

Laboratory Inspectorate Griffith India Pvt. Ltd., Jamnagar Laboratory, Plot # 4126,
Phase No. 3, Dared, Jamnagar, Gujarat

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7722 (in lieu of T-3160)

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Validity 24.10.2018 to 23.10.2020

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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 AND PRODUCTS				
A. Crude Petroleum				
1.	Crude Oil	Density @ 15 °C	ASTM D1298 IP 160	0.850 g/ml to 1.000 g/ml, kg/l 850.0 kg/m ³ to 1000.0 kg/m ³
		Sp. Gr. 60/60	ASTM D1298 IP 160	0.850 to 1.000 850.0 to 1000.0
		Total Acid Number	ASTM D664 IP 177	0.05 mg KOH /g to 5 mg KOH /g
		Water by Distillation	ASTM D4006 IP 358	Upto 5.0 % vol
		Sediments by Extraction	ASTM D473, IP 53	0.01 % to 0.40 % mass
B. Petroleum Products				
1.	Naphtha	Colour Saybolt	ASTM D156	(+) 20 To (+)30
2.	Alkylate	Colour Saybolt	ASTM D156	(+) 20 To (+)30
3.	HSD (Gas Oil)	Color ASTM	ASTM D1500 IP 196	0.5 to 8.0
		K.V. @ 37.8 °C	ASTM D445 IP 71	1 cSt to 15 cSt
		K.V. @ 40.0 °C	ASTM D445 IP 71	1 cSt to 15 cSt
4.	Fuel Oil	K.V. @ 50.0 °C	ASTM D445, IP 71	1 cSt to 400 cSt
5.	HSD (Gas Oil)	Viscosity-Saybolt Universal/Furol	ASTM D2161	32 to 50
6.	Naphtha	Density @ 15 °C	ASTM D1298 IP 160	0.650 g/ml to 0.700 g/ml, kg/l 650.0 kg/m ³ to 700.0 kg/m ³

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7.	Motor Gasoline		ASTM D1298 IP 160	0.700 g/ml to 0.750 g/ml, kg/l 700.0 kg/m ³ to 750.0 kg/m ³
8.	HSD (Gas Oil)		ASTM D1298 IP 160	0.800 g/ml to 0.900 g/ml, kg/l 800.0 kg/m ³ to 899.0 kg/m ³
9.	Fuel Oil		ASTM D1298 IP 160	0.950 g/ml to 1.000 g/ml, kg/l 950.0 kg/m ³ to 1000.0 kg/m ³
10.	Alkylate		ASTM D1298 IP 160	0.700 g/ml to 0.750 g/ml, kg/l 700.0 kg/m ³ to 750.0 kg/m ³
11.	Naphtha	Sp. Gr. 60/60	ASTM D1298 IP 160	0.650 to 0.700 650.0 to 700.0
12.	Motor Gasoline		ASTM D1298 IP 160	0.700 to 0.750 700.0 to 750.0
13.	HSD (Gas Oil)		ASTM D1298 IP 160	0.800 to 0.850 800.0 to 850.0
14.	Fuel Oil		ASTM D1298 IP 160	0.950 to 1.000 950.0 to 1000.0
15.	Alkylate		ASTM D1298 IP 160	0.700 to 0.750 700.0 to 750.0
16.	Naphtha	Doctor Test	ASTM D4952 IP 30	Qualitative Positive or Negative
17.	Motor Gasoline		ASTM D4952 IP 30	
18.	Alkylate		ASTM D4952 IP 30	

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19.	Naphtha,	Distillation	ASTM D86 IP 123	30 °C to 200°C / Upto 100 % volume
20.	Motor Gasoline		ASTM D86 IP 123	30 °C to 250°C / Upto 100 % volume
21.	HSD (Gas Oil)		ASTM D86 IP 123	150 °C to 400°C / Upto 100 % volume
22.	Alkylate		ASTM D86 IP 123	30 °C to 250°C / Upto 100 % volume
23.	HSD (Gas Oil)	Cetane Index	ASTM D976	30 to 60
		Cetane Index	ASTM D4737	30 to 60
		Strong Acid Number	ASTM D97 4ASTM D664 IP 139 IP 177	0.01 mg KOH /g to 0.10 mg KOH /g
		Total Acid Number	ASTM D974 IP 139	Upto 10 mg KOH /g
		Total Acid Number	ASTM D664 IP 177	Upto 10 mg KOH /g
24.	Fuel Oil	Total Acid Number	ASTM D664 IP 177	Upto 10 mg KOH /g
25.	Naphtha	Mercaptan Sulphur	ASTM D3227 IP 342	0.0003 % mass to 0.0100 % mass 3 mg/kg to 100 mg/kg
26.	Motor Gasoline	Mercaptan Sulphur	ASTM D3227 IP 342	0.0003 % mass to 0.0100 % mass 3 mg/kg to 100 mg/kg
27.	HSD (Gas Oil)	Total Sulphur	ASTM D5453	1 mg/kg to 10 mg/kg 10mg/kg to 500mg/kg
		Total Sulphur		0.0001 % mass to 0.001 % mass 0.001% mass to 0.050% mass
28.	Motor Gasoline	Total Sulphur	ASTM D5453	1 mg/kg to 500 mg/kg
		Total Sulphur		0.0001 % mass to 0.050 % mass

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29.	Naphtha	Total Sulphur	ASTM D5453	1 mg/kg to 500 mg/kg
		Total Sulphur		0.0001 % mass to 0.050 % mass
30.	Alkylate	Total Sulphur	ASTM D5453	1 mg/kg to 10 mg/kg
		Total Sulphur		0.0001 % mass to 0.001 % mass
31.	Naphtha	Organic Chloride	ASTM D4929	1 mg/kg to 500 mg/kg
32.	Naphtha	Copper Strip Corrosion @ 50°C	ASTM D130 IP 154	Classification 1 to 4
33.	Motor Gasoline	Copper Strip Corrosion @ 100°C	ASTM D130 IP 154	Classification 1 to 4
34.	HSD (Gas Oil)		ASTM D130 IP 154	Classification 1 to 4
35.	Alkylate		ASTM D130 IP 154	Classification 1 to 4
36.	Motor Gasoline		Existent Gum Unwashed/Washed	ASTM D381 IP 131
		Oxidation Stability (Potential Gum 4 hours aging)	ASTM D873 IP 138	0.5 mg/100 ml to 7.0 mg/100 ml.
		Induction Period (Oxidation Stability)	ASTM D525 IP 40	30 Minutes to 480 Minutes
37.	Alkylate	Induction Period (Oxidation Stability)	ASTM D525 IP 40	30 Minutes to 480 Minutes
38.	HSD (Gas Oil)	Oxidation Stability	ASTM D2274	0.1 mg/100 ml to 3.0 mg/100 ml or 1 g/m ³ to 30 g/m ³
		Flash Point (PMCC)	ASTM D93 IP 34	40.0 °C to 70.0 °C 70.0 °C to 80.0 °C
39.	Fuel Oil	Flash Point (PMCC)	ASTM D93 IP 34	60 °C to 150 °C

Pooja Singh
Convenor

Jitendra B. Vispute
Program Manager

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40.	HSD (Gas Oil)	Cloud Point	ASTM D2500 IP 219	49 °C to 0 °C Upto (-) 33 °C
		Pour Point	ASTM D97 IP 15	3 °C to (-) 33 °C
41.	Fuel Oil	Pour Point	ASTM D97 IP 15	3 °C to 30 °C
42.	HSD (Gas Oil)	Cold Filter Plugging Point (CFPP)	ASTM D6371 IP 309	(-)15 to 49 °C (-)15 to (-)33 °C
		Ash	ASTM D482 IP 4	0.001 % mass to 0.010 % mass
43.	Fuel Oil	Ash	ASTM D482 IP 4	0.010 % mass to 0.180 % mass
44.	HSD (Gas Oil)	Water	ASTM D95 IP 74	2 % vol to 25 % vol
45.	Fuel Oil	Water	ASTM D95 IP 74	Upto 2 % vol
46.	HSD (Gas Oil)	Free Water & particulate contamination	ASTM D4176	Qualitative Visual
47.	Motor Gasoline	Free Water & particulate contamination	ASTM D4176	Qualitative Visual
48.	HSD (Gas Oil)	Total Contamination	IP 440	6 mg/kg to 30 mg/kg
		Particulate Contamination	ASTM D6217, IP 415	Upto 25 mg/l
		Electrical Conductivity	ASTM D2624 IP 274	100 pS/m to 400 pS/m 400 pS/m to 2000 pS/m
49.	Motor Gasoline, Alkylate, Naphtha	Vapor Pressure (DVPE); at 37.8 °C	ASTM D5191 IP 394	35 kPa (psi) to 75 kPa (psi)
				7 kPa (psi) to 35 kPa (psi)
				35 kPa (psi) to 75 kPa (psi)
50.	HSD (Gas Oil)	Conradson Carbon Residue (CCR) on 10 % distillation residue	ASTM D189 IP 13	0.01 %mass to 10.0 %mass

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51.	Fuel Oil	Conradson Carbon Residue (CCR)	ASTM D189 IP 13	10.0 %mass to 30.0 %mass
52.	Motor Gasoline	Aromatics (Uncorrected)	ASTM D1319 IP 156	5 % vol to 99 % vol
		Olefins (Uncorrected)	ASTM D1319 IP 156	0.3 % vol to 55 % vol
53.	HSD (Gas Oil)	Sediments by Extraction	ASTM D473 IP 53	0.001% to 0.40 % mass
54.	Fuel Oil		ASTM D473 IP 53	0.01 % mass to 0.40 % mass
55.	HSD (Gas Oil)	Calorific Value	ASTM D4868	10300 cal/g to 11850 cal/g
56.	HSD (Gas Oil)	Filter Blocking Tendency	ASTM D2068 IP 387	1 to 100
57.	Naphtha	Appearance	WI-44, Issue. 01. Dated 29.10.2014	Qualitative
58.	Motor Gasoline		WI-44, Issue. 01. Dated 29.10.2014	Qualitative
59.	HSD (Gas Oil)		WI-44, Issue. 01. Dated 29.10.2014	Qualitative
60.	Alkylate		WI-44, Issue. 01. Dated 29.10.2014	Qualitative
61.	Motor Gasoline	Colour	WI-45, Issue. 01. Dated 29.10.2014, Color	Qualitative
		FVI(Flexible Volatility Index)/VLI (Vapor Lock Index)	WI-46, Issue. 01. Dated 29.10.2014	FVI :-47 to 95/ VLI :-470 to 950
C.	Aviation Fuels			
1.	ATF	Colour Saybolt	ASTM D156	(-)16 to (+)30
		Density @ 15 °C	ASTM D1298 IP 160	0.750 g/ml to 0.800 g/ml, kg/l 750.0 kg/m ³ to 800.0 kg/m ³

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		Sp. Gr. 60/60, °F	ASTM D1298 IP 160	0.750 to 0.800
		Doctor Test	ASTM D4952 IP 30	Qualitative Positive or Negative
		Smoke Point	ASTM D1322	14.7 mm to 42.8 mm at 101.3 kPa
		Distillation	ASTM D86 IP 123	125 °C to 275 °C / Upto 100 % volume
		Acidity	ASTM D3242 IP 354	0.000 mg KOH /gm to 0.100 mg KOH /gm
		Mercaptan Sulphur	ASTM D3227 IP 342	0.0003 % mass to 0.0100 % mass 3 mg/kg to 100 mg/kg
		Total Sulphur	ASTM D5453	1 mg/kg to 8000 mg/kg 0.0001% to 0.8 % mass
		Copper Strip Corrosion @ 50°C Copper Strip Corrosion @ 100°C	ASTM D130 IP 154	Classification 1 to 4
		Existent Gum	IP 540	1 mg/100 ml to 20 mg/100 ml
		Flash Point (Abe)	IP 170	19 °C to 70 °C
		Freezing Point	ASTM D2386 IP 16	- 60.0 °C to 20.0 °C
		Free Water & particulate contamination (Visual Inspection)	ASTM D4176	Pass No., 2
		Particulate Contamination	ASTM D5452 IP 423	0.0 mg/l to 1.0 mg/l
		Electrical Conductivity	ASTM D2624 IP 274	1 pS/m to 100 pS/m
		Aromatics (Uncorrected)	ASTM D1319 IP 156	5 % vol to 99 % vol
		Specific Energy	ASTM D3338	40.19 MJ/kg to 44.73 MJ/kg or

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		Appearance	WI-44, Issue. 01. Dated 29.10.2014	17280 Btu/lb to 19230 Btu/lb Qualitative Visual
D.	Petroleum feed stocks			
1.	VGO	K.V. @ 50.0 °C	ASTM D445 IP 71	0.2 cSt to 500 cSt
		Density @ 15 °C	ASTM D1298 IP 160	0.850 g/ml to 0.900 g/ml, kg/l
2.	CBFS	Density @ 15 °C	ASTM D1298 IP 160	1.000 g/ml to 1.050 g/ml, kg/l
3.	VGO	Sp. Gr. 60/60	ASTM D1298 IP 160	0.850 to 0.900
4.	CBFS	Sp. Gr. 60/60	ASTM D1298 IP 160	1.000 to 1.050
5.	VGO	Flash Point (PMCC)	ASTM D93 IP 34	80.0 °C to 340.0 °C
6.	CBFS	Flash Point (PMCC)	ASTM D93 IP 34	80.0 °C to 340.0 °C
7.	VGO	Pour Point	ASTM D97 IP 15	30 °C to 45 °C
		Water	ASTM D95 IP 74	Upto 2 % vol
		Conradson Carbon Residue (CCR)	ASTM D189 IP 13	0.01% to 30.0 %mass
		Ash	ASTM D482 IP 4	0.001% to 0.18 % mass
E.	Liquefied/Compressed gases			
1.	LPG (Liquified Petroleum Gas)	Composition-Ethane	ASTM D2163	0.01% to 100 % vol or % mass
		Propane		
		Propylene		
		Isobutane		

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		n-Butane		
		Trans-2-butene		
		1-Butene		
		Isobutene		
		cis-2-butene		
		Isopentane		
		n-Pentane		
		1,3,butadiene		
		Density@ 15 ° C	ASTM D2598/ ASTM D2421	0.5000 g/ml to 0.5800 g/ml
		Specific Gravity @ 60 ° F		
		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 D2421	93 to 97
		Molecular Weight	ASTM D2598/ ASTM D2421	44 to 58
		Volatility (95% Evaporation tempt.)° C	ASTM D1837	(-) 40°C to 2 °C
		Copper Strip Corrosion @ 37.8° C Rating	ASTM D1838	1 to 4 Rating
		Residue on Evaporation	ASTM D2158	Upto 0.2 % vol
		Oil Stain Observation	ASTM D2158	Upto 0.2 % vol
		Gross Calorific Value	ASTM D2598/ ASTM D2421	11700 K.cal/kg to 11900 K.cal/kg
		Hydrogen Sulphide	IP 401	Qualitative Positive or Negative
		Mercaptan By Organoleptic	WI-52, Issue. 01. Dated 30.07.2015	Qualitative Present or Absent