CST – 380 FUEL OIL

SPECIFICATION (CST – 380 FUEL OIL)

CST 380 FUEL OIL			
Test	**Unit**	**Specification**	**Test Method**
Density @ 15DC	KG/M^3	MAX 990	D-1298
Kinematic 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

REBCO GOST 9965-76

Specification

№	DESCRITION	VALUE
1	Density at 20 °C gr/sm^3, max	0, 870
2.	Sulfur content, %, max	1,8
3.	Paraffin content, %, max	6,0
4.	Water and sediments content, %, max	0,1
5.	Distillation, % recovered	at 200 °C min 21.0 at 300 °C min 41.0 at 350 °C min 50.0
6.	Chlorine salts content, mg/dm^3, max	100
7.	Density deg API at 60 °F, min	32,0
8.	Salt content (NaCl), mg/L	17,3
9.	Ash content, % max	0,05
10.	Mercaptans, mg/kg	< 1
11.	Pour Point, degr.C	15
12.	Kinematic viscosity, deg. 20C, cst	4,92
13.	Hydrogen Sulfide, mg/kg	<1
14.	Nitrogen, mg/l	342
15.	KOH Number, mg/g	0,39

BASE OIL SN 150

Specification of base OIL N 70 / N100 / N 150 / N300

PARAMETERS	UNIT	N 70	N 85	N 100	N 150	N 300
Density at 15°C	kg/m³	860	860	860	865	865
Kinematic viscosity at 40°C	mm²/s	12,1 – 12,8	15,0 – 18,5	20,6 – 22,6	29,0 – 35,0	62,0 – 68,0
Kinematic viscosity at 100°C	mm²/s	3,0	3,5	4,2	5,5	8,9
Viscosity index		85	94	95	110	110
Flash point	°C	170	190	190	220	260
Pour point	°C	-12	-15	-15	-15	-12
ISO colour		0,5	0,5	0,5	< 1,0	1,5
TAN	mg KOH/g	0,01	0,01	0,01	0,01	0,01
CCR	%	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01
Volatility Noack	%	-	-	-	12,0	5,0
Sulphur	%	< 0,01	< 0,01	< 0,01	< 0,01	< 0,01
PCA IP 346	%	< 1,5	< 1,5	< 1,5	< 1	< 1
Simdist 5% - 95%	°C	-	345 415	350 460	390 465	420 530

AUTOMOTIVE GAS OIL (AGO)

SPECIFICATIONS, QUALITY AND STANDARD: DIESEL AUTOMOTIVE GAS OIL (AGO)

GUARANTEED SPECIFICATION OF DIESEL AUTOMOTIVE GAS OIL (AGO)

PARAMETER	TEST METHOD IP/ASTM	LIMITS
Specific Gravity 15/15 deg C	160 / D1298	0.820min, 0.870 max
Distillation: Recovered @ 357 deg C (% Vol. EBP deg.)	123 / D86	90 min, 385 max
Color (ASTM)	D 150000	3 max
Flash Point (deg. C)	34 / D93	66
Total Sulphur (% wt)	x-ray	0.3 max
Copper Corrosion (3 hr @ 100 deg. C)	154 / D130	No. 1 Strip max
Kinematic Viscosity @ 38 deg. C (Cst)	71 / D445	1.6 – 5.5
Cloud Point (deg. C)	219 / D2500	4.4 max
Carbon residue (% wt.)	D189	0.15 max
Acidity (inorganic acid)		Nil
Total Acid Number (mg KOH/gm)	139 / D974	0.50 max
Ash Content (% wt.)	4 / D482	0.01 max
Sediment (% wt.)	53 / D473	0.01 max
Water by Distillation	74 / D95	0.05% max
Diesel Index	IP 21	47 min

LIGHTCYCLE OIL (LCO)

SPECIFICATION :LCO

No	TEST ITEM	TEST METHOD	LIMIT
1	Density@15°C kg/L	ASTM D4052	Min 0.82 Max 0.90
2	Color ASTM	ASTM D1500	Brownish Color
3	Cetane Index (D4737)	ASTM D4737	Min 35.00
4	Carbon MCRT wt%	ASTM D4530	Max 0.20
5	Pour Point degree °C	ASTM D97	Min -25 Max -5
6	Flash Point PM degree °C	ASTM D93	Max 63
7	Distillation degree °C	ASTM D86	
8	IBP		Report
9	50%		Report
10	90%		Max 370
11	95%		Max 380
12	Final Point		Max 390
13	Recovery @ 250 degree °C, vol%		Max 90
14	Sulphur mass%	ASTM D4294	Max 0.15
15	Viscos KIN @40 degree mm, cst	ASTM D445	Max 4.0
16	Moisture content wtppm	ASTM D6304	Max 1000
17	Ash mass%	ASTM D482	Max 0.05
18	Aromatics wt%	IP 391	Min 50 Max 80
19	BS&W, wt ppm		Max 1000
20	Saturates %	ASTM D1319	Min 20 Max 50

ULTRA-LOW SULPHUR DIESEL (EN590)

SPECIFICATION – DIESEL EN 590 (10PPM)

TEST	UNITS	LIMITS	METHOD
Density at 15°C *	kg/m^3	820.0 – 860.0	ASTM D4052
ASTM Color *		2.0 Max.	ASTM D6045
Flash Point P.M.C.C*	°C	60 Min.	ASTM D93A
Total Sulphur	mg/kg	10 Max.	ASTM D2622
Copper Corrosion, 3hrs at 100°C		1.0 Max.	ASTM D130
Kinematic Viscosity at 40°C	cSt	2.0 – 4.5	ASTM D445
Pour Point *	°C	+6 Max.	ASTM D5950
Ash Content	wt%	0.01 Max.	ASTM D482
Water Content	mg/kg	200 Max.	ASTM D6304
Sediments by Centrifuge	vol %	0.01 Max.	ASTM D2709
Derived Cetane Number		51 Min.	ASTM D6890
Cetane Index		46 Min.	ASTM D4737A
FAME Content	vol %	7.0 Max.	EN 14078
Lubricity (HFRR)(WSD) @ 60°C		460 Max.	EN 12156-1
Distillation			
50 % Recovery	°C	Report	ASTM D86
90 % Recovery	°C	Report	
95 % Recovery	°C	360 Max.	
F.B.P	°C	Report	

LIOUIDIFIED PETROLIUM GAS (LPG)

LPG Specifications

QUALITY	GHV	1,000 – 1,130 Btu/Scf
	Methane	Not less than 88% molecular percentage (88MOL%); Not higher than 98% molecular percentage (98MOL%);
	Other components	For the components and substances listed below, such LNG shall not contain more than the following: i. Nitrogen (N2) 2 MOL%; ii. Ethane (C2), 15 MOL%; iii. Propane (C3), 4 MOL%; iv. Butanes (C4), 2.5 MOL%; v. Pentanes (C5) and heavier, 0,5 MOL%; vi. Hydrogen sulfide (H2S), 5.7 mg/Nm3; vii. Total sulfur content, not more than 30 mg/Nm3; viii. Mercaptans, not ore than 7 mg/Nm3; and ix. Mercury (Hg), not more than 50 mg/Sm3

MAZUT

FUEL OIL / MAZUT C.St 280 SPECIFICATIONS – M			
PROPERTY	UNIT	VALUE	TEST METHOD
DENSITY @ 15 °C	kg / m³	970 max.	ASTM D1298
KINEMATIC VISCOSITY @ 50 °C	C.St	280 max.	ASTM D445
VISCOSITY RODWOOD @ 37.7 °C	secs	2500 max.	Calculated
POUR POINT	°C	24 max.	ASTM D97
FLASH POINT	°C	65 min.	ASTM D93
TOTAL SULFUR CONTENT	% Wt.	3.5 max.	ASTM D1552
CARBON RESIDUE (CONRADSON)	% Wt.	15 max.	ASTM D189
ASH CONTENT	% Wt.	0.05 max.	ASTM D482
WATER	% Vol.	0.5 max	ASTM D1796
CALORIFIC VALUE (HIGHER)	Mj / kg	41.8 min.	Calculated

DIESEL GAS D2 OIL GOST 305-82

COMPONENTS: THE AGREED TABLE FOR GASOIL DIESEL 500PPM (0.05%WT SULPHUR) SPECIFICATIONS

GASOIL D2 GOST 305 - 82

No	Property	Test Methods ASTM	Limits
1	Sulphur Content, mg/kg	D2622 / D5453	Max 500
2	Cetane Index	D4737	Min 46
3	Distillation,°C :90% Vol	D86	Max 360
4	Flash Point, PMCC, °C	D93	Min 55
5	Kinematic viscosity at 40 °C , Cst	D445	Min 2.0 – Max 4.5
6	Conradson carbon residue on 10% distillation residue, %wt	D4530 / D189	Max 0.2
7	Pour Point, °C	D97	Max +6
8	Ash content, %wt	D482	Max 0.01
9	Water content, mg/kg	E203	Max 200
10	Particulate Contaminant, mg/l	D2276	Max 10
11	Copper Strip Corrosion at 50 °C/3hrs	D130	Max No.1
12	Density at 15 °C , kg/m3	D1298 / D4052	Min 820- Max 850
13	Colour	D1500	Max 1.0
14	Evaluating Lubricity, µm,	D 6079	Max 460
15	Appearance	D 4176	Bright and clear
16	Oxydation stability , mg/100ml	D 2274	Max 1.5
17	Total Acid Number mg KOH/G	D974	Max 0.25
18	Strong Acid Number mg KOH/G, max	D974	Nil
19	Mercaptan Sulfur		Max 0.01

UREA 46% PRILLED & GRANULUR

Urea Fertilizer Specification

Urea Prilled Test Standard: GB2440-2001

Item	Specification	Test Result
Total Nitrogen, % ≥	46	46.6
Biuret, % ≤	1.0	0.8
Moisture (H2O)，% ≤	0.5	0.3
Granulation d 0.85-2.80mm,% ≥	90	99
Size	0.85-2.8mm	

Urea Granular Test Standard: GB2440-2001

Item	Specification	Test Result
Total Nitrogen, % ≥	46	46.5
Biuret, % ≤	1.0	0.8
Moisture (H2O)，% ≤	0.5	0.4
Granulation d 2-4.75mm,% ≥	90	94
Size	2-4.75mm	

BITUMEN 40/50, 60/70 & 80/100


PRODUCT

PRODUCT SPECIFICATION - BITUMEN 50/70

SPECIFIC GRAVITY@25/25°C	1.01/1.06	D.70
PENETRATION @ 25° C	50/70	D.5
SOFTENING POINT °C	49-56	D.36
DUCTILITY @ 25°C	100 min	D.113
DROP IN PENETR. AFTER HEAT. %	20 max	D.6 & D.5
LOSS ON HEATING (WT) %	0.2 max	D.6
FLASH POINT °C	250 min	D.92
SOLUBILITY IN CS2 (WT)%	99.5 min	D.4
SPOT TEST	NEGATIVE	A.A.S.H.O.T102

LIQUIDIFIED NATURAL GAS (LNG)

SPECIFICATION : LNG

Component	Short symbol		LNG 1 [%mol]	LNG 2 [%mol]	LNG 3 [%mol]
methane	C_1		96,07	89,18	94,05
ethane	C_2		2,67	7,07	2,77
propane	C_3		0,77	2,5	0,77
n-butane	nC_4		0,18	0,69	0,15
iso-butane	iC_4		0,21	0,46	0,18
pentanes	C_5		0,01	0,01	0,01
nitrogen	N_2		0,01	0,09	2,07
Latent heat of vaporization		[kJ/kg]	508,97	505,31	502,63
Boiling temperature at normal pressure		[K]	111,8	112,6	105,8

JET FUEL GRADE-1

SPECIFICATION OF THE PRODUCT AVIATION FUEL JET A1

1	Appearance			
1.1	VisualAppearance	Clear & Bright, free from solid matter & undissolved water at ambient temperature		Clear&Bright
1.2	Color	Report	ASTM D 156 or ASTM D 6054	25
1.3	Particulate Contamination, at point of manufacture, mg/l	1.0 Max.	IP 423 / ASTM D 5425	0.80
1.4	Particulate, at point of manufacture			
1.4.1	≥ 4 µµ(c)	Report	IP 564 or IP 565	2500
1.4.2	≥ 6 µµ(c)	Report		950
1.4.3	≥ 14 µµ(c)	Report		99
1.4.4	≥ 21 µµ(c)	Report		22
1.4.5	≥ 25 µµ(c)	Report		15
1.4.6	≥ 30 µµ(c)	Report		10
2	Composition			
2.1	Total Acidity, mg KOH/gm	0.015 Max.	ASTM D 3242	0.009
2.2	AromaticHydrocarbonTypes			
2.2.1 or	Aromatics % v/v	25 Max.	IP 156 / ASTM D 1319	18.5
2.2.2	TotalAromatics % v/v	26.5 Max.	IP 346 / ASTM D 6379	18.5
2.3	Sulphur, Total % m/m	0.3 Max.	ASTM D 4294	0.25
2.4 or 2.5	SulphurMercaptan % m/m	0.003 Max.	ASTM D 3227	0.0020
2.6	Refining Component, at the point of manufacture			
2.6.1	1. Hydro processed component, % v/v	Report		
2.6.2	2. Severely Hydro processed component. % v/v	Report		
3	Volatility			
3.1	Distillation – IBP °C	-	ASTM D 86	155
	Fuel recovered 10% by volume at °C	205 Max	-	171
	Fuel recovered 50% by volume at °C	Report	-	195
	Fuel recovered 90% by volume at °C	Report	-	195
	FinalboilingpointºC	300 Max.	-	254
	Residue % volume	1.5 Max.	-	1.0
	Loss % volume	1.5 Max.	-	1.0
3.2	FlashpointºC	38 Min.	IP 170	42
3.3	Density @ 15 °Ckg/m^3	Min. 775.0 Max. 840.0	IP 365 / ASTM D 4052	799
4	Fluidity			
4.1	Freezingpoint, °C	Minus 47 Max.	IP 16 / ASTM D 2386	Minus 52
4.2	Kin. Viscosity at minus 20 °C, mm^2	8.00 Max.	IP 71 / ASTM D 445	4.10
5	Combustion			
5.1	SmokePoint, mmor	25 Min.	ASTM D 1322 / IP 57	24
	SmokePoint	19 Min.	ASTM D 1322 / IP 57	
	AndNaphtalene, % vol.	3 Max.	ASTM 1840	2.3
5.2	Specific Energy MJ/kg, Min	42.8	Annex C	43.27
6	Corrosion			
6.1	Cu Strip for 2 hours @ 100 °C	NotworsethanNo. 1	ASTM D 130	No. 1
7	ThermalStability, JETOT			
7.1	ThermalStability, JETOT		IP 323 / ASTM D 3241	
	TestTemperature, °C	Min 260		
7.2	Tuberating, visual	Less than 3 (no peacock) or abnormal colour		Zero, nopeacock

AVITION KEROSINE COLONIAL (GRADE 54) JET FUEL

AVIATION KEROSENE COLONIAL GRADE JP54 JET AVIATION FUEL

ADDITIVES			**MIN**	**MAX**	**ASTM**
ANTIOXIDANT IN HYDRO PROCESSED FUEL	MG/L		17	24	
ANTIOXIDANT NON HYDRO PROCESSED FUEL	MG/L			24	
STATIC DISSIPATER FIRST DOPING ASA-3	MG/L			1	
STADIS 450	MG/L			3	
COMBUSTION PROPERTIES					
SPECIFIC ENERGY, NET	MJ/KG		18.4		D4808
SMOKE POINT	MM			19	D1322
LUMINOMITTER NUMBER				45	D1740
NAPHTALENES	5VOL			3	D1840
PROERTY	**UNIT**	**RESULT MIN**	**RESULT MAX**	**TEST-IP METHOD**	**ASTM**
COMPOSITION					
TOTAL ACIDITY	MG KOH/G		0.01	354	D3242
AROMATICS	%VOL		22.0	158	D1318
SULPHUR, TOTAL	%MASS		0.30	107	D1266/2622
SULPHUR, MERCAPTAN	%MASS		0.003	342	D3227
DOCTOR, TEST				30	D4952
VOLATILY					
INITIAL BOILING POINT CENTIGRADE			Report	123	D96
10% VOL AT C					240
20% VOL AT C					Report
50% VOL AT C					Report
80% VOL AT C					Report
END POINT CENTIGRADE			300		
RECOVERED RESIDUALS %VOL			1.5		
LOSS %VOL			1.5		
FLESH POINT CENTIGRADE			42	170/303	D56/3828
DENSITY AT 15 C KG/M²		776	840	180/385	D1298
LOW TEMPERATURES PROPERTIES					
Freezing Point Centigrade			-40	15	D2256
CORROSION					
Corrosion, copper (2hrs at 100C)			1	154	D130
Corrosion, silver (4hrs at 50C)			1	227	
STABILITY					
Thermal stability control, temp. 280C				323	
Filter pressure, differential mm.Hg			25		
Tube deposit rating (visual)			<3		
CONTAMINATIONS					
EXISTENT GUM	MG/100ML		7	131	D361
WATER REACOIN, INTERFACE RATING			16	258	D1084
FUEL WITH STATIC DISSIPATER ADDITIVES		75			D3684
FUEL WITHOUT STATIC DISSIPATER ADDITIVE		85			
CONDUCTY					
Electrical conductivity	P3/M			Report	

D6 VIRGIN FUEL OIL

SPECIFICATION : D6 VIRGIN FUEL OIL

Method Units	Test	Result	Unit
ASTM D5002	Density and Relative Density of Crude Oils Average API Gravity	 29.7 (29.7) (Min)	 API
ASTM D1298-99	Density @15 Deg C	0.87 (0.8775) (Max)	Kg/l
ASTM D97	Pour Point of Petroleum Products Pour Point Pour Point	< -33 (-36) (BELOW ZERO) < -27.4 (-32.8) (BELOW ZERO)	 °C °F
ASTM D93-IP34	Pensky-Martens Closed Cup Flash Point Corrected Flash Point	 117 (137) (MIN)	 °F
ASTM D4294	Sulfur Content in Petroleum Products by EDXRF Sulfur Content	 0.38 (0.358) (MAX)	 Wt%
ASTM D445	Kinematic/Dynamic Viscosity Kinematic Viscosity @ 122°F / 50°C	 17.83 (18.12) (MAX)	 Mm2/s
ASTM D6304	Water Content by Coulometric Karl Fisher Titration Water Content	 0.20 (0.7) (MAX)	 Wt%
ASTM D482	Ash from Petroleum Products Average Ash	 0.279 (1.007) (MAX)	 Wt%
ASTM D2161	Conversion of Kinematic Viscosity To SUS/SFS 1Saybolt furoi viscosity 122°F	 10.9SFS	 (MAX)
ASTM D5184	Aluminum and Silicon in Fuel Oils by ICP-AES or AAS Aluminum Content Silicon Content	 102 (MAX) 93 (MAX)	 Mg/kg Mg/kg
ASTM D95	Water by Distillation, Vol%	0.70 (MAX)	Vol%
ASTM D4530.06	Carbon Residue	1.11 (MAX)	Wt%
Method Test Result Units			
IP 143 Asphlteness Heptane Insolubles			
	Asphaltene Content	0.08	Wt%
IP 501 Determination of AL,Si,V,Ni,Fe,Na,Ca,Zn,P in Fuel Oil-ICPES			
	Aluminium Silicon Sodium Vanadium Calcium Zinc Phosphorus Iron	372 187 117 1 779 298 4176 545	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg