

Oman Light Blend Crude Oil

TABLE 1: GENERAL PROPERTIES ANALYSIS

CHARACTERISTICS	UNITS	RESULT	TEST METHOD
Specific Gravity @ 15.56 /15.56 °C	---	0.8556	ASTM D5002
API Gravity	°API	33.9	ASTM D5002
Sulfur Content (Total)	wt.%	1.70	ASTM D4294
H ₂ S Content	ppm	<1	RIPI
Mercaptan Content	ppm	254	UOP 163
Nitrogen Content (Total)	wt.%	0.13	ASTM D4629
Water & Sediment	vol.%	<0.025	ASTM D4007
Water Content	vol.%	<0.025	ASTM D4006
Salt Content	PTB	8	ASTM D3230
Kinematic Viscosity @ 10 °C	mm ² /s	11.81	ASTM D445
Kinematic Viscosity @ 20 °C	mm ² /s	8.716	
Kinematic Viscosity @ 40 °C	mm ² /s	4.969	
Pour Point (Upper)	°C	-30	ASTM D5853
Reid Vapor Pressure	psi	8.65	ASTM D323
Asphaltene Content	wt.%	2.1	IP 143
Wax Content	wt.%	2.3	BP 237
Drop Melting Point of Wax	°C	64	IP 133
Conradson Carbon Residue	wt.%	5.60	ASTM D189
Total Acid Number	mg KOH/g	0.08	UOP 565
Nickel Content	mg/kg	18	ASTM D5863
Vanadium Content	mg/kg	59	
Iron Content	mg/kg	<1	
Lead Content	mg/kg	<1	
Sodium Content	mg/kg	12	
Copper Content	mg/kg	<1	
Zinc Content	mg/kg	<1	

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TABLE 2: TBP DISTILLATION ANALYSIS (ASTM D2892 & ASTM D5236)

Frac. No.	Boiling Range, °C	Yield, wt.%	Cumulative Yield, wt.%	Sp.Gr. @ 15.56/15.56 °C	Yield, vol.%	Cumulative Yield, vol.%
1	IBP-15	1.42	1.42	0.5566	2.18	2.18
2	15-65	5.23	6.65	0.6543	6.84	9.02
3	65-100	6.46	13.11	0.7196	7.68	16.70
4	100-125	4.90	18.01	0.7443	5.63	22.33
5	125-150	5.05	23.06	0.7637	5.66	27.99
6	150-175	4.70	27.76	0.7793	5.16	33.15
7	175-200	4.73	32.49	0.7921	5.11	38.26
8	200-225	4.15	36.64	0.8079	4.40	42.66
9	225-250	3.46	40.10	0.8216	3.60	46.26
10	250-275	3.09	43.19	0.8400	3.15	49.41
11	275-300	3.00	46.19	0.8501	3.02	52.43
12	300-325	2.93	49.12	0.8639	2.90	55.33
13	325-350	2.73	51.85	0.8654	2.70	58.03
14	350-385	4.25	56.10	0.8841	4.11	62.14
15	385-425	5.00	61.10	0.9138	4.68	66.82
16	425-450	2.75	63.85	0.9226	2.55	69.37
17	450-475	3.15	67.00	0.9359	2.88	72.25
18	475-500	2.90	69.90	0.9455	2.62	74.87
19	500-530	3.20	73.10	0.9563	2.86	77.73
20	530-565	3.32	76.42	0.9656	2.94	80.67
21	565+	23.58	100.00	1.0438	19.33	100.00

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TABLE 3: INDIVIDUAL HYDROCARBONS IN IBP-15 °C CUT (ASTM D2427)

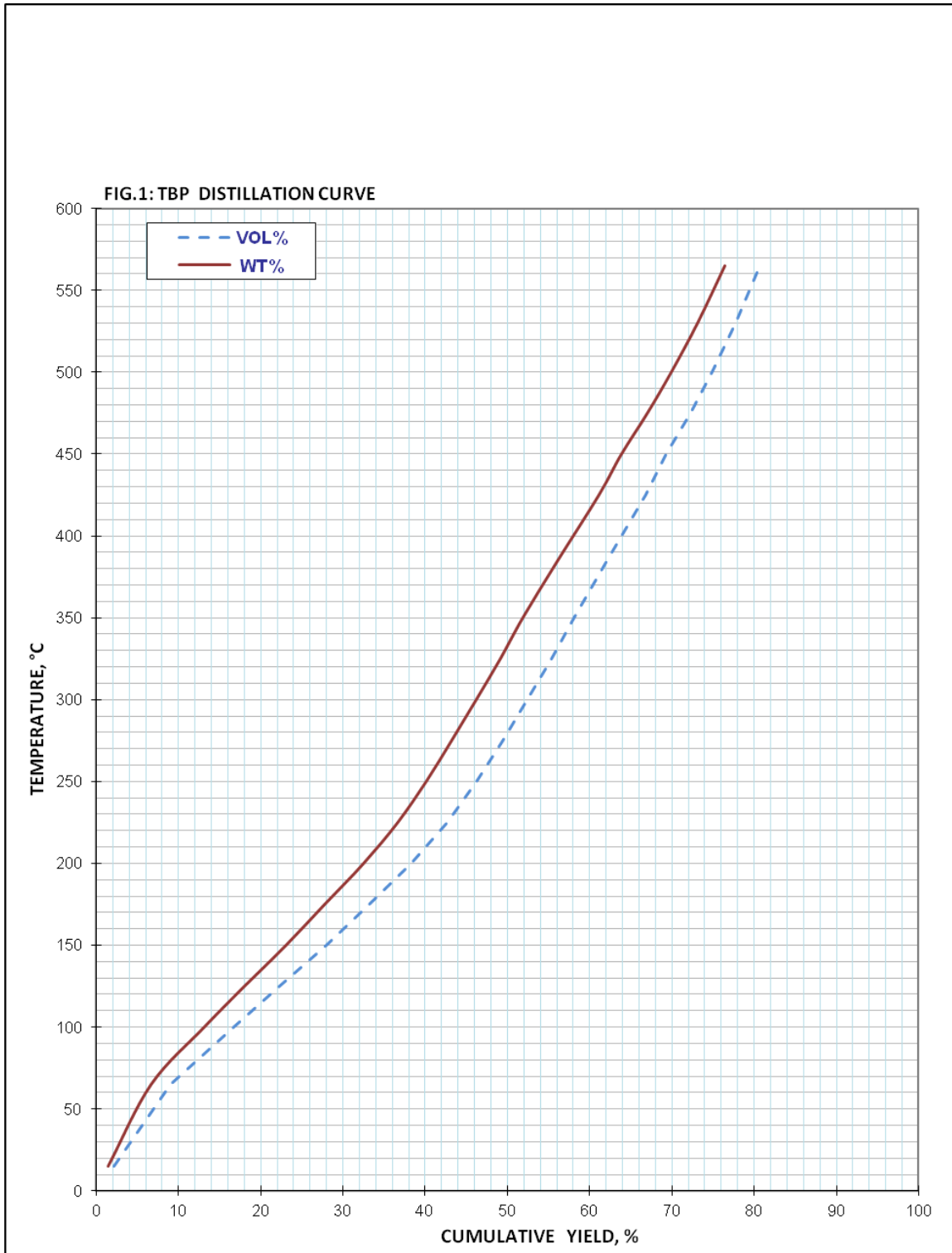
TBP CUT RANGE, °C	IBP-15	
YIELD ON CRUDE, wt.%	1.42	
<u>HYDROCARBONS, wt.-%:</u>	ON CUT	ON CRUDE
Methane	---	---
Ethane	2.8	0.04
Propane	21.7	0.31
iso-Butane	16.9	0.24
n-Butane	51.3	0.73
iso-Pentane	4.9	0.07
n-C5+	2.4	0.03
Total	100.0	1.42

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TABLE 4: INDIVIDUAL HYDROCARBONS IN 15 - 65 °C CUT(ASTM D2427)

TBP CUT RANGE, °C	15 - 65	
YIELD ON CRUDE, wt.%	5.23	
<u>HYDROCARBONS, wt.%</u>	ON CUT	ON CRUDE
Propane	–	–
iso-Butane	0.1	0.01
n-Butane	1.7	0.09
iso-Pentane	18.4	0.96
n-Pentane	26.4	1.38
2,2-Dimethylbutane + 2,3-Dimethylbutane	23.0	1.20
3-Methylpentane	9.6	0.50
n-Hexane	13.3	0.70
Methylcyclopentane + 2,4-Dimethylpentane	3.5	0.18
Benzene	2.6	0.14
Cyclohexane+	1.4	0.07
Total	100.0	5.23

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TABLE 5: EVALUATION OF FRACTIONS OBTAINED BY DISTILLATION

CHARACTERISTICS	UNITS	GASOLINE (15-175 °C)	KEROSINE (150-275 °C)	GASOIL (250-385 °C)	RESIDUE (565 °C +)	TEST METHOD
Yield on Crude	wt.%	26.34	20.13	16.00	23.58	ASTM D2892 & D5236
Yield on Crude	vol.%	30.97	21.42	15.88	19.33	
Specific Gravity @15.56/15.56 °C	---	0.7277	0.8041	0.8621	1.0438	ASTM D4052
Sulfur Content (Total)	wt.%	0.09	0.33	1.04	4.40	ASTM D4294
Mercaptan Content (as Sulfur)	ppm	467	82	15	---	UOP163
H ₂ S Content (as Sulfur)	ppm	<1	<1	<1	---	
Nitrogen Content (Total)	ppm	2	9	265	0.40 wt%	ASTM D4629
Total Acid Number	mg KOH/g	0.07	0.06	0.11	---	ASTM D664
Reid Vapor Pressure	psi	5.15	---	---	---	ASTM D323
Saybolt Color	---	+30	+30	---	---	ASTM D156
ASTM Color	---	---	---	2.0	---	ASTM D1500
Research Octane Number	---	55.4	---	--	---	ASTM D2699
Corrosion Copper Strip (3h/100°C)	---	@50°C:3b	3b	2a	---	ASTM D130
Aniline Point	°C	---	68.0	73.0	---	IP2
Flash Point (PMCC)	°C	---	55.0	128.0	---	ASTM D93
Flash Point (Open Cup)	°C	---	---	---	333	ASTM D92
Smoke Point	mm	---	31	---	---	ASTM D1322
Freezing Point	°C	---	-46	---	---	ASTM D2386
Oxidation Stability	min	>480	---	---	---	ASTM D525
Diesel Index	---	---	---	50.7	---	CALCULATED
Cetane Index	---	---	---	53.3	---	ASTM D976
Kinematic Viscosity@40 °C	mm ² /s	---	---	4.618	---	ASTM D445
Kinematic Viscosity@100 °C	mm ² /s	---	---	1.613	13450	
Kinematic Viscosity@135 °C	mm ² /s	---	---	----	960	ASTM D2170
Cloud Point	°C	---	---	-4	---	ASTM D2500
Pour Point	°C	---	---	-6	>+50	ASTM D97
* C _A /C _N /C _P	%	---	---	16.1/24.1/59.8	---	ASTM D3238
<u>Hydrocarbon Types:</u>						
Saturates	vol.%	90.1	80.3	---	---	ASTM D1319
Olefins	vol.%	1.0	3.2	---	---	
Aromatics	vol.%	8.9	16.5	---	---	
Ramsbottom Carbon Residue, on 10%	wt.%	---	---	0.15	---	ASTM D524
Conradson Carbon Residue	wt.%	---	---	---	25.8	ASTM D189
Wax Content	wt.%	---	---	---	3.3	BP237
Drop Melting Point of Wax	°C	---	---	---	82	IP133
n-Heptane Insolubles	wt.%	---	---	---	14.3	ASTM D3279
Net Heat of Combustion	kcal/kg	---	10894	10842	---	ASTM D240
Softening Point	°C	---	---	---	62.0	ASTM D36
Penetration @ 25°C	mm/10	---	---	---	18	ASTM D5
<u>Metal Content:</u>						
Vanadium	ppm	---	---	---	247	ASTM D 5863
Nickel	ppm	---	---	---	73	

*C_A/C_N/C_P: DISTRIBUTION OF AROMATIC, NAPHTHENIC, PARAFFINIC CARBONS

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TABLE 6: YIELD AND PROPERTIES OF WAXY DISTILLATES

CHARACTERISTICS	UNITS	OIL NO.1 (385-450 °C)	OIL NO.2 (450-500 °C)	OIL NO.3 (500-565 °C)	TEST METHOD
LUBE CUT:					
YIELD ON CRUDE	wt%	7.75	6.05	6.52	ASTM D 2892 & D 5238
YIELD ON CRUDE	vol%	7.23	5.5	5.8	
SPECIFIC GRAVITY @15.56/15.56°C	---	0.9172	0.9412	0.9619	ASTM D 4052
SULFUR CONTENT	wt%	1.95	2.13	2.68	ASTM D 4294
POUR POINT	°C	27	39	45	ASTM D 97
KINEMATIC VISCOSITY@ 60 °C	mm ² /s	13.72	32.81	120.5	ASTM D 445
KINEMATIC VISCOSITY@100 °C	mm ² /s	4.889	8.830	21.56	
WAX CONTENT	wt%	11.1	8.5	7.6	BP 237
CONRADSON CARBON RESIDUE	wt%	<0.05	<0.05	1.01	ASTM D 189
NITROGEN CONTENT	wt%	0.11	0.16	0.21	ASTM D 5762