.8	-11.3	-29.5	88.6	149.3	210.8	261.0	319.2	368.1	399.8	442.9	359.9	
5% Vol a.	85.5	0.1	59.6	98.7	156.8	216.0	268.3	328.4	392.0	426.9	475.8	391.6	
10% Vol a.	111.1	24.5	62.1	103.1	157.9	217.0	269.7	330.5	394.7	432.5	480.7	413.0	
20% Vol a.	189.0	27.3	69.0	109.4	159.9	218.2	271.5	332.4	399.6	438.0	486.5	452.8	
30% Vol a.	296.7	28.6	79.3	115.5	161.9	219.8	273.6	333.3	401.7	441.5	492.2	500.7	
40% Vol a.	368.0	33.2	87.5	119.7	163.8	221.3	275.8	334.8	403.0	445.4	496.6	556.5	
50% Vol a.	436.4	35.6	90.1	126.2	166.1	223.2	278.3	336.5	406.7	449.7	500.7	620.1	
60% Vol a.	509.9	36.5	92.9	127.4	168.5	224.9	281.2	338.5	410.0	452.2	505.6	692.7	
70% Vol a.	-	37.4	97.8	133.7	171.5	227.6	284.8	340.3	414.3	460.9	513.2	-	
80% Vol a.	-	57.9	102.3	138.2	175.4	230.6	288.8	343.5	421.5	472.3	522.3	-	
90% Vol a.	-	60.8	103.8	144.3	181.6	235.2	294.5	348.0	437.4	487.9	539.1	-	
95% Vol a.	-	64.7	107.4	148.6	187.3	238.8	298.4	352.5	448.3	503.3	552.3	-	
F.B.P.	574.4	85.2	123.0	165.8	203.3	243.7	303.6	355.1	448.3	503.3	552.3	719.1	
Residue	32.9			0.8	0.9	0.7	1.3	5.0	5.0	5.0	5.0	34.8	
Yield/Crude (%vol)	2.79	6.77	7.45	4.58	3.70	8.59	8.58	7.12	8.44	5.54	56.88	35.78	
Yield/Crude (%w)	1.96	5.36	6.24	3.88	3.33	8.14	8.42	7.18	8.66	5.80	62.26	40.62	
Motor Octane Number MON	I.S.	63.6	54.8	I.S.									
Research Octane Number RON	I.S.	65.4	54.0	48.5									
N2 Basic (%w)							0.0028	0.0149	0.035	0.050	0.074	0.161	0.201
N2 Total (%w)	0.4162						0.0003	0.0040	0.0373	0.1066	0.1803	0.3121	0.9525
Refractive Index @ t (20°C)								1.5094					
Refractive Index @ t (70°C)									1.5056	1.5166	1.5300		
Aniline Point (°C)							54.7						
Naphthenes (%vol)		2.3	35.3	30.7	15.8								
Paraffins (%vol)		47.0	24.6	19.1	17.4								
Iso-Paraffins (%vol)		49.3	35.6	37.3	27.3								
Aromatics (%vol)		0.1	3.9	12.2	32.4								
Saybolt Color				30	23								
Naphthalenes (%vol)				0.003	0.144	3.64							
Freezing Point (°C)				<-70.0	<-70.0	-49.0							
Smoke Point (mm)				25.4	20.3	17.3							
Cetane Index				32.4	35.3	36.3	40.6						
Cloud Point (°C)				<-33	<-33	-31	-1						
Softening Point (°C)													114.8
Penetration 25°C (mm/10)													0.0
Mercaptans Sulfur (%w)		0.0004	0.0005	0.0003	0.0003	0.0004	0.0007						
Density at 70°C (g/cc)									0.9120	0.9290	0.9494	0.9965	1.0321
<b>Aromatic Carbon Type</b>													
monoaromatic (%w)	4.99			17.10	9.76	6.10	5.98	6.70	5.84	5.40	5.62	4.93	4.48
Diaromatic (%w)	3.24			n.d.	n.d.	4.72	7.06	5.07	4.73	4.32	4.19	3.76	3.27
Triaromatic (%w)	3.00			n.d.	0.02	0.22	0.72	3.64	5.34	5.78	5.92	4.93	4.40
Tetraaromatic (%w)	3.76			n.d.	n.d.	n.d.	0.04	0.56	2.04	3.13	4.32	5.18	6.25
Pentaaromatic (%w)	2.14			n.d.	n.d.	0.06	0.01	nd	0.49	0.78	1.21	3.16	4.09
Hexaaromatic (%w)	0.88			n.d.	n.d.	0.03	0.00	nd	0.11	0.24	0.50	1.98	2.08
Hepta-aromatic (%w)	3.29			n.d.	n.d.	0.22	0.01	nd	0.16	0.20	0.28	5.68	8.74
<b>S.A.R.A. ANALYSIS</b>													
Saturated (%w)											42.7	18.7	12.2
Aromatics (%w)											49.0	46.3	33.8
Resines (%w)											6.7	17.5	23.2
Asphaltenes (%w)											1.6	17.5	30.8
Thermal Stability at 180 Min %reflectance						97	85	92					

I. S.: insufficient sample  
nd: no detectable