

Laboratory Inspectorate Griffith India Pvt. Ltd., Navi Mumbai Laboratory, Plot No. B3/B4, TTC Ind Area, Digha MIDC, Navi Mumbai, Maharashtra

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-6846

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Validity 30.01.2018 to 29.01.2020

Last Amended on 03.12.2018

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
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CHEMICAL TESTING

I. PETROLEUM & PRODUCTS				
A. Crude Petroleum				
1.	Crude Oil	Density @ 15°C	ASTM D1298), IS 1448(P16), IP160	0.9000 gm/ml to 1.0000 gm/ml, 900.0 kg/l to 1000.0 kg/l, kg/m ³
		Sp. Gr. 15.56°C	ASTM D1298, IP 160	0.9000 to 1.0000
		Asphaltenes (heptane insoluble)	ASTM D 6560, IP 143	0.5% to 30% m/m
		Water & Sediments	ASTM D 4007	0.025% to 30%
		Sulphur	ASTM D 4294	0.0017% to 4.7% mass, 17 mg/kg to 100 mg/kg
		Sediments by Extraction	ASTM D 473, IP 53	0.01% to 0.40% mass
B. Petroleum Products				
1.	Naphtha	Colour Saybolt	ASTM D156	(-) 16 to (+)30
2.	HSD, LDO (Gas Oil)	Color ASTM	ASTM D1500, IP 196	0.5 to 8.0
3.	Base Oil		ASTM D1500, IP 196	0.5 to 8.0
4.	Lube Oil		ASTM D1500, IP 196	0.5 to 8.0
5.	HSD, LDO (Gas Oil)	K.V. @ 37.8°C	ASTM D445, IP 71 (Section1), IS 1448 P(25)	1 mm ² /sec to 15 mm ² /sec
		K.V. @ 40.0°C	ASTM D445, IP 71 (Section1), IS 1448 P(25)	1 mm ² /sec to 15 mm ² /sec
6.	Fuel Oil	K.V. @ 50°C	ASTM D445, IP 71 (Section1), IS 1488 P(25)	0.2 mm ² /sec to 500 mm ² /sec
7.	HSD, LDO (Gas Oil)	Saybolt Universal and Saybolt Furol viscosities	ASTM D2161	32 mm ² /sec to 50 mm ² /sec

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8.	Naphtha	Density @ 15°C	ASTM D1298, IP 160, IS 1448(P16)	0.6500 gm/ml to 0.7000 gm/ml 650.0 kg/l to 700.0 kg/l, kg/m ³
9.	Motor Gasoline		ASTM D1298, IP 160, IS 1448(P16)	0.7000 gm/ml to 0.7500 gm/ml 700.0 kg/l to 750.0 kg/l, kg/m ³
10.	HSD, LDO (Gas Oil)		ASTM D1298, IP 160, IS 1448(P16)	0.8000 gm/ml to 0.9000 gm/ml 800.0 kg/l to 900.0 kg/l, kg/m ³
11.	Fuel Oil		ASTM D1298, IP 160, IS 1448(P16)	0.9000 gm/ml to 1.0000 gm/ml 900.0 kg/l to 1000.0 kg/l, kg/m ³
12.	Base Oil		ASTM D1298, IP 160, IS 1448(P16)	0.8000 gm/ml to 1.0000 gm/ml 800.0 kg/l to 1000.0 kg/l, kg/m ³
13.	Naphtha	Sp. Gr. 15.5°C/60°F	ASTM D1298	0.6500 to 0.7000
14.	Motor Gasoline		ASTM D1298	0.7000 to 0.7500
15.	HSD, LDO (Gas Oil)		ASTM D1298	0.8000 to 0.9000
16.	Fuel Oil		ASTM D1298	0.9500 to 1.0000
17.	Base Oil		ASTM D1298	0.8000 to 0.8500
18.	Naphtha	Density @ 15°C	ASTM D4052, IP 365	0.6500 gm/ml to 0.7000 gm/ml 650.0 kg/l to 700.0 kg/l, kg/m ³
19.	Motor Gasoline		ASTM D4052, IP 365	0.7000 gm/ml to 0.7500 gm/ml 700.0 kg/l to 750.0 kg/l, kg/m ³

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20.	HSD, LDO (Gas Oil)		ASTM D4052, IP 365	0.8000 gm/ml to 0.9000 gm/ml 800.0 kg/l to 850.0 kg/l, kg/m ³
21.	Fuel Oil		ASTM D4052, IP 365	0.9500 gm/ml to 1.0000 gm/ml 950.0 kg/l to 1000.0 kg/l, kg/m ³
22.	Base Oil		ASTM D4052, IP 365	0.8000 gm/ml to 1.0000 gm/ml 800.0 kg/l to 850.0 kg/l, kg/m ³
23.	Naphtha	Sp. Gr. 15.5°C//60°F	ASTM D4052	0.6500 to 0.7000
24.	Motor Gasoline		ASTM D4052	0.7000 to 0.7500
25.	HSD, LDO (Gas Oil)		ASTM D4052	0.8000 to 0.9000
26.	Fuel Oil		ASTM D4052	0.9500 to 1.0000
27.	Naphtha	Doctor Test	ASTM D4952, IP 30	Positive or Negative (Qualitative)
28.	Motor Gasoline		ASTM D4952, IP 30	
29.	Naphtha	Distillation	ASTM D86, IP 123, IS 1448 (Part 18)	30°C to 200 °C
30.	Motor Gasoline		ASTM D86, IP 123, IS 1448 (Part 18)	30°C to 270 °C
31.	HSD, LDO (Gas Oil)		ASTM D86, IP 123, IS 1448 (Part 18)	150 °C to 400 °C
32.	HSD, LDO (Gas Oil)	Total Acid Number	ASTM D664, IP 177	0.1 mg to 10 mg KOH/g
			ASTM D974	0.1 to 150 mg of KOH/gm
33.	Fuel Oil		ASTM D664, IP 177	0.1 mg to 10 mg KOH/g
34.	Lube Oil		ASTM D664, IP 177	0.1 mg to 10 mg KOH/g
35.	Base Oil		ASTM D664, IP 177	0.1 mg to 10 mg KOH/g
36.	Naphtha	Mercaptan Sulphur	ASTM D3227, IP 342, IS 1448(P109)	0.0003 to 0.0100 (3 to 100)% mass (mg/kg)
37.	Motor Gasoline		ASTM D3227, IP 342, IS 1448(P109)	0.0003 to 0.0100 (3 to 100)% mass (mg/kg)

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38.	HSD, Bio Diesel (Gas Oil)	Total Sulphur	ASTM D5453	1 mg/kg to 8000 mg/kg or ppm mass 0.0001% to 0.8% mass
39.	Motor Gasoline		ASTM D5453	1 mg/kg to 8000 mg/kg or ppm mass 0.0001% to 0.8% mass
40.	Naphtha		ASTM D5453	1 mg/kg to 8000 mg/kg or ppm mass 0.0001% to 0.8% mass
41.	Naphtha	Organic Chloride	ASTM D4929	1 mg/kg to 500 mg/kg (ppm mass)
42.	Naphtha	Copper Strip Corrosion @ 50°C	ASTM D130, IP 154	Classification 1 to 4
43.	Motor Gasoline	Copper Strip Corrosion @ 100°C	ASTM D130, IP 154	Classification 1 to 4
44.	HSD, LDO (Gas Oil)		ASTM D130, IP 154	Classification 1 to 4
45.	Naphtha	Existent Gum (Unwashed/Washed)	ASTM D381, IP 131, IP 540, IS 1448(P29)	0.5 mg to 50 mg/100 ml
46.	Motor Gasoline		ASTM D381, IP 131, IP 540, IS 1448(P29)	0.5 mg to 50 mg/100 ml
47.	Motor Gasoline	Induction Period (Oxidation Stability)	ASTM D525, IP 40	30 minutes to 480 minutes
48.	HSD, LDO (Gas Oil)	Flash Point (PMCC)	ASTM D93, IP 34, IS 1448 - 21	40°C to 90°C
49.	Fuel Oil		ASTM D93, IP 34, IS 1448- 21	60°C to 150°C
50.	Base Oil		ASTM D93, IP 34, IS 1448- 21	100°C to 350°C
51.	HSD, LDO (Gas Oil)	Cloud Point	ASTM D2500, IP 219	(-) 33°C to 49 °C
52.	Lube Oil		ASTM D2500, IP 219	(-) 33°C to 49 °C
53.	HSD, LDO (Gas Oil)	Pour Point	ASTM D97, IP 15	(-) 33°C to 45°C
54.	Fuel Oil		ASTM D97, IP 15	(-) 33°C to 45°C
55.	Base Oil		ASTM D97, IP 15	(-) 33°C to 45°C
56.	Lube Oil		ASTM D97, IP 15	(-) 33°C to 45°C

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57.	HSD, LDO (Gas Oil)	Cold Filter Plugging Point (CFPP)	ASTM D6371, IP 309	(-) 33°C to 49°C
58.	HSD, LDO (Gas Oil)	Ash	ASTM D482, IP 4, IS 1448 (Part 4)	0.010% to 0.180% mass
59.	Fuel Oil		ASTM D482, IP 4, IS 1448 (Part 4)	0.010% to 0.180% mass
60.	HSD, LDO (Gas Oil)	Water	ASTM D95, IP 74, IS1448(P40)	0.2% to 25% vol
61.	Fuel Oil		ASTM D95, IP 74, IS1448(P40)	0.2% to 25% vol
62.	HSD (Gas Oil)	Electrical Conductivity	ASTM D2624, IP 274	1 pS/m to 1999 pS/m
63.	Motor Gasoline	Aromatics (Uncorrected)	ASTM D1319, IP 156	5% to 99% vol.
64.	Naphtha		ASTM D1319, IP 156	5% to 99% vol.
65.	Motor Gasoline	Olefins (Uncorrected)	ASTM D1319, IP 156	0.3% to 55% vol.
66.	Naphtha		ASTM D1319, IP 156	0.3% to 55% vol.
67.	Fuel Oil	Sediments by Extraction	ASTM D473, IP 53	0.01% to 0.40% mass
68.	HSD, LDO (Gas Oil)	Calorific Value	ASTM D4868, IS 1448 (Part 7)	10330 cal/g (kcal/kg)/ 43.25 MJ/kg to 11460 cal/g (kcal/kg)/47.98 MJ/kg
69.	Naphtha		ASTM D4868, IS 1448 (Part 7)	10330 cal/g (kcal/kg)/ 43.25 MJ/kg to 11460 cal/g (kcal/kg)/47.98 MJ/kg
70.	Motor Gasoline		ASTM D4868, IS 1448 (Part 7)	10330 cal/g (kcal/kg)/ 43.25 MJ/kg to 11460 cal/g (kcal/kg)/47.98 MJ/kg
71.	Naphtha	Appearance	WI-09; Issue # 6 dtd 01.10.18	Clear & Bright, free from visible impurities
72.	Motor Gasoline		WI-09; Issue # 6 dtd 01.10.18	Clear & Bright, free from visible impurities
73.	HSD, LDO (Gas Oil)		WI-09; Issue # 6 dtd 01.10.18	Clear & Bright, free from visible impurities
74.	Motor Gasoline	Colour	WI-09; Issue # 6 dtd 01.10.18	Visual

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75.	Naptha	RVP @ 37.8°C	ASTM D323	0 to 15 psi
76.	Motor Gasoline		ASTM D323	0 to 15 psi
77.	Naptha	C/H Ratio	WI-024; Issue # 6 dtd. 01.10.18	Qualitative
78.	HSD (Gas Oil)	Strong Acid No.	ASTM D974	0 to Nil
79.	HSD, LDO (Gas Oil)	Cetane Index	ASTM D976, ASTM D4737	40 to 65
80.	HSD, LDO (Gas Oil)	RCR	ASTM D524	0.01% to 20%
81.	Fuel Oil		ASTM D524	0.01% to 20%
82.	Fuel Oil	H ₂ S in the Vapour phase above residual fuel Oils	ASTM D5705	5 ul/L to 4000 ul/L
83.	HSD, LDO, Bio Diesel (Gas Oil)	Nitrogen	ASTM D4629	0.3 mg/kg to 100 mg/kg
84.	Naptha		ASTM D4629	0.3 mg/kg to 100 mg/kg
85.	Gasoline		ASTM D4629	0.3 mg/kg to 100 mg/kg
86.	Lube Oil	Flash Point	ASTM D92	79°C to 400°C
87.	Base Oil		ASTM D92	79°C to 400°C
88.	HSD, LDO, Bio Diesel (Gas Oil)	Water & Sediment	ASTM D2709	0.025% to 30%
89.	Fuel Oil		ASTM D1796	0.025% to 30%
90.	HSD, LDO, Bio Diesel (Gas Oil)	Sulphur	ASTM D 4294	17 mg/kg to 100 mg/kg
				0.01% to 4.6 % mass
91.	Fuel Oil		ASTM D 4294	0.01% to 4.6 % mass
92.	Naptha		ASTM D 4294	17 mg/kg to 100mg/kg
				0.01% to 4.6 % mass
93.	Gasoline		ASTM D 4294	17 mg/kg to 100 mg/kg
				0.01% to 4.6 % mass
94.	Lube Oil	ASTM D 4294	17 mg/kg to 100mg/kg	
			0.01% to 4.6 % mass	
95.	Base Oil	Sulphur	ASTM D 4294	17 mg/kg to 100mg/kg
				0.01% to 4.6 % mass

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96.	Fuel Oil	Asphaltenes (heptane insoluble)	ASTM D 6560, IP 143	0.5% to 30% m/m
C.	Aviation Fuels			
1.	ATF	Colour Saybolt	ASTM D 156	(-)16 to (+)30
2.	SKO		ASTM D 156	(-)16 to (+)30
3.	ATF	Density @ 15 °C	ASTM D 1298, IP 160, IS 1448(P16)	0.7500 gm/ml to 0.8000 gm/ml 750.0 kg/l to 800.0 kg/l, kg/m ³
4.	SKO	Density @ 15 °C	ASTM D 1298, IP 160, IS 1448(P16)	0.7500 gm/ml to 0.8000 gm/ml 750.0 kg/l to 800.0 kg/l, kg/m ³
5.	ATF	Sp. Gr. 15.56 °C	ASTM D 1298	0.7500 to 0.8000
6.	SKO		ASTM D 1298	0.7500 to 0.8000
7.	ATF	Density @ 15 °C	ASTM D 4052	0.7500 to 0.8000 gm/ml, kg/l, kgm ³
8.	SKO		ASTM D 4052	0.7500 to 0.8000 gm/ml 750.0 to 800.0 kg/l, kg/m ³
9.	ATF	Sp. Gr. 15.56 °C	ASTM D 4052	0.7500 to 0.8000 gm/ml 750.0 to 800.0 kg/l, kg/m ³
10.	SKO		ASTM D 4052	0.7500 to 0.8000
11.	ATF	Doctor Test	ASTM D 4952, IP 30	Positive or Negative (Qualitative)
12.	SKO		ASTM D 4952, IP 30	Positive or Negative (Qualitative)
13.	ATF	Smoke Point at 101.3 kPa	ASTM D 1322	14.7 mm to 42.8 mm
14.	SKO		ASTM D 1322	14.7 mm to 42.8 mm
15.	ATF	Distillation	ASTM D 86, IP 123, IS 1448(P18)	125°C to 275°C
16.	SKO		ASTM D 86, IP 123, IS 1448	125°C to 275°C
17.	ATF	Acidity	ASTM D 3242	0.001 to 0.100 mg KOH/gm

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18.	SKOL		ASTM D 3242	0.001 to 0.100 mg KOH/gm
19.	ATF	Mercaptan Sulphur	ASTM D 3227, IS 1448-109	0.0003 to 0.0100 (3 to 100)% mass (mg/kg)
20.	SKO		ASTM D 3227, IS 1448-109	0.0003 to 0.0100 (3 to 100)% mass (mg/kg)
21.	ATF	Total Sulphur	ASTM D 5453	1 to 8000mg/kg/ 0.0001 to 0.8 % mass
22.	SKO		ASTM D 5453	1 to 8000mg/kg/ 0.0001 to 0.8 % mass
23.	ATF	Copper Strip Corrosion @ 50°C & 100°C	ASTM D 130, IP 154	Classification 1 to 4
24.	SKO		ASTM D 130, IP 154	Classification 1 to 4
25.	ATF	Existent Gum	IP 540	1 to 20 mg/100 ml.
26.	SKO		IP 540	1 to 20 mg/100 ml.
27.	ATF	Flash Point (Abel)	IP 170	19°C to 70 °C
28.	SKO		IP 170	19°C to 70 °C
29.	ATF	Freezing Point	ASTM D 2386, IP 16	(-) 60.0°C to (+) 20.0°C
	SKO			
30.	ATF	Free Water & particulate contamination (Visual Inspection)	ASTM D 4176	Pass No., 2
31.	SKO		ASTM D 4176	Pass No., 2
32.	ATF	Electrical Conductivity	ASTM D 2624, IP 274	1 Ps/m to 100 Ps/m
33.	ATF	Aromatics (Uncorrected)	ASTM D 1319, IP 156	5% to 99 % vol
34.	SKO		ASTM D 1319, IP 156	5% to 99 % vol
35.	ATF	Olefins (Uncorrected)	ASTM D 1319, IP 156	0.3% to 55 % vol
36.	SKO		ASTM D 1319, IP 156	0.3% to 55 % vol
37.	ATF	Appearance	WI-09; Issue # 6 dtd. 01.10.18	NA
38.	SKO		WI-09; Issue # 6 dtd. 01.10.18	N.A.
39.	SKOL	Colour	WI-09; Issue # 6 dtd. 01.10.18	N.A.

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40.	ATF	Sulphur	ASTM D 4294	0.0017% to 4.7% mass
41.	SKO		ASTM D 4294	0.0017% to 4.7% mass
42.	ATF	Calorific Value	ASTM D 4868, IS 1448(P7)	10330 cal/g(Kcal/kg)/ 43.25 MJ/kg to 11460 cal/g(Kcal/kg)/47.98 MJ/kg
43.	Fuel Oil	Al	ASTM D 5184, IP 377,	5 mg/kg to 150 mg/kg
			IP 501	5 mg/kg to 150 mg/kg
		Si	ASTM D 5184, IP 377,	10 mg/kg to 250 mg/kg
			IP 501	10 mg/kg to 250 mg/kg
		Na	IP 501	1 ppm mass to 100 ppm mass
		V	IP 501	1 ppm mass to 100 ppm mass
		Ni	IP 501	1 ppm mass to 100 ppm mass
		Fe	IP 501	2 ppm mass to 60 ppm mass
		Ca	IP 501	3 ppm mass to 100 ppm mass
		Zn	IP 501	1 ppm mass to 70 ppm mass
P	IP 501	1 ppm mass to 60 ppm mass		
D.	Petroleum feed stocks			
1.	VGO	Density @ 15 °C	ASTM D 1298, IP 160, IS 1448 (P16)	0.8500 to 1.0000 gm/ml, kg/l, kgm ³
2.	CBFS		ASTM D 1298, IP 160, IS 1448 (P16)	1.000 to 1.050 gm/ml, kg/l, kgm ³
3.	VGO	Sp. Gr. 15.56 °C	ASTM D 1298	0.8500 to 1.0000
4.	CBFS		ASTM D 1298,	1.0000 to 1.0500
5.	VGO	Flash Point (PMCC)	ASTM D 93, IP 34	80.0°C to 340.0°C
6.	VGO	Pour Point	ASTM D 97, IP 15	(-)-33°C to (+)45°C
7.	CBFS	Saybolt Universal and Saybolt Furol viscosities	ASTM D 2161	32 to 50

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8.	VGO	Flash Point	ASTM D 92	79°C to 400°C
9.	VGO	Asphaltens (heptane insoluble)	ASTM D 6560, IP 143	0.5% to 30% m/m
E.	Liquefied/Compressed Gas			
1.	LPG (Liquified Petroleum Gas)	Composition – Ethane	ASTM D 2163	0.01% to 100 % vol
		Propane		
		Propylene		
		Isobutane		
		n-Butane		
		Trans-2-butene		
		1-Butene		
		Isobutene		
		cis-2-butene		
		Isopentane		
		n-Pentane		
		1,3, butadiene		
		Density@ 15 ° C, Specific Gravity@ 60°F	ASTM D2598, ASTM D2421	0.5000 g/ml to 0.5800 g/ml
		Vapour Pressure @ 100 ° F (37.8 ° C)	ASTM D2598, ASTM D2421	40 psi to 175 psi
		Vapour Pressure @ 40°C	IP 432	400 kpa to 1350 kpa
		Motor Octane Number, Number	ASTM D2598, ASTM D 2421	93 to 97
		Molecular Weight	ASTM D2598, ASTM D 2421	44 to 58
		Volatility (95% Evaporation temperature)	WI 69 Issue # 6, Rev.01 dtd. 01.10.2018	(-) 40°C to (+) 2 °C
		Copper Strip Corrosion @ 37.8 ° C	ASTM D1838	1 to 4 Classification
		Residue on Evaporation	ASTM D2158	0 to 0.2 % vol
		Oil Stain Observation	ASTM D2158	0 to 0.2 % vol

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		Gross Calorific Value	ASTM D2598, ASTM D2421, ASTM D 3588	11700 to 11900 kcal/kg
		Mercaptan By Organoleptic	WI 66 Issue # 6 dtd 01.10.18	Qualitative Present or Absent
II.	SOLID FUELS			
1.	Coal & Coke	Total Moisture	IS 1350 (Part -1) ASTM D 3302, ASTM D 2961 ISO 579 & ISO 589	1% to 45.00 %
		Moisture In Analysis Sample	IS 1350 (Part 1) ASTM D 3173, ISO 687, ISO 11722, ASTM D 7582,	0.1% to 20.00 %
		Volatile Matter	IS 1350 (Part -1) ASTM D3175, ISO 562, ASTM D 7582,	0.5% to 50.00 %
		Ash	IS 1350 (Part I) ASTM D3174, ISO 1171, ASTM D 7582,	0.1% to 65.00 %
		Gross Calorific Value	IS 1350 (Part II), ASTM D 5865, ISO 1928	3000 kcal/kg to 8000 kcal/kg
		Fixed Carbon	IS 1350 (Part I) (By calculation), ASTM D 3172, ISO 17246	By Calculation
		Phosphorous	ISO 622	0.005% to 0.100 %
		Total Sulphur	IS 1350 (Part III), ASTM D 4239, ISO 334, ISO 19579	0.05% to 33.0 %

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Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-6846

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Validity 30.01.2018 to 29.01.2020

Last Amended on 03.12.2018

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Chlorine	IS 1350 (Part V), ISO 587	0.01% to 0.100 %
		Hardgrove Grindability Index	IS 4433, ASTM D 409, ISO 5074	30 to 100