

**INNOVATIVE SOLUTIONS
AT YOUR SIDE**

Product Specifications

PRODUCT SPECIFICATIONS

1. Jet Fuel (Jet A-1)

1	Appearance			
1.1	Visual Appearance	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	Aromatic Hydrocarbon Types			
2.2.1 Or	Aromatics % v/v	25 Max.	IP 156 /ASTM D 1319	18.5
2.2.2	Total Aromatics % v/v	26.5 Max.	IP 436 /ASTM D 6379	18.5
2.3	Sulphur, Total % m/m	0.3 Max.	ASTM D 4294	0.25
	Sulphur Mercaptan % m/m	0.003 Max.	ASTM D 3227	0.0020
2.4 Or 2.5				
	Doctor Test	Doctor	IP 30	
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	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
	Final boiling point °C	300 Max.		254
	Residue % volume	1.5 Max.		1.0
	Loss % volume	1.5 Max.		1.0
3.2	Flash point °C	38 min	IP 170	42

3.3	Density @ 15 °C kg/m ³	Min 775.0 Max 840.0	IP 365/ ASTM D 4052	799
4	Fluidity			
4.1	Freezing point, °C	Minus 47	IP16/ ASTM D	Minus 52
4.2	Kin. Viscosity at minus 20 °C,	8.00 Max.	IP 71/ ASTM D 445	4.10
5	Combustion			
5.1	Smoke Point, mm or	25 Min	ASTM D 1322/IP	24
	Smoke Point	19 Min	ASTM D 1322/IP	
	And Naphthalene, % 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	Not worse	ASTM D 130	No.1
7	Thermal Stability, JFTOT			
7.1	Thermal Stability, JFTOT		IP 323 / ASTM D	
	Test Temperature, °C	Min 260		
7.2	Tube rating, visual	Less than 3 (no peacock)		Zero, no peacock

2. Ultra-Low Sulphur Diesel (EN590)

Component	Method Of Analysis	Unit	Result	
			Min.	Max.
Aspect Color	Visual inspection ASTM D 1500		Clear 2,0	
Density @ 15°	EN ISO 3675:98 / EN ISO 12185:96 / C1:2001	Kg/m ³	820,0	845,0
Flash Point	EN ISO 2719:2002	C°	55(1)	
Distillation: - Recovered @ 150 °C - Recovered @ 250 °C - Recovered @ 350 °C - Recovered at 95%	EN ISO 3405:2000	% vol % vol % vol °C	85,0(2)	2,0 65,0(2) 360,0
C.F.P.P. (summer) (3) C.F.P.P. (winter) (3)	EN 116:1997	°C °C	50,0	-2 -12
CLOUD Point (summer) CLOUD Point (winter)	EN 23015:1994	°C °C	Report	0
Cetane number Cetane index	EN ISO 5165:1998 EN ISO 4264:1996	n° Index	51,0 46,0	
Viscosity @ 40 °C	EN ISO 3104:1996	mm ² s	2,00	4,50
Water content Total contamination	EN ISO 12937:2000 EN ISO 12662:2002	mg/kg mg/kg		200 15
Sulfur content	EN ISO 20884:2004	mg/kg		10,0
Copper strip corrosion (3 hr at 50 °C)	EN ISO 2160: 1998	Indice	1 st Class	
Carbon residue (On 10% distillation residue)	EN ISO 10370:1995	%		0,15

		weight		
Total acidity	ASTM D 974:2002	mgKOH/g		0,3
Ash content	EN ISO 6245:2002	% weight		0,01
Lubricity, correct wear scar	EN ISO 12156-1:2000	µm		460
Oxidation stability	EN ISO 12205:1996	g/m ³	20	
Electrical conductivity (4)	IP 274; ASTM 2624; ISO 6297	pS/m	50	
Polycyclic aromatic hydrocarbons	EN 12916:2001	%m/m		11,0(6)
Biodiesel content (5)	EN 14078:2003	% vol	4,5	7,0

3. Virgin Fuel Oil D6

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°C	0.87(0.8775) (Max)	Kg/t
ASTM D97	Pour Point of Petroleum Products Pour Point Pour Point	<-33(-36) (< 0) <-27.4(32.8) (< 0)	°C °F
ASTMD 93-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 KinematicViscosity@122°F/ 50°C	17.83(18.12) (Max)	Mm ² /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/SFS1 Saybolt furoil 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 Asphaltene Heptane Insoluble.			
	Asphaltene Content	0.08	Wt%
IP501 Determination of AL, Si, V, Ni, Fe, Na, Ca, Zn, P in Fuel Oil-ICPES			
	Aluminum	372	mg/kg
	Silicon	187	mg/kg
	Sodium	117	mg/kg
	Vanadium	1	mg/kg

	Calcium	779	mg/kg
	Zinc	298	mg/kg
	Phosphorus	4176	mg/kg
	Iron	545	mg/kg

4. CPC Blend

CPC CRUDE OIL ASSAY (KAZAKHSTANI ORIGIN)			YIELDS AND CHARACTERISTICS OF PRODUCTS												API – 44,4 Sulphur – 0,59	
			GAS		NAPHTHAS		KEROSENES		GASOILS		V.DI ST.	RESIDUES				
TBP Range			C1 – C4	C5-80 [C]	80-160	80-180	160-230	180-230	230-370	370-400	370-530	370+	400+	530+	TBP Distillation	
TBP Yield	% m/ m		2,68	9,15	20,81	25,94	16,11	10,98	27,40	4,56	16,19	23,85	19,28	7,66	Cut Point	% m/m Cum
TBP Yield	% v/ v		3,78	11,16	22,39	27,65	16,26	10,99	25,95	4,14	14,45	20,79	16,65	6,35		
Density @15°C	Kg/l	0,8039	0,5707	0,6596	0,7471	0,7540	0,7968	0,8031	0,8488	0,8862	0,9010	0,9221	0,9310	0,9700	C1	0,00
API Gravity @ 60°F		44,4													C2	0,00
Viscosity @ 20°C	mm²/s	2,97													C3	0,27
Viscosity @ 50°C	VBV						4,02	5,28	15,77	25,32	29,14	32,99	34,81	41,13	I C4	0,82
Sulphur	% m/ m	0,59		0,0626	0,1300	0,1400	0,1900	0,2000	0,66	0,85	1,04	1,27	1,37	1,76	NC4	2,68
Mercaptan Sulphur	ppm	471		130	168	313	488	847			62,29938				IC5	4,52
Hydrogen Sulphide	% m/ m														NC5	6,61
Acidity	mgKOH/g	0,04					0,05	0,06	0,08	0,12	0,09	0,09548	0,087	0,115	80	11,83
Paraffins	% v/v			87,8	52,9	52,6									100	17,38
Naphthenes	% v/v			10,5	35,1	33,7									120	22,16
Aromatics	% v/v			1,7	12,0	13,7	19,7	19,1							140	27,58
N+ 2A				13,8	59,1	61,1									160	32,64
Smoke Pt.	mm						25	24							180	37,77
Freezing Pt.	°C						-53	-45							210	44,08
Cloud Pt.	°C								-4	+30					230	48,75
Pour Pt.	°C	< -36							-6	+27		+39	+42		250	53,26
Cetane Index									56,4	65,3	0,08				270	57,82
Total Nitrogen												0,15	0,18		290	61,82
Basic Nitrogen	ppm									119	181	370	430		320	67,42
Nickel	ppm	1							< 1 [c]	6	7				350	72,66
Vanadium	ppm	2,5									< 2 [c]	11	13		370	76,15
PValue													1,1		400	80,72
Asphaltenes in NC7	% m/ m	0,2										0,65	0,80	2,00	530	92,34
R.C.C.	% m/ m	1,0									0,2	4,2	5,2	12,6	550	93,50
Penetration@ 25°C	dmm															
UOP K Factor		12,0									12,0	11,9	11,9			

[c] calculated value
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While this material is based upon information that we consider reliable, nevertheless, despite our efforts, it may not be accurate, up to date or applicable to the circumstances of any particular case.
In particular, the assay is based on a small sample only, therefore it may not be wholly representative of the crude in question.
In addition, crude yield structures change over time and less recently dated assays are thus less representative of the crude in question.

5. Mazut (Heavy Fuel Oil) Gost 10585-75

COMPONENT	RESULT
1. Ash content, not more %	0.1
2. Mass fraction of sulphur, not more % - low sulphur residual oil	0.5
3. Temperature of the flash, not less °C in the closed crucible	
In the open crucible °C	110 min
4. The temperature of solidification, not higher °C	25
5. Kinematics viscosity at 50 °C	118 max
6. Water content	0.5%
7. Mechanical impurities	Lower than 0.1%
8. Acidity	Lower than 5 mg KOH/ 100ml
9. Alkalinity	nil
10. Gross Calorific Value Kcal/kg / KJ/kg	Min9200/41300
11. Density at 15.0 deg. C Kg/l	0.880-0.9200
12. Hydrogen Sulfide Content (H2S) pom	0.5 max
13. Carbon Residua	Lower than 7%
14. Vanadium (V) ppm	30 MAX
15. Aluminium (Al) ppm	5
16. Silikon (Si) ppm	12
17. Nickel (NI) ppm	29
18. Asphaltenes m/m	3.6%
19. Distillation @4 mm Hg	

Extracted to 760 mm Hg	
Initial Boiling Point deg. C	216
5% recovered deg. C	259
10% recovered deg. C	310
20% recovered deg. C	358
30% recovered deg. C	445
40% recovered deg. C	502
50% recovered deg. C	534
60% recovered deg. C	538
75% recovered deg. C	545
80% recovered deg. C	-
90% recovered deg. C	-
Final Boiling point deg. C	550
Percent Recovered vol	78%
Residue vol	22%
Total Nitrogen m/m	0.192%
20. Sodium (Na) ppm	15
21. K ppm	40
22. Ca ppm	10

6. Liquefied Natural Gas

Properties at boiling point at normal pressure	LNG 1	LNG 2	LNG 3
Mole fraction, %:			
N ₂	0.13	1.79	0.36
CH ₄	99.8	93.90	87.20
C ₂ H ₆	0.07	3.26	8.61
C ₃ H ₈	-	0.69	2.74
^{iso} -CH ₄ H ₁₀	-	0.12	0.42
ⁿ -CH ₄ H ₁₀	-	0.15	0.65
CH ₅ H ¹²	-	0.09	0.02
Molecular mass, kg/mol	16.07	17.07	18.52
Boiling point, °C	-161.9	-166.5	-161.3
Density, kg/m	422	448.8	468.7
Volume of gas obtained from 1 m ³ of LNG at 0°C and 101.35 kPa, m ³ / m ³	588	590	568
Volume of gas obtained from 1 ton of LNG at 0.0°C and 101.325 kPa, m ³ /10 kg ³	1392	1314	1211
Mass latent heat of vaporization, KJ/kg	525.6	679.5	675.5
Higher calorific value, MJ/ m ³	37.75	38.76	42.59

7. Liquefied Petroleum Gas (LPG)

Specification Of Butane			
PROPERTY	UNITS	TEST METHOD	VALUE
Ethane	mol %	G.C.	Max. 0.08
Propane	mol %	G.C.	Max. 2.0
Total – C4	mol %	G.C.	Min. 97.5
Total – C5	mol %	G.C.	To be reported
Sp. Gr. @ (60°F/ 60°F)	--	ASTM D-2598	Max. No. 1a
Copper Corrosion	--	ASTM D-1838	Max. 30
Total Sulphide	wt. ppm	ASTM D-3246	Nil
Hydrogen Sulphide	vol. ppm	ASTM D-2420 / DRAGER	Max. 30
Vapour Press @ (100°F)	Psig	ASTM D-2598	Max. 70
Water Content	vol. ppm	Shaw dew point	Max. 10
Residue of Evaporation	vol. %	ASTM D-2158	Max. 0.05
Specification of Propane			
Ethane	mol %	G.C.	Max. 0.4
Propane	mol %	G.C.	Min. 98
Butane	mol %	G.C.	Min. 1.4

8. Eastern Siberia-Pacific Ocean (ESPO) Crude Oil

Test	Units	Method	Result
Density at 15°C	kg/L	ASTM D 5002	0.8508
Specific Gravity at 60/60°F	kg/L	ASTM D 5002	0.8512
API gravity	°C	ASTM D 1250	34
Kinematic viscosity at 20°C	CST	ASTM D 445	6.949
Total acid Number	mg KOH/g	ASTM D 664	<0.050
Pour Point	°C	ASTM D 5853	<=-36
Water by distillation	mass %	ASTM D 4006	0.35
Sediment by extraction	mass %	ASTM D 473	0.01
Chloride salt content	mg/dm3	GOST 2153475(A)	17
Organic chlorine content	mg/kg	ASTM D 4929(B)	*1
Sulphur content	mass %	ASTM D 4294	0.535
Hydrogen Sulphide	ppm	UOP 163	less 1
Mercaptan Sulphur	ppm	UOP 163	111
Ash content	mass %	ASTM D 482	0.011
Nickel	ppm	IP 470	4
Sodium	ppm	IP 470	1
Iron	ppm	IP 470	19