

## fuel oil CST 180

TEST	UNIT	METHOD	QUARANTEED	Result
DENSITY@15 ° C	kg/m3	ASTM D-1298	MAX 990	985.3
Kinematic Viscosity @50 ° C	cst	ASTM D-445	MAX 180	118.1
Flash Point	° C	AST, D-93-B	MIN 60	65.0
Water Content	%vol	ASTM D-95	LESS THAN 0.5	0.05
Pour Point	° C	ASTM D-97	-5	-12
Sulfur Content	Wt%	ASTM D-4294	MAX 3.5	3.23
Conradson Carbon Residue	Wt%	ASTM D-189	MAX 18	10.7
Ash Content	Wt%	ASTM D-482	0.10	0.03
Sediment By Extraction	Wt%	ASTM D-473		0.12
Total Sediment Potential	%m/m	ASTM D-4870-A		0.17
<b>METAL</b>				
Zn			LESS THAN 15	4
Ni				19
Na			MAX 50	25
Ca			LESS THAN 30	17
Al			MAX 50	9
Si			MAX 50	13
V			MAX 350	87

## 380CST Fuel Oil Normal Export Quality

Test	Unit	Specification	Test Method
Density @ 15DC	KG/M <sup>3</sup>	MAX 990	D-1298
Kinomatic Viscosity @ 50 DC	CST	MAX 380	D-445
Pour Point	DC	MAX 32	D-97
Flash Point	DC	MIN 65	D-93
Sulphur Total	WT%	MAX 3.5	D-1552
Carbon Residue ( Conradson)	WT%	MAX 15	D-189
Ash	WT%	MAX 0.15	D-482
Water & Sediment	VOL%	MAX 1.0	D-1796
Calorific Value ( Higher)	MJ/KG	MIN 41.7	Calculated

**F.O CRUDE OIL**

**SP.GR @15.56/15.56 °C: 0.8653**

<b>FRAC. NO</b>	<b>BOILING RANGE OF FRAC.@760 mmHg°C</b>	<b>WEIGHT PERCENT</b>	<b>CUTTING RANGE WT%</b>	<b>SP.GR @15.56 /15.56 °C</b>	<b>VOLUME PERCENT</b>	<b>CUTTING RANGE VOL %</b>
1	IBP-15	1.00	1.00	0.5701	1.52	1.52
2	15-65	2.46	3.46	0.6361	3.35	4.87
3	65-100	5.59	9.05	0.6933	6.98	11.85
4	100-125	2.96	12.01	0.7336	3.49	15.34
5	125-150	5.05	17.06	0.7545	5.79	21.13
6	150-175	4.66	21.72	0.7717	5.23	26.36
7	175-200	4.20	25.92	0.7862	4.62	30.98
8	200-225	3.35	29.27	0.8010	3.62	34.60
9	225-250	4.10	33.37	0.8123	4.37	38.97
10	250-275	4.22	37.59	0.8311	4.39	43.38
11	275-300	4.49	42.08	0.8441	4.60	47.96
12	300-325	3.06	45.14	0.8572	3.09	51.05
13	325-350	3.17	48.31	0.8679	3.16	54.21
14	350-385	6.78	55.09	0.8889	6.60	60.81
15	385-425	6.16	61.25	0.9201	5.79	66.60
16	425-450	3.92	65.17	0.9324	3.64	70.24
17	450-475	4.49	69.66	0.9485	4.10	74.34
18	475-500	3.32	72.98	0.9561	3.00	77.34
19	500-530	3.40	76.38	0.9664	3.04	80.38
20	530-565	3.55	79.93	0.9803	3.13	83.51
21	565+	20.07	100.00	1.0532	16.49	100.00

## SPECIFICATION OF GASOIL 5000PPM

Test	Method	Unit	Result
Appearance	Visual	-	Clear & Bright
Sulphur Content	ASTM D 4294	% mass	0.5
Flash Point	ASTM D 93	°C	60-65
Water	ASTM D 27.09	% Vol	<0.05
Density @ 15°C	ASTM D 12.98	Kg/L	0.835-0.845
Color	ASTM D 15.00	-	L1.5
Viscosity @ 10°C	ASTM D 44.5	CST	2.84-4.00
Total Acidity	ASTM D 97.4	mgKOH/g	0.01
Strong Acid Number	ASTM D 97.4	mgKOH/g	Nil
Pour Point	ASTM D 97	°C	-9
Cloud Point	ASTM D 2500	°C	+9
Ash Content	ASTM D 48.0	% mass	<0.01
Cetane Index	ASTM D 4737	-	53.03
Distillation	ASTM D 86	°C	-
IBP	ASTM D 86	°C	160
10% Recovery	ASTM D 86	°C	197
50% Recovery	ASTM D 86	°C	278
90% Recovery	ASTM D 86	°C	362
FBP	ASTM D 86	°C	381
Residue	ASTM D 86	°C	1.0
Recovery	ASTM D 86	°C	99
Loss	ASTM D 86	°C	.05
Carbon Residue, (10% MCRT)	ASTM D 45.30	% mass	<0.1



## Gasoil Specification 0.5%

Analysis	Unit	Limit	Test Method
Density @ 15°C	Kg/m <sup>3</sup>	820-860	ASTM D1298
Distillation:			
Recovered @ 150°C	Vol%	report	ASTM D86
Recovered @ 300°C	Vol%	report	ASTM D86
Recovered @ 357°C	Vol%	90 min	ASTM D86
F.B.P	°C	385 max	ASTM D86
Colour	-	3 max	ASTM D1500
Flash point	°C	60 min	ASTM D93
Sulphur Total	wt%	0.5 max	ASTM D1552
Corrosion-3hrs@100°C	-	1 a	ASTM D130
Viscosity Kinematic@37.8°C	c.St	2.0-5.5	ASTM D445
Cloud point	°C	*2.0 max	ASTM D2500
Pour point	°C	*-3.0 max	ASTM D97
Carbon Residue ( on 10 % Bottoms)	wt%	0.1 max	ASTM D189
Ash	wt%	0.01 max	ASTM D482
Water & Sediment	Vol%	0.05 max	ASTM D2709
Cetane Index	-	49 min	ASTM D976

Note : Cloud point and Pour point specification shall be 4.0 & 0 °C respectively from 21th March to 21st September.

# Gasoil Specification 1.0%

Analysis	Unit	Limit	Test Method
Density @ 15°C	Kg/m <sup>3</sup>	820-860	ASTM D1298
Distillation:			
Recovered @ 150°C	Vol%	report	ASTM D86
Recovered @ 300°C	Vol%	report	ASTM D86
Recovered @ 357°C	Vol%	90 min	ASTM D86
F.B.P	°C	385 max	ASTM D86
Colour	-	3 max	ASTM D1500
Flash point	°C	54 min	ASTM D93
Sulphur Total	wt%	1.0 max	ASTM D1552
Corrosion-3hrs@100°C	-	1 a	ASTM D130
Viscosity Kinematic@37.8°C	c.St	2.0-5.5	ASTM D445
Cloud point	°C	*2.0 max	ASTM D2500
Pour point	°C	*-3.0 max	ASTM D97
Carbon Residue ( on 10 % Bottoms)	wt%	0.1 max	ASTM D189
Ash	wt%	0.01 max	ASTM D482
Water & Sediment	Vol%	0.05 max	ASTM D2709
Cetane Index	-	49 min	ASTM D976

Note : Cloud point and Pour point specification shall be 4.0 & 0 °C respectively from 21th March to 21st September.

## GAS OIL 0.05% (5000 PPM)

### QUALITY

#### ANALYSIS & METHODS

SHORE TANK SAMPLE (COMPOSITE [*];INDIVISUAL[ ] )			TK-191	TK-196	TK-199
Density @ 15°C	Kg/m3	ASTM D1298	841	842	842
Distillation: Recovered @357°C	Vol%	ASTM D86	91	91	91
F.B.P	°C	ASTM D86	384	383	383
Colour	-	ASTM D1500	2	2	2
Flash point	°C	ASTM D93	62	62	62
Sulphur Total	wt%	ASTM D1S52	0.461	0.457	0.456
Corrosion-3hrs@100°C	-	ASTM D130	1a	1a	1a
Viscosity Kinematic@37.8°C	c.St	ASTM D445	3.125	3.129	1.128
Cloud point	°C	ASTM D2500	1.83	1.84	1.85
Pour point	°C	ASTM D97	-3.01	-3.02	-3.03
Carbon Residue ( on 10 % Bottoms)	wt%	ASTM D189	0.094	0.093	0.093
Ash	wt%	ASTM D482	0.009	0.009	0.009
Water & Sediment	Vol%	ASTM D2709	0.042	0.041	0.040
Cetane Index	-	ASTM D976	49.51	49.52	49.54

# GASOLINE OCTANE NUMBER 90

ANALYSIS	UNIT	LIMIT	TEST METHOD
Density@15°C	Kg/m <sup>3</sup>	753	ASTM D1298
Distillation:			ASTM D86
10% Evaporation @	°C	65 max	ASTM D86
50% Evaporation @	°C	110 max	ASTM D86
75% Evaporation @	°C	150 max	ASTM D86
F.B.P	°C	205 max	ASTM D86
Residue	Vol%	2 max	ASTM D86
Loss	Vol%	report	ASTM D86
Sulphur Total	ppm	40 max	ASTM D1266
Corrosion 3hrs@100°C	-	1a	ASTM D130
Vapour Pressure, Reid @ 37.8°C	Kpa	51.5	ASTM D323
	lb	7-8	
Gum Content (AIR JET)	Mg/100 ml	4 max	ASTM D381
Induction Period @ 100°C	mins	480 min	ASTM D525
Colour (Lovibond)	-	Red (1.0Kg/1000M3)	
Benzene	Vol%	1 max	GC
Aromatic	Vol%	35 max	GC or D1319
Olefin	Vol%	18 max	GC or D1319
Octane Number (Research)	-	90 min	ASTM D2699
Mercaptan Content	ppm	5 max	ASTM D3227
MTBE	Vol%	15 max	
Oxygen Content	Wt%	0	



## MOTOR GASOLINE SPECIFICATION 95

TEST	ANALYSIS		UNITS	LIMITS		TEST METHOD	
				MIN	MAX	ASTM	EN
1	DENSITY @ 15 ° C		Kg/m <sup>3</sup>	720	775	D 1298 D 4052	ISO 3675 ISO 12185
2	RESEARCH OCTANE NUMBER (SEE NOTE 1)	PREMIUM		95		D2699	ISO 5164
3	MOTOR OCTANE NUMBER	PREMIUM		85		D2700	ISO 5163
4	REID VAPOR PRESSURE (SEE NOTE 2)					(SEE NOTE 3)	
4.1	SPRING		KPA	50	62	D323	
4.2	SUMMER		KPA	45	60		
4.3	FALL		KPA	50	65		
4.4	WINTER		KPA	60	70		
5	DISTILLATION @ 760 mmHg : (SEE NOTE 2)		% V/V			D 86	ISO 3405
5.1	EVAPORATED AT 70 °C (SPRING, SUMMER,FALL)		% V/V	20	46		
5.2	EVAPORATED AT 70 °C (WINTER)		% V/V	22	46		
5.3	EVAPORATED AT 100 °C (ALL SEASONS)		% V/V	46	71		
5.4	EVAPORATED AT 150 °C (ALL SEASONS)		% V/V	75	-		
5.5	FINAL BOILING POINT (ALL SEASONS)		°C	190	215		
5.6	RESIDUE (ALL SEASONS)		% V/V	-	2		
6	HYDROCAROBN ANALYSIS :					(SEE NOTE 4)	ISO 22854
6.1	OLEFINS		% V/V		18	D6839/D5986/ D1319	EN 1601
6.2	AROMATIC		% V/V		35	D6839/D5986/ D1319	EN 13132
6.3	BENZENE		% V/V		1	D6277/D5580	
7	OXYGEN CONTENT		% M/M		2.7		ISO 22854
8	ALCOHOL		% V/V		NIL		ISO 22854
9	SULFUR		mg/kg		50	D7039/D2622/ D5453	ISO 20846
10	LEAD CONTENT				NIL	D 3237/ D 5059	EN 237
11	EXISTENT GUM (WASHED)		Mg/100ml		5	D 381	
12	COPPER CORROSION (3 HOURS AT 50 °C)		SCALE		CLASS 1	D 130	
13	INDUCTION PERIOD AT 100 °C		MINUTES	360		D 525	
14	COLOR – GREEN (ABSORBANCE AT MAXIMUM WAVE LENGTH) (SEE NOTE 5)				0.16	(SEE NOTE 6 )	
15	Mn CONTENT (SEE NOTE 1)				NIL	D 3831	
16	Fe CONTENT (SEE NOTE 1)				NIL	D 5863	

## MOTOR GASOLINE SPECIFICATION

TEST	ANALYSIS	UNITS	LIMITS		TEST METHOD	
			MIN	MAX	ASTM	EN
1	DENSITY @ 15° C	Kg/m3	720	775	D 1298 D 4052	ISO 3675 ISO 12185
2	RESEARCH OCTANE NUMBER (SEE NOTE 1)		92		D2699	ISO 5164
3	MOTOR OCTANE NUMBER		81		D2700	ISO 5163
4	REID VAPOR PRESSURE (SEE NOTE 2)					
4.1	SUMMER	KPA		60*	D323	
4.2	WINTER	KPA		70*		
5	DISTILLATION :	%V/V				
5.1	INITIAL BOILING POINT	°C	24	40	D 86	ISO 3405
5.2	EVAPORATED AT 100 °C	%V/V	46	57		
5.3	EVAPORATED AT 150 °C	%V/V	75	87		
5.4	FINAL BOILING POINT	°C	190	215		
5.5	RESIDUE	%V/V		2		
6	HYDROCAROBN ANALYSIS :					
6.1	OLEFINS	%V/V		18	D1319	ISO 22854
6.2	AROMATICS	%V/V		35	D1319	ISO 22854
6.3	BENZENE	%V/V		1	D2267	ISO 22854
7	OXYGEN CONTENT	%M/M		2.7		ISO 22854
8	ALCOHOL	%V/V		ZERO		ISO 22854
9	SULFUR	mg/kg		50		ISO 20846
10	LEAD CONTENT	g/l		0.005	D 3237	IN 237
11	EXISTENT GUM (WASHED)	Mg/(100ml)		5		D 381
12	COPPER CORROSION (3 HOURS AT 50 °C)	SCALE		CLASS 1		D 130
13	INDUCTION PERIOD AT 100 °C	MINUTES	360			D 525
14	COLOR – GREEN (SEE NOTE 3)	MG/L		1		IP 17
15	Mn CONTENT (SEE NOTE 1)			ZERO	D 3831	
16	Fe CONTENT (SEE NOTE 1)			ZERO	D 5863	

**Note 1:** The Octane Enhancer Agents Containing: Metals (LIKE FE, MN, PB,...).Aniline and its derivatives (Like N- Methyl Aniline ,N-N- dimity Aniline,...) And Chlorine Contain Agents (like Dichloroethane , 1, 2 Dichloropropane,... ) Aren't Permitted. Any other type of the octane enhancer additives needs the Oil Products Specification committed approval.

**Note 2:** The RVP of the cargo should be MAX 60 Kpa during April 4th to October 7th. RVP should be MAX 70 for the rest of the year.

**Note 3:** Dye quantity should be about 1 Mg/L.

(The color of dye shall be green otherwise mentioned by buyer)

Please note dye will be placed on board of vessel and will not be mixed.

MOTOR GASOLINE 95 RON UNLEADED MEETING NIOC SPECIFICATIONS:

<u>TEST METHOD</u>	<u>UNIT</u>	<u>SPECIFICATION</u>	<u>TEST METHOD</u>
DENSITY AT 15 DC	KG/M3	TO BE REPORTED	ASTM D - 1298
DISTILLATION:			ASTM D - 86
I.B.P.	DC	TO BE REPORTED	ASTM D - 86
10 PCT EVAPORATED	DC	65 MAX	ASTM D - 86
50 PCT EVAPORATED	DC	115 MAX	ASTM D - 86
90 PCT EVAPORATED	DC	180 MAX	ASTM D - 86
F.B.P EVAPORATED	DC	210 MAX	ASTM D - 86
RESIDUE	VOL.PCT	1.50 MAX	ASTM D - 86
LOSS	VOL.PCT	1.50 MAX	ASTM D - 86
SULPHUR TOTAL	WT PCT	0.10 MAX	ASTM D - 1266
CORROSION 3HRS AT 50DC		NO.1 A	ASTM D - 130
VAPOR PRESSURE, REID @37.8 DC	KPA	<u>SEE NOTE 1</u>	ASTM D - 323
GUM EXISTENT (AIR JET)	MG/100ML	4.0 MAX	ASTM D - 381
INDUCTION PERIOD AT 100DC	MINS	480 MIN	ASTM D - 525
METALLIC LEAD	G/L	0.013 MAX	ASTM D - 3227
COLOUR (LOVI BOND) <u>SEE NOTE 2</u>		RED OR BLUE (1 KG/1000 M3)	IP 17
OCTANE NUMBER (RESEARCH)		95 MIN	ASTM D - 2699
MERCAPTAN CONTENT	PPM	5 MAX	ASTM D - 3227
OR DOCTOR TEST		NEGATIVE	ASTM D - 484
MTBE	M/M PCT	REPORT	<u>SEE NOTE 3</u>
OXYGEN	WT PCT	2.7 MAX	<u>SEE NOTE 3</u>
BENZENE	VOL.PCT	3.0 PCT	GC
AROMATIC	VOL.PCT	45.0 PCT	C OR D1319
ALCOHOL <u>SEE NOTE 4</u>	VOL.PCT	NIL	ASTM D4815

NOTE 1: FROM 21ST NOVEMBER TO 20TH MARCH 69 MAX  
 FROM 21ST MARCH TO 20TH MAY 62 MAX  
 FROM 21ST MAY TO 21ST SEPTEMBER 55 MAX  
 FROM 22ND SEPTEMBER TO 20TH NOVEMBER 62 MAX

NOTE 2: DYE ADDITION SHOULD BE ABOUT 1 MG/LIT.

NOTE 3: OXYGEN CONTENT M/M PCT IN THE BLENDED GASOLINE CAN BE DETERMINED AS FOLLOWS:  
 $M/M \text{ PCT OXYGEN} = (0.1353 / \text{DENSITY OF GASOLINE}) \times \text{VOL PCT MTBE}$

NOTE 4: THE CARGO SHOULD BE FREE OF ALCOHOL (ETHANOL, METHANOL, ETC.) AND IN CASE THAT ALCOHOL BE FOUND IN THE CONTENT OF THE CARGO, BUYER HAS THE RIGHT TO REJECT THE CARGO.

THE LATEST ISSUES OF THE RELEVANT TEST METHODS SHALL BE USED.



# HEAVY CRUDE OIL

SP.GR @15.56/15.56 °C: 0.8763

FRAC. NO	BOILING RANGE OF FRAC.@760 mmHg°C	WEIGHT PERCENT	CUTTING RANGE WT%	SP.GR @15.56 /15.56 °C	VOLUME PERCENT	CUTTING RANGE VOL %
1	IBP-15	2.15	2.15	0.5375	3.51	3.51
2	15-65	2.99	5.14	0.6442	4.07	7.58
3	65-100	4.39	9.53	0.7106	5.41	12.99
4	100-125	3.16	12.69	0.7442	3.72	16.71
5	125-150	3.59	16.28	0.7643	4.12	20.83
6	150-175	3.96	20.24	0.7797	4.45	25.28
7	175-200	3.25	23.49	0.7926	3.59	28.87
8	200-225	3.91	27.40	0.8123	4.22	33.09
9	225-250	3.23	30.63	0.8241	3.43	36.52
10	250-275	4.08	34.71	0.8394	4.26	40.78
11	275-300	3.93	38.64	0.8561	4.02	44.80
12	300-325	4.12	42.76	0.8575	4.21	49.01
13	325-350	4.23	46.99	0.8795	4.21	53.22
14	350-385	5.58	52.57	0.8919	5.48	58.70
15	385-425	2.65	55.22	0.9236	2.52	61.22
16	425-450	5.75	60.97	0.9316	5.41	66.63
17	450-475	5.30	66.27	0.9473	4.91	71.54
18	475-500	3.53	69.80	0.9556	3.24	74.78
19	500-530	3.68	73.48	0.9640	3.34	78.12
20	530-565	4.55	78.03	0.9780	4.08	82.20
21	565+	21.97	100.00	1.0815	17.80	100.00



## HEAVY END

QUALITY				
ANALYSES & METHODS			HEAVY END	
TEST	METHOD	UNIT	GUARANTEE RANGE	RESULT
Sp.Gr @ 60 °F	ASTM D 4052	-	0.8-0.84	0.8147
Density		Kg/L	800-840	814.3
<b>Distillation</b>			-	-
<b>IBP</b>	ASTM D 86	°C	-	200
<b>10% recovered at</b>	ASTM D 86	°C	-	210
<b>50% recovered at</b>	ASTM D 86	°C	300 Max	235
<b>90% recovered at</b>	ASTM D 86	°C	-	290
<b>FBP</b>	ASTM D 86	°C	385 Max	352
<b>Recovered @ 150 °C</b>	ASTM D 86	Vol%	-	-
<b>Recovered @ 250 °C</b>	ASTM D 86	Vol%	65 Max	65
<b>Recovered @ 300 °C</b>	ASTM D 86	Vol%	-	92
<b>Recovered @ 350 °C</b>	ASTM D 86	Vol%	85 Min	97
<b>Recovered @ 357 °C</b>	ASTM D 86	Vol%	90 Min	-
<b>Colour,Saybolt</b>	ASTM D 1500	-	2.5 Max	0.5
<b>Flash Point</b>	ASTM D 93	°C	55 Min	79
<b>T.Sulphur</b>	ASTM D 4294	ppm	<2000	1700
<b>Cloud Point</b>	ASTM D 2500	ppm	2 Max	1
<b>Pour Point</b>	ASTM D 97	-	-3 Max	-4
<b>Copper Corrosion</b>	ASTM D 130	Scale	Class 1	Class 1
<b>CETANE INDEX</b>	ASTM D 976	mg/kg	46 Min	52.51
<b>Water &amp; Sediment</b>	ASTM D 2709	Vol%	0.05 Max	-
<b>Carbon Residue</b>	ASTM D 4530/189	% wt	0.3 Max	0.02
<b>ASH CONTENT</b>	ASTM D 482	% wt	0.01 Max	0

## Heavy Naphtha Specification

<b>Analysis</b>	<b>Unit</b>	<b>limit</b>	<b>Test Method</b>
Density @ 15.0 °C	Kg/m <sup>3</sup>	0.7580 Max	ASTM D1298
Distillation	°C		ASTM D86
10 % Evaporated Temp	°C	120 Max	ASTM D86
50 % Evaporated Temp	°C	115 Min	ASTM D86
95 % Evaporated Temp	°C	150-170	ASTM D86
F.B.P	°C	180 Max	ASTM D86
Residue	% Vol	1.5 Max	ASTM D86
Loss	%Vol	1 Max	ASTM D86
Total Sulphur	% Wt	0.08 Max	ASTM D1266
Corrosion 3 HRS	50°C	No 1 strip	ASTM D130
Vapour Pressure	K.Pa	27 Max	ASTM D323
Mercaptan Content	ppm	70 Min	ASTM D3227
Colour, Saybolt	-	25 Min	ASTM D156
Paraffins Content	%Vol	50 Min	ASTM D1319
Oleffins Content	%Vol	1.5 Max	ASTM D1319
(Naphthenes + Aromatics) Content	%Vol	40 Min	ASTM D1319
Lead (PB) P.P.B	UOP	40 Max	350-68T
C/H Ratio	Estimated	6 Max	Calculate
Gum Existent (air jet)	Mg/100ml	2.5 Max	ASTM D381
Oxygenates	ppm	60 Max	ASTM D4815

## Hydrogenated Pyrolysis Gasoline (H.P.G)

Characteristic	Test Method	Unit	Value
Density @ (15.6°C)	ASTM D-1298	gr/cm <sup>3</sup>	0.78 - 0.82
Copper Corrosion	ASTM D-130	--	No. 1a
Total Sulphur	ASTM D-3120	ppm	300 max.
Lead Content	ATOMIC*	ppb	5 Max
I.B.P.	ASTM D-86	°C	34 min.
F.B.P.	ASTM D-86	°C	210 max.
Aromatics	G.C	wt %	50 min.
R.V.P.	ASTM D-323	psi	7 - 12
Color Saybolt	ASTM D-156	--	+10

## K CONDENSATE

ANALYSIS	TEST METHOD	RESULT
		SHORE
SPECIFIC GRAVITY 60/60	ASTM. D-4052	0.7275
API GRAVITY	CALCULATED	63.00
WATER CONTENT	ASTM. D-1533	*****
DISTILLATION	D-86	*****
I. B. P		35
5% RECOVERED		46
10%		55
30%		80
50%		102
70%		127
90%		180
95%		215
F. B. P		255
LOSS%		1.4
RESIDUE%		1.6
R. S. H (PPM.)	D-1219	158
R. V. P (PSI. @ 100 of)	D-323	7.8



## Light Naphtha Guaranteed Specification

<b>Analysis</b>	<b>Unit</b>	<b>limit</b>	<b>Test Method</b>
Density @ 15.0 °C	Kg/m <sup>3</sup>	700 max	ASTM D1298
Distillation	°C		ASTM D86
I.B.P	°C	35 min	ASTM D86
10 % Evaporated Temp	°C	60 max	ASTM D86
50 % Evaporated Temp	°C	85 min	ASTM D86
95 % Evaporated Temp	°C	125 max	ASTM D86
F.B.P	°C	150 max	ASTM D86
Residue	% Vol	1.5 max	ASTM D86
Loss	%Vol	1max	ASTM D86
Total Sulphur	% Wt	0.03 max	ASTM D1266
Corrosion 3 HRS	50°C	No 1 strip	ASTM D13
Vapour Pressure	K.Pa	75 max	ASTM D32
Mercaptan Content	PPM	25 max	ASTM D322
Colour, Saybolt	-	20 min	ASTM D156
Paraffins Content	%Vol	70 min	ASTM D131
Oleffins Content	%Vol	2 max	ASTM D131
Naphthenes Content	%Vol	10 min	ASTM D131
Aromatics Content	%Vol	5 min	ASTM D131
Lead (PB) P.P.B	Uop	40 max	350-68T
C/H Ratio	Estimated	5.5 max	Calculate
Gum Existent (air jet)	Mg/100ml	3 max	ASTM D381

# LPG CERTIFICATE OF QUALITY

<b>PRODUCT: LPG</b>			<b>FORM CODE: FP820-04 REV: 02</b>
<b>ANALYSES &amp; METHODS (Latest Issue of test methods used. Unless otherwise stated)</b>			<b>RESULTS</b>
<b>AVERAGE SAMPLES SHORE TANK</b>			<b>LIMITED</b>
<b>ANALYSIS</b>	<b>UNIT</b>	<b>TEST METHOD</b>	<b>RESULT</b>
<b>ETHANE HYDROCARBON</b>	<b>VOL%</b>	<b>ASTM D-2163</b>	<b>MAX 0.2</b>
<b>PROPANE HYDROCARBON</b>	<b>VOL%</b>	<b>ASTM D-2163</b>	<b>25-35</b>
<b>BUTANE HYDROCARBON</b>	<b>VOL%</b>	<b>ASTM D-2163</b>	<b>65-75</b>
<b>PENTANE HYDROCARBON</b>	<b>VOL%</b>	<b>ASTM D-2163</b>	<b>MAX 2.0</b>
<b>HYDROGEN SULPHUR</b>		<b>ASTM D-2163</b>	<b>NEG</b>
<b>MERCAPTANE SULPHUR</b>	<b>gram/m<sup>3</sup></b>	<b>IP-104(A)</b>	<b>MAX 0.23</b>

**M.CONDENSATE**  
**CERTIFICATE OF QUALITY**

<b>ANALYSES&amp;METHOD-(LATEST ISSUE OF TEST METHOD USED UNLESS OTHERWISE STATED)</b>	<b>RESULT</b>	
SHORE TANKS SAMPLE (INDIVIDUAL)	1105	1106
DENSITY @ 15.0 C KG/M3 ASTM D-1298	817.6	817.6
DISTILLATION D-86	---	---
I.B.P TEMP ^C	60	59
10% RECOVERY TEMP ^C	123	122
20% RECOVERY TEMP ^C	151	151
50% RECOVERY TEMP ^C	261	260
90% RECOVERY TEMP ^C	390	390
F.B.P ^C	---	---
RESIDUE %VOL	---	---
LOSS %VOL	---	---
TOTAL SULPHUR %WT D-1552	0.55	0.55
CORROSION 3 HRS 50 ^C D-130	<b>(NO 1 STRIP)</b>	
VAPOUR PRESSURE LB/IN2 D-323	---	---
COLOUR D-1500	7.5	7.5
PARAFFINS CONTENT %VOL D-1319	---	---
OLEFFINS CONTENT %VOL D-1319	---	---
NAPHTHENES CONTENT %VOL D-1319	---	---
AROMATICS CONTENT %VOL D-1319		
LEAD (PB)P.P.B UOP 350-68T	---	---
C/H RATIO (ESTIMATED)	6.28	6.28
GUM EXISTENT (AIR JET)mg/100ml D-381	---	---
WATER AND SEDIMENT %VOL D-2709	0.005	0.005

## S8N CRUDE OIL

**\*SP.GR @15.56/15.56 °C: 0.9397**

FRAC. NO	BOILING RANGE OF FRAC.@ 760 mmHg°C	WEIGHT PERCENT	CUTTING RANGE WT%	SP.GR @15.56/15.56 °C	VOLUME PERCENT	CUTTING RANGE VOL %
1	IBP-15	0.70	0.70	0.5514	1.19	1.19
2	15-65	2.72	3.42	0.6525	3.92	5.11
3	65-100	2.02	5.44	0.7159	2.65	7.76
4	100-125	2.01	7.45	0.7380	2.56	10.32
5	125-150	1.49	8.94	0.7616	1.84	12.16
6	150-175	2.42	11.36	0.7791	2.92	15.08
7	175-200	2.33	13.69	0.7982	2.74	17.82
8	200-225	2.18	15.87	0.8074	2.54	20.36
9	225-250	2.94	18.81	0.8302	3.33	23.69
10	250-275	2.64	21.45	0.8436	2.94	26.63
11	275-300	2.64	24.09	0.8599	2.88	29.52
12	300-325	3.09	27.18	0.8636	3.36	32.88
13	325-350	3.37	30.55	0.8836	3.58	36.46
14	350-385	5.24	35.79	0.9036	5.45	41.91
15	385-425	3.37	39.16	0.9365	3.38	45.29
16	425-450	3.95	43.11	0.9461	3.92	49.21
17	450-475	6.34	49.45	0.9630	6.19	55.40
18	475-500	3.36	52.81	0.9732	3.24	58.64
19	500-530	4.01	56.82	0.9842	3.83	62.47
20	530-552	16.35	73.17	0.9998	15.37	77.84
21	552+	26.83	100.00	1.1375	22.16	100.00

- \* :WATER FREE
- SORUSH CRUDE OIL QUALITY IS VERY VARIABLE.



### S.P CONDENSATE (2,3)

**TABLE 1: GENERAL DATA**

SPECIFICATION	RESULT	TEST METHOD
SPECIFIC GRAVITY @ 15.56/15.56 M°C	0.7403	ASTM D-4052
API	59.64	ASTM D-1298
SULPHUR CONTENT WT%	0.25	ASTM D-2622
NITROGEN CONTENT PPM	14	ASTM D-4629
MERCAPTAN CONTENT WT.%	0.19	UOP -163
*H2S CONTENT PPM	11.6	UOP-163
WATER CONTENT WT.%	0.13	ASTM D-6304
PONA TEST:		ASTM D-1319
SATURATE CONTENT VOL.%	85.2	
OLEFIN CONTENT VOL.%	0.3	
AROMATIC CONTENT VOL.%	14.5	
KINEMATIC VISCOSITY @ 0 C mm2/sec	1.2920	ASTM D-445
KINEMATIC VISCOSITY @ 10 C mm2/sec	0.8992	ASTM D-445
KINEMATIC VISCOSITY @ 20 C mm2/sec	0.8179	ASTM D-445
POUR POINT °C	<-30	ASTM D-97
*R.V.P PSI	10.98	ASTM D-5191
COLD FILTER PLUGGING POINT °C	<-30	IP-309
WAX CONTENT	0.52	BP-237
COPPER CORROSION,3hrs,@50C	2a	ASTM D-130
ACIDITY TOTAL mgrKOH/gr	<0.05	ASTM D-664
ANILINE POINT °C	59.0	IP-2
MOLECULAR WEIGHT	121	OSMOMAT
COLOR Saybolt	+20	ASTM D-156
BROMINE NUMBER gr Br/100gr	2.44	IP-130
LEAD PPM	<1.0	UOP-391
DISTILLATION @ 760 mmHg °C		ASTM D-86
IBP °C	35.9	
5%EVAPORATED °C	55.5	
10%EVAPORATED °C	64.8	
20%EVAPORATED °C	82.5	
50%EVAPORATED °C	142.5	
90%EVAPORATED °C	295.1	
FBP °C	323.9	
RECOVERY VOL.%	97.7	
RESIDUE VOL.%	0.1	
LOSS% VOL.%	2.2	

**SOUR HEAVY NAPHTHA  
CERTIFICATE OF QUALITY**

<b>PRODUCT: SOUR HEAVY NAPHTHA</b>			<b>FORM CODE: FP820-05 REV: 02</b>
<b>ANALYSES &amp; METHODS (Latest Issue of test methods used. Unless otherwise stated)</b>			<b>RESULTS</b>
<b>AVERAGE SAMPLES SHORE TANK</b>			<b>LIMITED</b>
<b>SPECIFIC GRAVITY</b>	<b>@ 60 °F/ 60 °F</b>	<b>ASTM D-1298</b>	<b>0.70 - 0.73</b>
<b>GRAVITY</b>	<b>A.P.I</b>	<b>CALCULATED</b>	<b>Cal.</b>
<b>DISTILLATION I. B. P</b>	<b>°C</b>	<b>ASTM D-86</b>	<b>MIN 35</b>
<b>DISTILLATION F. B. P</b>	<b>°C</b>	<b>ASTM D-86</b>	<b>MAX 200</b>
<b>RECOVERY</b>	<b>%VOL</b>	<b>ASTM D-86</b>	<b>REPORT</b>
<b>RESIDUE</b>	<b>%VOL</b>	<b>ASTM D-86</b>	<b>REPORT</b>
<b>LOSS</b>	<b>%VOL</b>	<b>ASTM D-86</b>	<b>REPORT</b>
<b>TOTAL SULPHUR</b>	<b>%WT</b>	<b>ASTM D-5453</b>	<b>MAX 0.05</b>
<b>VAPOUR PRESSURE REID</b>	<b>PSI</b>	<b>ASTM D-323</b>	<b>MAX 9.0</b>
<b>COLOUR SAYBOLT</b>		<b>ASTM D-156</b>	<b>MIN 25</b>
<b>DOCTOR TEST</b>		<b>IP - 30</b>	<b>POS</b>

## S.P CONDENSATE (P1)

**TABLE 1: GENERAL DATA**

SPECIFICATION	RESULT	TEST METHOD
SPECIFIC GRAVITY @ 15.56/15.56 °C	0.7441	ASTM D-4052
API	58.66	ASTM D-1298
SULPHUR CONTENT WT%	0.22	ASTM D-2622
NITROGEN CONTENT PPM	16	ASTM D-4629
MERCAPTAN CONTENT WT.%	0.16	UOP -163
*H <sub>2</sub> S CONTENT PPM	<1	UOP-63
WATER CONTENT WT.%	0.10	ASTM D-6304
PONA TEST:		ASTM D-1319
SATURATE CONTENT VOL.%	87.6	
OLEFIN CONTENT VOL.%	0.3	
AROMATIC CONTENT VOL.%	12.1	
KINEMATIC VISCOSITY @ 0 °C mm <sup>2</sup> /sec	0.9477	ASTM D-445
KINEMATIC VISCOSITY @ 10 °C mm <sup>2</sup> /sec	0.8795	ASTM D-445
KINEMATIC VISCOSITY @ 20 °C mm <sup>2</sup> /sec	0.8097	ASTM D-445
POUR POINT °C	<-30	ASTM D-97
*R.V.P PSI	11.40	ASTM D-323
COLD FILTER PLUGGING POINT °C	<-30	IP-309
WAX CONTENT	0.30	BP-237
COPPER CORROSION,3hrs,@50C	2a	ASTM D-130
ACIDITY TOTAL mgrKOH/gr	<0.05	ASTM D-664
ANILINE POINT °C	59.0	IP-2
MOLECULAR WEIGHT	120	OSMOMAT
COLOR Saybolt	+19.8	ASTM D-156
BROMINE NUMBER gr Br/100gr	1.28	IP-130
LEAD PPM	<1.0	UOP-391
DISTILLATION @ 760 mmHg °C		ASTM D-86
IBP °C	31.2	
5%EVAPORATED °C	49.9	
10%EVAPORATED °C	59.7	
20%EVAPORATED °C	80.7	
50%EVAPORATED °C	136.6	
90%EVAPORATED °C	284.6	
FBP °C	321.0	
RECOVERY VOL.%	97.7	
RESIDUE VOL.%	0.1	
LOSS% VOL.%	2.2	

## fuel oil 380

	Test	Method	Equipment reference	RESULT	until
1	Density at 15°C	ASTM D1298-12b	PT-HK-1028	980-990	KG/M3
2	Viscosity at 50°C	ASTM D445-15a	CANON CT – 500	365-385	MM/S2
3	Water by extraction	ASTM D95-13	-----	0.7	VOL%
4	Sulphur content	ASTM D14294-16	RX-360SH	2.6-3.3	Wt%
5	Pour point	ASTM D97-16	Thermometer 5C	<-18	°C
6	Sediment by extraction	ASTM D473-07	KIA-2204	0.048	Wt%
7	Flash point(close cup)	ASTM D93-16	TANAKA-apm-8	Min 60.0	°C
8	Carbone residue	ASTM D189-06	KIA-2204	12.2	Wt%
9	Ash content	ASTM D482-14	KIA-2204	Max 0.10	Wt%
10	TSP	ASTM D4870	-----	Max 0.10	%m/m
11	Zinc	ASTM D1976	-----	Max 10	ppm
	Sodium			Max 100	
	Nickel			Max 4.5	
	Aluminum			Max 10	
	Calcium			Max 5	
	Silicon			Max 3	
	Vanadium			Max 5	
	Ferrous			Max 1	
magnesium	Max 1				

TURKMENBASHI, TURKMENISTAN GAS OIL L - 0,2 - 62

The undersigned Independent Surveyor herewith declares that the quality of cargo loaded by above mentioned vessel as follows:

Quality characteristics of product \* :

TEST		Result
	UNIT	Shore tank No. 145
Density at 20 oC	kg/m <sup>3</sup>	823.4
Cetane Index		48
Distillation		
- 50 % volume recovered	oC	270
- 96 % (final Boiling Point)	oC	338
Kinematic Viscosity at 20 oC	cSt	4.452
Pour Point	oC	-12
Cloud Point	oC	-5
Flash Point (closed cup)	oC	71
Sulphur Content	mass %	0.14
Mercaptan Sulphur Content	mass %	0.0030
Hydrogen Sulphide Content	mass %	absence
Copper Strip Test		Passed
Water Soluble Acids and Alkalides		absence
Concentrate Fraction of Resin	mg/100 cm <sup>3</sup>	10
Acidity	mg KOH/100 cm <sup>3</sup>	5.34
Iodine Value	Value/100 g	0.9
Ash Content	mass %	0.0032
Carbon Residue - Conradson		0.09
Filtration Factor		1.3
Sediments Content	mass %	absence
Water Content	mass %	absence