

Laboratory **Visakha Laboratory, Indian Oil Corporation Limited, Malkapuram, Visakhapatnam, Andhra Pradesh**

Accreditation Standard **ISO/IEC 17025: 2017**

Certificate Number **TC-8055 (in lieu of T-1013)**

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Validity **04.11.2018 to 03.11.2020**

Last Amended on --

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.	ATF JET A-1	Electrical Conductivity	ASTM D 2624-2015 IS1448 (Part 148):2013	15 pS/m to 1500 pS/m
2.	ATF JET A-1, ATF JP-5	Silver Corrosion Test	IP 227-1999	Qualitative (Rating 0 to 4)
		Total Acidity	ASTM D 3242-2011 (2017) IS 1448 (Part 113): 2016	0.0 to 0.1mgKOH/g
		Naphthalene Content	ASTM D 1840-2013 IS 1448 (Part 118): 2007	0 to 5% vol
		Sulphur Mercaptans	ASTM D 3227-2016 IS 1448 (Part 109): 2016	0.0003% mass to 0.01% mass
3.	ATF JET A-1, ATF JP-5, AVGAS	Aniline point	ASTM D 611-2012 (2016), IS 1448 (Part 3): 2007	50°C to 80°C
		Freezing Point	ASTM D 2386-2012, IS 1448 (Part 11): 2016	20°C to (-)70°C
		Specific Energy	ASTM D 3338:2014	40.19 MJ/kg to 44.73 MJ/kg
		Water Reaction	ASTM D 1094-2013, IS 1448 (Part 42):2015	Qualitative (Rating 1 to 4)
4.	ATF JET A-1, ATF JP-5, AVGAS, Motor Gasoline	Existent Gum	ASTM D 381-2012 (2017), IP 540-2014 IS 1448 (Part 29): 2011	1 mg/100ml to 7 mg/100ml
5.	ATF JET A-1, ATF JP-5, AVGAS, Motor gasoline, Automotive diesel, Kerosene, Fuel oils, Light Diesel Oil, Bio diesel, High flash high speed diesel, Naphtha	Density by Hydrometer	ASTM D 1298-2012b (2017) IS 1448 (Part 16):2014,	600 kg/m <sup>3</sup> to 1050 kg/m <sup>3</sup>

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6.	ATF JET A-1, ATF JP-5, AVGAS, Motor gasoline, Kerosene, Automotive diesel, Bio Diesel, Light diesel oil, high flash high speed diesel	Copper Strip Corrosion Test	ASTM D 130-2012 IS 1448 (Part 15): 2015	Qualitative (Rating 1 to 4)
7.	ATF JET A-1, ATF JP-5, High Flash High Speed Diesel, Automotive Diesel, Light Diesel Oil, Fuel Oils, Lubes, Bio-Diesel	Kinematic Viscosity	ASTM D 445-2017a, ISO 3104-1997, IS 1448 (Part 25): 2013	1 cSt to 380 cSt
8.	ATF JET A-1, ATF JP-5, Kerosene	Smoke Point	ASTM D 1322-2015e1 ISO 3014-1993, IS 1448 (Part 31):2013	5 mm to 30 mm
9.	ATF JET A-1, ATF JP-5, Kerosene, AVGAS, Auto-motive Diesel, High Flash High Speed Diesel, Light Diesel Oil, Fuel Oils, Motor Gasoline, Naphtha	Sulphur by ED XRF	ASTM D 4294-2016 ISO 13032-2012, ISO 8754-2003, IS 1448 (Part 153):2012	0.0003% to 5.0% mass
10	ATF JET A-1, ATF JP-5, Motor Gasoline, Automotive Diesel	Aromatics	ASTM D 1319-2015 IS 1448 (Part 23): 2010	5.0% to 99.0% Vol
		Olefins	ASTM D 1319-2015 IS 1448 (Part 23): 2010	0.3% to 55.0% Vol
		Saturates	ASTM D 1319-2015 IS 1448 (Part 23): 2010	1.0% to 95.0% Vol
11.	ATF JET A-1, Automotive Diesel, Kerosene	Flash Point (Abel)	IP 170-2014, ISO 13736-2013 IS 1448 (Part 20): 2013	18°C to 70°C

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12.	ATF JET A-1, ATF JP-5	Doctor Test	IS 1448 (Part 19): 2015	Qualitative (Positive or Negative)
13.	ATF JET A-1, ATF JP-5, AVGAS, Motor Gasoline, Automotive Diesel, Kerosene, Naphtha, High Flash High Speed Diesel	Distillation	ASTM D 86-2017, ISO 3405-2011, IS 1448 (Part 18): 2016	30°C to 400 °C
14.	ATF JP-5, Automotive Diesel, High Flash High Speed Diesel, Light Diesel Oil, Fuel Oils, Biodiesel, Lubes	Flash Point (PMCC)	ASTM D 93-2016a IS 1448 (Part 21): 2012	40°C to 370°C
15.	Automotive Diesel, High Flash High Speed Diesel	Cetane Index	ASTM D 4737: 2016	32.5 to 65
16.	Automotive Diesel, High Flash Diesel, Biodiesel	Colour (ASTM units)	ASTM D 1500-2017 IS 1448 (Part 12): 2013	0.5 to 8.0 ASTM Units
17.	Automotive Diesel, Light Diesel Oil, Fuel Oils, Lubes	Ash Content	ASTM D482-2013, ISO 6245-2001, IS 1448 (Part 4): 2013	0.001% to 0.18% By Mass
18.	Biodiesel	Acid Number	ASTM D974:2014, IS 1448 (Part 1): 2002	0.0 to 2.0 mg KOH/g
		Cold Filter Plugging Point	ASTM D 6371-2017, IS 1448 (Part 113): 2013	-15°C to 51°C
19.	Fuel Oils, Naphtha	Calorific Value	ASTM D 4868-2017 IS 1448 (Part 7): 2010	9000 cal/g to 12000 cal/g
20.	High Flash High Speed Diesel, Automotive Diesel, Light Diesel Oil, Fuel Oils	Pour Point	ASTM D 97-2017b IS 1448 (Part 10):2013	-15°C to 51°C

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30.	Kerosene, ATF JETA-1, ATF JP-5	Colour Saybolt	ASTM D 156-2015 IS 1448 (Part 14):2013	-16 to 30
31.	Light Diesel Oil, Fuel Oils	Sediments by Extraction	ASTM D 473-2017 IS 1448 (Part 30):2013	0.01% to 0.4% wt
32.	Light Diesel Oil, Fuel Oils, Biodiesel	Water Content by Distillation	ASTM D 95-2013 IS 1448 (Part 40):2015 IP 74-2000, ISO 3733-1999,	0.05% to 10.0% vol
33.	Lubes	Flash Point (COC)	ASTM D 92-2016b IS 1448 ( Part 69):2013	79°C to 400°C
34.		Sulphated Ash	ASTM D 874-2013a ISO 3987-2010 IS 1448 (Part 4):2013	0.005% to 0.10% mass
35.	Motor Gasoline, AV Gas, Naphtha	Reid Vapour Pressure	IS 1448 (Part 39):2012	3.4 kPa to 180 kPa