

<b>Laboratory</b>	<b>Indian Oil Corporation Ltd., M.D., Hyderabad Laboratory, Survey No. 183, IDA, Phase-III, Cherlapally, Hyderabad, Telangana</b>		
<b>Accreditation Standard</b>	<b>ISO/IEC 17025: 2005</b>		
<b>Discipline</b>	<b>Chemical Testing</b>	<b>Issue Date</b>	<b>05.04.2016</b>
<b>Certificate Number</b>	<b>T-2174</b>	<b>Valid Until</b>	<b>04.04.2018</b>
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<b>S. No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
<b>I.</b>	<b>PETROLEUM AND PRODUCTS</b>			
1.	<b>JetA1/JP-5</b>	Acidity	BIS 1448 (Part 113): 2010 IP 354: 2006 ASTMD 3242: 2011	Upto 0.1 mg of KOH/g
2.	<b>JetA1/JP- 5 Avgas</b>	Aniline point	BIS 1448 (Part 3): 2007 IP 2: 2004 ISO 2977: 1977 ASTMD 611: 2012	50 °C to 80 °C
3.	<b>JetA1/JP5</b>	Aromatics Olefins	BIS 1448 (Part 23): 2010 IP 156: 2008 ISO 3837: 1993 ASTMD 1319: 2015	5 % by vol. to 99 % by vol. 0.3 % by vol. to 55 % by vol.
4.	<b>HSD, LDO, Fuel Oil</b>	Ash Content	BIS 1448 (Part 4): 2008 IP 4: 2005 ISO 6245: 2001 ASTMD 482: 2013A	0.001 % by wt. to 0.18 % by wt.
5.	<b>LUBES</b>	Ash Content (Sulphated)	IP 163: 1996 ISO 3987: 2010 ASTMD 874: 2007	0.005 % by wt. to 0.10 % by wt.
6.	<b>HSD</b>	Cetane Index (Cal)	IP 380: 2008 ISO 4264: 2007 ASTMD 4737: 2010	32.5 to 65
7.	<b>Jet A1,JP5, AV Gas, Motor Gasoline, LDO Kerosene,HSD</b>	Copper Corrosion Test	BIS 1448 (Part 15): 2010 IP 154: 2000 ISO 2160: 1998 ASTMD 130: 2012	Qualitative (Rating 1 to Rating 4)

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8.	HSD, Lubes	Colour (ASTM) color units	BIS 1448 (Part 12): 2008 IP 196: 2011 ISO 2049: 1996 ASTMD 1500: 2012	0.5 to 8.0
9.	Fuel Oil,	Calorific Value	BIS 1448 (Part 7): 2010 ASTM D 4868: 2010	10000 Cal/g to 12000 Cal/g
10.	Motor Gasoline/ Avgas, Jet A1, JP5, Kerosine, HSD, LDO/Fuel Oil	Density by Hydrometer	BIS 1448 (Part 16): 2014 IP 160: 1999 ISO 3675: 1998 ASTMD 1298: 2012B	600 kg/m <sup>3</sup> to 1000 kg/m <sup>3</sup>
11.	Motor Casoline, Avgas, Kerosine, JetA1, JP5, AV Gas, HSD	Distillation	BIS 1448 (Part 18) IP 123: 2001 ISO 3405: 2011 ASTMD 86: 2015	30 °C to 370 °C Volume % Recovered: 5 % to 100 %
12.	HSD	Calculated Cetane Index	IP 380: 2008 ISO 4264: 2007 ASTMD 4737: 2010	40 to 70
13.	Jet A1, JP5	Doctor Test	BIS 1448 (Part 19): 2007 IP 30: 1992	Qualitative (Presence or Absence)
14.	Motor Gasoline/ Avgas, Jet A1, JP5	Existent Gum	BIS 1448 (Part 29): 2010 IP 131: 1999 ISO 6246: 1995 ASTMD 381: 2012	Upto 1000 g/m <sup>3</sup>
15.	Jet A1	Electrical Conductivity	BIS 1448-148: 2007 IP 274: 2009 ISO 6297: 2002 ASTMD 2624: 2015	15 pS/m to 1500 pS/m

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16.	Jet A1, JP5, AV Gas	Freezing Point	BIS 1448 (Part 11): 2010 IP 16: 2012 ISO 3013: 2009 ASTMD 2386: 2015 e1	(+) 20 °C to (-) 70 °C
17.	Jet A1, HSD, Kerosene	Flash Point (Abel)	BIS 1448 (Part 20): 2008 IP 170: 2009 ISO 13736: 2008	19 °C to 70 °C
18.	JP5,HSD, LDO Fuel Oil, Lubes	Flash Point (P&M),	BIS 1448 (Part 21): 2012 IP 34: 2003 ISO 2719: 2002 ASTMD 93: 2015 A	40 °C to 360 °C
19.	JET A1, JP5, HSD, Lubes, Fuel Oil	Kinematic Viscosity @-20,-35°C & 40 and 50, 100°C, cSt	BIS 1448 (Part 25): 2007 IP 71: 1997 ISO 3104: 1994 ASTM D 445: 2015	0.5 to 400
20.	Jet A1	Naphthalene Content	BIS 1448 (Part 118): 1985 ASTMD 1840: 2013	0 to 5 % by vol.
21.	HSD, Fuel Oil	Pour Point	BIS 1448 (Part 10): 2013 IP 15: 2004 ISO 3016: 1994 ASTMD 97: 2015	(-) 15 °C to (+) 51 °C
22.	HSD, Fuel Oil,	Sediments by Extraction	BIS 1448 (Part 30): 2008 IP 53: 2000 ISO 3735: 1999 ASTMD 473: 2007	0.01 % wt. to 0.4 % wt.
23.	Jet A1,JP5	Silver Corrosion Test	IP 227: 1993	0 to 4 Classification

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24.	Jet A1, JP5, Kerosene	Smoke Point	BIS 1448 (Part 31): 2008 IP 57: 1995 ISO 3014: 1993 ASTMD 1322: 2015e1	5 mm to 30 mm
25.	Motor Gasoline,	Sulphur-EDXRF	BIS 1448 (Part 153): 2012 ISO 20847: 2004	0 to 1000 mg/kg
26.	HSD, Kerosine, Jet A-1/JP5, Fuel Oil/LDO	Sulphur-EDXRF	BIS 1448 (Part 153): 2012 ASTMD D 4294: 2010	0 to 50000 mg/kg 0 to 5.0 %
27.	Jet A1, JP5	Sulphur Mercaptan	BIS 1448 (Part 109): 2004 IP 342: 2000 ISO 3012: 1999 ASTMD 3227: 2013	0.0003 % by mass to 0.01 % by mass
28.	Jet A1, JP5, AV Gas	Specific Energy	ASTM D 3338 M: 2009 (Reapproved 2014)	40 MJ/Kg to 48 MJ/Kg
29.	Motor Gasoline, AV Gas,	Vapour Pressure – Reid	BIS 1448 (Part 39): 1967 IP 69: 2008 ISO 3007: 1999	3.4 kPa to 180 kPa
30.	HSD, LDO, Fuel Oil	Water Content by Dean & Stark	BIS 1448 (Part 40): 2011 IP 74: 2000 ISO 3733: 1999 ASTMD 95: 2013e1	0.05 to 50 % by Vol.
31.	Jet A1, JP5 AV Gas	Water Reaction	BIS 1448 (Part 42): 2011 IP 289: 2006 ASTMD 1094: 2007 (Reapproved 2013)	Qualitative (Rating 1 to Rating 4)
32.	Jet A-1/ Kerosine	Colour (Saybolt)	BIS 1448 (Part 14) ASTMD 156: 2015	(-)16 to (+)30

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33.	Motor Gasoline, Kerosine, HSD, Jet A-1,JP-5, Av Gas100 LL	Colour	Visual IOC/ LHY/50 WI No.10 2016, Issue No. 2	Qualitative
		Appearance	Visual IOC/ LHY/50 WI No. 9 2016, Issue No. 2	Qualitative

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