



Type & specification of crude oil	LIBYAN CRUDE OIL
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## Sarir Crude Oil

Density @ 15°C g/ml	0.8370	IP 365/D4052
Specific Gravity @ 60° F	0.8374	Calculation
API Gravity @ 60° F	37.48	Calculation
Characterization Factor	12.5	Calculation
Total Sulphur % wt.	0.17	IP 336/D4294
Mercaptan Sulphur ppm wt.	8	IP 342Mod/D3227Mod
Total Nitrogen % wt.	0.10	IP 379Mod/D4629Mod
Pour Point °C (°F)	+21(+70)	IP 15/D97
Viscosity @ 70°F, cSt	67.54	IP 71/D445
Viscosity @ 100°F, cSt	10.73	IP 71/D445
Vanadium ppm wt.	<1	IP 377 Mod
Nickel ppm wt.	1	IP 377 Mod
Sodium ppm wt.	4.7	IP 377 Mod
Calcium ppm wt.	3.7	IP 377 Mod
Potassium ppm. Wt.	0.2	IP 377 Mod
Conradson Carbon % wt.	4.60	IP 13/D189
Asphaltenes % wt.	0.3	IP 143
n-Heptane insolubles % wt.	0.84	D893
Reid Vapour Pressure KPa (psi)	12 (1.7)	IP 69/D323
Flash point °C (°F)	Below -20 (Below -4)	IP 170
Hydrogen Sulphide ppm wt.	<1	IP PM-BJ
Neutralization Number, mg KOH/g	0.085	IP 177/D664
Bottom, Sediment and Water % vol.	<0.05	IP 359/D4007
Ash content % wt.	<0.01	IP 4/D482
Salt (as NaCl) mg/liter (lbs/1000 bbls)	1.4 (4.0)	D3230



Light Hydrocarbons % wt (% vol.)		IP 344
Methane	<0.01 (<0.01)	
Ethane	0.03 (0.05)	
Propane	0.66 (1.10)	
Iso-Butane	0.54 (0.80)	
n-Butane	1.97 (2.83)	
iso pentane	1.53 (2.05)	
n-pentane	2.17 (2.88)	
cyclo-pentane	0.10 (0.11)	

## **Buatti Fuel Crude Oil**

Density @ 15°C g/ml	0.8089	IP 365/D4052
Specific Gravity @ 60° F	0.8093	Calculation
API Gravity @ 60° F	43.35	Calculation
Characterization Factor	>12.5	Calculation
Total Sulphur % wt.	0.06	IP 336/D4294
Mercaptan Sulphur ppm wt.	44	IP 342Mod/D3227Mod
Total Nitrogen % wt.	0.0142	IP 379Mod/D4629Mod
Pour Point °C (°F)	+39 (+102)	IP 15/D97
Viscosity @ 122°F, cSt	10.89	IP 71/D445
Viscosity @ 100°F, cSt	25	IP 71/D445
Vanadium ppm wt.	0.4	IP 377 Mod
Nickel ppm wt.	0.5	IP 377 Mod
Sodium ppm wt.	19.6	IP 377 Mod
Calcium ppm wt.	2.9	IP 377 Mod
Potassium ppm. Wt.	0.3	IP 377 Mod
Conradson Carbon % wt.	0.4	IP 13/D189
Asphaltenes % wt.	0.09	IP 143
n-Heptane insolubles % wt.	9.2	D893



Reid Vapour Pressure KPa (psi)	5 (0.7)	IP 69/D323
Flash point °C (°F)	Below -20 (Below -4)	IP 170
Hydrogen Sulphide ppm wt.	<1	IP PM-BJ
Neutralization Number, mg KOH/g	0.08	IP 177/D664
Bottom, Sediment and Water % vol.	0.10	IP 359/D4007
Ash content % wt.	<0.01	IP 4/D482
Salt (as NaCl) mg/liter (lbs/1000 bbls)	71.9 (25.2)	D3230
Light Hydrocarbons % wt (% vol.)		IP 344
Methane	Nil (Nil)	
Ethane	Nil (Nil)	
Propane	0.02 (0.03)	
Iso-Butane	0.04 (0.06)	
n-Butane	0.14 (0.19)	
iso pentane	0.29 (0.38)	
n-pentane	0.51 (0.65)	
cyclo-pentane	0.03 (0.03)	

## **Sirtica Crude Oil**

Density @ 15°C g/ml	0.8194	IP 365/D4052
Specific Gravity @ 60° F	0.8198	Calculation
API Gravity @ 60° F	41.11	Calculation
Characterization Factor	12.1	Calculation
Total Sulphur % wt.	0.42	IP 336/D4294
Mercaptan Sulphur ppm wt.	110	IP 342Mod/D3227Mod
Total Nitrogen % wt.	0.12	IP 379Mod/D4629Mod
Pour Point °C (°F)	-9 (+16)	IP 15/D97
Viscosity @ 70°F, cSt	4.534	IP 71/D445
Viscosity @ 100°F, cSt	2.935	IP 71/D445



Vanadium ppm wt.	1.5	IP 377 Mod
Nickel ppm wt.	3.5	IP 377 Mod
Sodium ppm wt.	18.6	IP 377 Mod
Calcium ppm wt.	4.7	IP 377 Mod
Potassium ppm. Wt.	0.4	IP 377 Mod
Conradson Carbon % wt.	2.1	IP 13/D189
Asphaltenes % wt.	0.46	IP 143
n-Heptane insolubles % wt.	0.84	D893
Reid Vapour Pressure KPa (psi)	54 (7.8)	IP 69/D323
Flash point °C (°F)	Below -20 (Below -4)	IP 170
Hydrogen Sulphide ppm wt.	<1	IP PM-BJ
Neutralization Number, mg KOH/g	0.10	IP 177/D664
Bottom, Sediment and Water % vol.	<0.05	IP 359/D4007
Ash content % wt.	<0.01	IP 4/D482
Salt (as NaCl) mg/liter (lbs/1000 bbls)	40 (14)	D3230
Light Hydrocarbons % wt (% vol.)		IP 344
Methane	Nil (Nil)	
Ethane	0.02 (0.04)	
Propane	0.35 (0.57)	
Iso-Butane	0.39 (0.57)	
n-Butane	1.22 (1.71)	
iso pentane	1.48 (1.94)	
n-pentane	1.56 (2.03)	
cyclo-pentane	0.20 (0.22)	

**DIFFERENT TYPES OF CRUDE OILS****VENEZUELAN CRUDE OIL**

TEST	RESULTS	Phase Angle	UNIT / TEMP.
Relative density	1.0065		60 F
Brookfield viscosity	183		cP @ 135 C
Brookfield viscosity	122		cP @ 165 C
<b>Viscosity @ 140F</b>	<b>535</b>		<b>poise</b>
Penetration	216		77F
Flash	500		F
Weight Change	-0.689		%
Viscosity @ 140F RTFO	2074		poise
Ductility	74		Cm, 77F
Orig. G*/Sin Delta @ 46 C	3.1573	81.0	kPa. @ 46 C
G*/Sin Delta @ 52 C	1.3827	83.7	kPa. @ 52 C
G*/Sin Delta @ 58 C	<b>0.6742</b>	85.4	kPa. @ 58 C
RTFO G*/Sin Delta @ 46 C	11.6710	70.6	kPa. @ 46 C
G*/Sin Delta @ 52 C	5.0221	75.1	kPa. @ 52 C
G*/Sin Delta @ 58 C	2.4005	75.3	kPa. @ 58 C
PAV G*Sin Delta @ 13 C	1470	40.0	kPa. @ 13 C
G*Sin Delta @ 16 C	1049	42.3	kPa. @ 16 C
G*Sin Delta @ 19 C	769	43.9	kPa. @ 19 C
Creep stiffness (S)	73		MPa. @ -24 C
M - value	0.337		MPa. @ -24 C
Creep stiffness (S)	156		MPa. @ -30 C
M - value	0.306		MPa. @ -30 C
Creep stiffness (S)	332		MPa. @ -36 C
M - value	<b>0.274</b>		MPa. @ -36 C
Direct tension			
Failure Stress - Mean	4.007		MPa. @-30C
Failure Strain - Mean	2.74		% @ -30C
Failure Stress - Mean	6.424		MPa. @-36C
Failure Strain - Mean	1.67		% @ -36C
Critical Cracking Temp (T <sub>cr</sub> )	-45.1		°C

**VENEZUELAN CRUDE OIL**

TEST	RESULTS	Phase Angle	UNIT / TEMP.
Relative density	1.0104		60 F
Brookfield viscosity	278		cP @ 135 C
Brookfield viscosity	80		cP @ 165 C
<b>Viscosity @ 140F</b>	<b>1479</b>		<b>Poise</b>
Penetration	115		77F
Flash	490		F
Weight Change	-0.362		%
Viscosity @ 140F RTFO	6967		Poise
Ductility	112		Cm, 77F
Orig. G*/Sin Delta @ 52 C	3.6905	79.8	kPa. @ 52 C
G*/Sin Delta @ 58 C	1.6886	82.6	kPa. @ 58 C
G*/Sin Delta @ 64 C	<b>0.7921</b>	84.7	kPa. @ 64 C
RTFO -G*/Sin Delta @ 52 C	14.2800	69.4	kPa. @ 52 C
G*/Sin Delta @ 58 C	6.3523	73.8	kPa. @ 58 C
G*/Sin Delta @ 64 C	2.9799	77.1	kPa. @ 64 C
PAV -G*Sin Delta @ 19 C	1784	33.5	kPa. @ 19 C
G*Sin Delta @ 22 C	1434	38.9	kPa. @ 22 C
G*Sin Delta @ 25 C	1088	40.2	kPa. @ 22 C
Creep stiffness (S)	75		MPa. @ -18 C
M - value	0.308		@ -18 C
Creep stiffness (S)	145		MPa. @ -24 C
M - value	<b>0.278</b>		@ -24 C
Creep stiffness (S)	285		MPa. @ -30 C
M - value	<b>0.27</b>		@ -30 C
Creep stiffness (S)	<b>456</b>		MPa. @ -36 C
M - value	<b>0.229</b>		@ -36 C
Direct tension			
Failure Stress - Mean	4.103		MPa. @-30C
Failure Strain - Mean	1.12		% @ -30C
Failure Stress - Mean	3.897		MPa. @-24C
Failure Strain - Mean	3.09		% @ -24 C
Critical Cracking Temp (T <sub>cr</sub> )	-38.7		°C

**VENEZUELAN CRUDE OIL**

TEST	RESULTS	Phase Angle	UNIT / TEMP.
Relative density	1.0177		60 F
Brookfield viscosity	488		cP @ 135 C
Brookfield viscosity	130		cP @ 165 C
<b>Viscosity @ 140F</b>	<b>4737</b>		<b>poise</b>
Penetration	61		77F
Flash	530		F
Weight Change	-0.057		%
Viscosity @ 140F RTFO	18248		poise
Ductility	28		Cm, 77F
G*/Sin Delta @ 64 C	2.3054	81.0	kPa. @ 64 C
G*/Sin Delta @ 70 C	1.1497	83.9	kPa. @ 70 C
G*/Sin Delta @ 76 C	<b>0.5634</b>	85.5	kPa. @ 76 C
G*/Sin Delta @ 64 C	6.5591	74.0	kPa. @ 64 C
G*/Sin Delta @ 70 C	2.9826	77.9	kPa. @ 70 C
G*/Sin Delta @ 76 C	1.4631	80.9	kPa. @ 76 C
G*Sin Delta @ 25 C	1910	38.1	kPa. @ 25 C
G*Sin Delta @ 28 C	1407	40.6	kPa. @ 28 C
G*Sin Delta @ 31 C	1052	41.9	kPa. @ 31 C
Creep stiffness (S)	67		MPa. @ --12 C
M - value	0.316		@ --12 C
Creep stiffness (S)	129		MPa. @ --18 C
M - value	<b>0.288</b>		@ --18 C
Creep stiffness (S)	246		MPa. @ --24 C
M - value	<b>0.267</b>		@ --24 C
Creep stiffness (S)	<b>456</b>		MPa. @ --30 C
M - value	<b>0.245</b>		@ --30 C
Direct tension			
Failure Stress - Mean	2.56		MPa. @-18C
Failure Strain - Mean	1.55		% @ -18 C
Failure Stress - Mean	3.572		MPa. @-24C
Failure Strain - Mean	1.11		% @ -24 C
Failure Stress - Mean	3.227		MPa. @-30C
Failure Strain - Mean	0.51		% @ -30C