

Laboratory **Quality Assurance Laboratory, BPCL(Mumbai Refinery), Mahul, Mumbai, Maharashtra**

Accreditation Standard **ISO/IEC 17025: 2005**

Certificate Number **TC-7138** *(in lieu of T-0534)*

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Validity **13.04.2018 to 12.04.2020**

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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			
1.	ADF, Kerosine, LDO, FO, LSHS	Acidity, Inorganic	IS 1448 P:2C (2013)	0 to 0.5 mg KOH/g
	ADF, HFHSD	Acidity, Total	IS 1448 P:2B (2013)	0.001 mg KOH/g to 0.5 mg KOH/g
	JET A1	Acidity, Total	IS 1448 P:113 (2016)	0.001 mg KOH/g to 0.02 mg KOH/g
2.	JET A1, Naphtha, MT, SBP,FGH, MG	Aromatics, Olefins Saturates	IS 1448 P:23 (2016)	A:0.2 %V to 42 %V 0:0.2 %V to 21%V
3.	ADF, HFHSD, LDO, FO, LSHS	Ash Content	IS 1448 P:4 (2013)	0.001 %W to 0.18%W
4.	MG	Benzene Content	IS 1448 P:104 (2013) ASTM D: 3606:2010 ASTM D: 5580:2015	0.1 %V to 5.0 %V
	FGH	Benzene Content	ASTM D: 6229-2010	0.0001 %V to 0.0200 %V
5.	Kerosine	Burning Quality	IS 1448 P:5 (2013)	5 mg/Kg to 25 mg/Kg
6.	ADF, HFHSD, LDO	Carbon Residue Ramsbottom	IS 1448 P:8 (2012) ASTM D: 524:2015	0.01 %W to 5.0 %W
	LSHS	Carbon Residue, CCR	ASTM D: 189:2014	0.1%W to 25 %W
	ADF, LDO, FO, LSHS	Micro Carbon Residue	ASTM D: 4530:2015	0.1%W to 30 %W
7.	ADF, HFHSD	Cetane Index	ASTM D: 4737:2010	30 to 65 c
		CFPP	IS 1448 P:110 (2013)	(-)20°C to +30 °C
8.	SBP, JET A1, MG, LDO, Kerosine, ADF, HFHSD, FGH, MT	Copper Corrosion Test	IS 1448 P:15 (2016) ASTM D: 130:2012	1a to 4c
	LPG	Copper Corrosion Test	ASTM D: 1838:2016	1a to 4c

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9.	Kerosine, FGH, SBP, MT, Naphtha	Colour, Saybolt	IS 1448 P:14 (2013) ASTM D: 156:2015 ASTM D: 6045:2017	(-)16 to + 30
	ADF	Colour, ASTM	IS 1448 P:12 (2013) IP 196-1997 (2014) ASTM D: 1500:2017	0.5 to 8.0
10.	JET A1, MG, ADF, HFHSD, Kerosine, FO, LDO, FGH, MT, Naphtha, LSHS, SBP	Relative Density & Density by Hydrometer	IS 1448 P:16 (2013) ASTM D: 1298:2017	0.60 g/ml to 1.0 g/ml
11.	FGH	Polycyclic Aromatics Hydrocarbons	App F of IS 3470 (2017) ASTM D: Absorbance one third of reference	Qualitative
12.	FGH, SBP, Kerosine Naphtha, MG, ADF, HFHSD, MT, JET A1	Distillation: Temp (IBP/FBP) Recovery	IS 1448 P:18 (2016) ASTM D: 86:2017	30°C to 400°C 1 %to 100 %V.
13.	JET A1, FGH	Doctor Test	IS 1448 P:19 (2013)	Qualitative (+ve / -ve)
14.	MG	Existent Gum	IS 1448 P:19 (2013) ASTM D: 381:2017	1 g/m ³ to 100 g/m ³
15.	JET A1, SBP, Naphtha, MT	Existent Gum	IS 1448 P:29 (2016) ASTM D: 381:2017	0.2 mg/100ml to 10 mg/100ml
16.	JET A1	Electrical Conductivity	ISO 6297: 1997, IP 274,2017 ASTM D:2624:2051	5 µS/m to 1000 µS/m
		Freezing Point	IS 1448 P:11 (2016) ASTM D:7153:2015	(-)70°C to +20 °C
17.	JET A1, ADF, Kerosine, MT	Flash Point Abel	IS 1448 P:20 (2013) IP 170-2014	10 °C to 70 °C
	HFHSD, LDO, FO, LSHS	Flash Point PMCC	IS 1448 P:21 (2012)	50°C to 270 °C
	Bitumen	Flash Point COC	IS 1448 P:69 (2013)	110°C to 370 °C

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18.	JET A1	Kinematic Viscosity @ -20°C	IS 1448 P:25 (2013)	1 cSt. to 10 cSt.
	ADF, HFHSD LDO	Kinematic Viscosity @ 40°C	IS 1448 P:25 (2013) ASTM D:7042 :2014 ASTM D:445:2017	1 cSt. to 18 cSt.
	FO	Kinematic Viscosity @ 50°C	IS 1448 P:25 (2013)	40 cSt. to 1000 cSt.
	LSHS	Kinematic Viscosity @ 100°C	IS 1448 P:25 (2013)	4 cSt. to 500 cSt.
	Bitumen	Kinematic Viscosity @ 135°C	IS 1206 (1978) part:3	30 cSt. to 2000 cSt
		Absolute Viscosity 60°C	IS 1206 (1978) part:2	50 poise to 5000 poise
		Absolute Viscosity@ 60°C on RTFOT residue	IS 1206 (1978) part:2	5000 poise to 15000 poise
19.	MG	Lead Content by XRF	IS 1448 IP 352-1993 (2014)	0.001 g Pb/L to 0.01 g Pb/L
20.	JET A1	Naphthalene Content	IS 1448 P:118 (2013)	0.1 %V to 5 %V
21.	FGH	Non Volatile Residue	App A of IS 3470 (2017)	0.0001g/100ml to 0.1 g/100ml
22.	MG	Octane Number		
		RON	IS 1448 P:27(2013)	60 to 100
		MON	IS 1448 P:26(2013)	60 to 100
23.	ADF,LDO	Pour Point	ASTM D:5950 (2014)	(-)15°C to +60 °C
	ADF, HFHSD, LDO, FO, LSHS	Pour Point	IS 1448 P:10(2013)	(-)15°C to +90°C
24.	ADF, LDO, FO, LSHS	Sedimentsby Extraction	IS 1448 P:30 (2013)	0.001% to 1.0 %W
25.	JET A1	Silver Corrosion Test	IP 227-1999	0 to 4
26.	JET A1, Kerosine	Smoke Point	IS 1448 P:31 (2017) IP 3014:1993 ASTM D:1322:2015	10 mm to 30 mm
27.	JET A1	Specific Energy	ASTM D:3338:2014	41 c to 45 c
28.	MG	RVP (Reid)	IS 1448 : P39 (2012)	0.1 kPa to 60 kPa

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			ASTM D:323:2008	0.0001 N/mm ² to 0.06 N/mm ²
	LPG	Vapour Pressure	ASTM D:1267:2012	300 kPa to 1400 kPa
	Naphtha	RVP Mini Method	ASTM D:5191:2015	(1 psi to 18.6 psi) 7 kPa to 130 kPa
29.	JET A1, Kerosine, MG, ADF, LDO, FO, LSHS, Naphtha, MT	Sulphur Sulphur by EDXRF, %W	IS: P:153 (2012) ISO: 20847:2004 ASTM D: 4294:2016	17 mg/kg to 4.6 % mass
	LPG / PP Feed stock	Mercaptan,	IP: 272: 2012	0.0001% to 0.01%W
	JET A1, Naphtha	Sulphur Mercaptans (Potentiometric)	IS: P:109 (2016) IP: 342: 2000 (2014)	0.0004% to 0.01%W
	MG	Total Sulphur	ASTM D: 5453:2012	1 mg/kg to 300 mg/kg
	FGH			1 mg/kg to 5 mg/kg
	ADF, HFHSD, MG, Naphtha	Sulphur by WDXRF	ISO: 14596:2007 ASTM D: 2622:2010	3 mg/kg to 4.6 %wt
30.	ADF, HFHSD, MTBE,	Water content by KF Coulometric method	ISO 12937:2000	30 mg/kg to 500 mg/kg
31.	LDO, FO, LSHS	Water content by Dean & Stark	IS 1448 P:40 (2016) ASTM D 95:2013	0.05 %to 10 %V
32.	JET A1	Water Reaction	IS 1448 P:42 (2016)	1 to 4
		MSEP	IS 1448P:142 (2016)	50 to 100
		JFTOT (Tube Rating)	IS 1448P:97 (2013)	0 to 4
		Pressure Differential	ISO 6294	0 to 50 mm Hg
33.	FGH	Reaction on Non-Volatile Residue	App. B of IS 3470 (2017)	Qualitative (-ve/+ve)
34.	LPG	Hydrogen Sulphide	ASTM D 2420:2013	Qualitative
35.	Naphtha,FGH	Paraffins/ Naphthenes / Aromatics (Composition)	ASTM D 5134:2017/ ASTM D 730:2016	1%V/%W to 100 %V/%W
36.	Bitumen	Softening Point	IS 1205 (1978)	10 °C to 80 °C
		Penetration (1/10 mm)	IS 1203 (1978)	5 mm to 400 mm
		Ductility on RTFOT residue	IS 1208 (1978) RA 1988	1 cm to 125 cm

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		Matter insoluble in Trichloroethylene	IS 1216 (1978)	0.1%W to 1 %W
37.	MTBE	Purity	ASTM D 5441:2017	5 %W to 100 %W
38.	Propane-Propylene /LPG	Composition	ASTM D 2163:2014	0.1 %w to 100 %w
39.	LPG	Volatility	ASTM D 1837:2017	(-)10 °C to 4 °C
40.	JET A1	Lubricity (BOCLE)	ASTM D 5001:2014	0.5 mm to 0.90 mm
	ADF, HFHSD	Lubricity (HFRR)	IS 1448P:149 (2011) ISO 12156-1 ASTM D 6079:2016	200 µm to 800 µm
41.	Naphtha & JET A1	Particulate Contamination	ASTM D 5452:2012	0.01 mg/l to 2.0 mg/l
42.	MG	Oxygenates	ASTM D 4815:2015	0.1 %V to 20 %V
43.	MG	Oxidation Stability	IS 1448 P:28 (2013)	10 min to 720 min
	ADF, HFHSD		ASTM D 2274:2014	1 g/m ³ to 50 g/m ³
44.	ADF	Cetane Number	IS 1448P : 9 (2013)	30 to 65
		Polycyclic Aromatic Hydrocarbons (PAH)	IP 391- 2007 ASTM D 6591:2017	0.05%W to 10 %W
		Total Contaminants	EN 12662	1 mg/kg to 50 mg/kg
45.	BENZENE	Benzene	IS 534:2007, Annex A	0.1 % to 99.999 % mass
		Non aromatic hydrocarbonS	IS 534:2007, Annex A	0.001% to 0.1 % mass
		Toluene	IS 534:2007, Annex A	0.001 % to 0.05 % mass
		1,4 Dioxane	IS 534:2007, Annex A	0.001% to 0.02 % mass
		Density	ASTM D 4052-16	0.85 g/ml to 0.9 g/ml
		Colour	IS 534:2007, Annex B	0 to 20 Pt-Co Scale
		Thiophene	IS 534:2007, Annex H	0 to 2 mg/kg
		Acid wash colour	IS 534:2007, Annex J	1 to 5
		Residue on Evaporation	IS 82- Clause 8	0.2 mg/100ml to 1 mg/100ml
46.	Benzene, FGH	Bromine Index	ASTM D 5776-14a	1 to 35
	Toluene	Toluene	ASTM D 2360-11	0.1% to 99.999 % mass
		Colour	IS 1448IS 8768:2000	0 to 20 Pt-Co scale
		Density	ASTM D 4052-16	0.85 g/ml to 0.90 g/ml

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		Non aromatic hydrocarbons	ASTM D 2360-11	0.001% to 0.05% mass
		Benzene	ASTM D 2360-11	1 mg/kg to 1000 mg/kg
		C8+ Aromatics	ASTM D 2360-11	1 mg/kg to 2000 mg/kg
		Thiophene	IS 534:2007 , Annex H	0 to 2 mg/Kg
		H ₂ S & SO ₂	IS 537:2011,Annex E	Qualitative
		Water content	ASTM 6304-2016	10 mg/kg to10000 mg/kg
47.	MG, HFHSD,ADF	Appearance	ASTM D 4176	Qualitative (Clear)

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