

Laboratory	Central Laboratory, Reliance Industries Limited, Refinery & Petrochemical Division, Village: Meghpar/ Padana, Taluka: Lalpur, District: Jamnagar, Gujarat		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Chemical Testing	Issue Date	01.07.2014
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S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
I. PETROLEUM				
1.	Kerosene, Aviation Turbine, Naphtha, Motor Gasoline, Fuel Oil, High Speed Diesel	Distillation	ASTM D 86-2012 IS 1448 (Part-18)-91 (RA 2011)	Boiling Range: 30°C to 400°C
2.	High Speed Diesel Oil, Carbon Black Feed Stock & Fuel Oil	Flash point, Method-A & B	ASTM D 93-2013E1 IS 1448 (Part-21)-92 (RA 2012)	40°C to 360°C
3.	High Speed Diesel Oil, Carbon Black Feed Stock	Pour Point Ash content	ASTM D 97-2012 IS 1448 (Part-10)-1 (2013) ASTM D 7582-12	-33°C to 60°C 0.1% to 1.0% wt.
4.	Aviation Turbine Fuel, Kerosene, Motor Gasoline, High Speed Diesel	Copper Corrosion	ASTM D 130-2012 IS 1448 (Part-15)-2011	Rating: 1c to 4c
5.	Kerosene, Aviation Turbine Fuel, Naphtha	Colour, Saybolt	ASTM D 156-2012 IS 1448 (Part-14)-60 (RA 2013)	-16 to +30
6.	Motor Gasoline, Aviation Turbine Fuel	Gum content	ASTM D 381-2012 IS 1448 (Part-29)-2011	0 to 100 mg/ 100 ml

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7.	High Speed Diesel Oil, Aviation Turbine Fuel, Carbon Black Feed Stock, Fuel Oil	Kinematic Viscosity	ASTM D 445-2012 IS 1448 (Part-25)-76 (RA 2013)	0.2 to 300000 mm ² /s
8.	High Speed Diesel, Fuel Oil, Crude Oil	Sediment	ASTM D 473-07 (2012) IS 1448 (Part-30)-2013	0.00% to 0.40% mass
9.	High Speed Diesel Oil	Rams-bottom Carbon Residue Analysis (RCR)	ASTM D 524-10 IS 1448 (Part-8)-2012	0.01% to 30.0% wt.
		Cetane Number	ASTM D 613-13 IS 1448 (Part-9)-2013	30 to 65 Number
		Colour	ASTM D 1500-2012 IS 1448 (Part-12)-2013	0 to 8.0 ASTM
		Oxidation Stability	ASTM D 2274-10	0.0 to 15 mg/ 100 ml
		Cloud Point	ASTM D 2500-11 IS 1448 (Part-10)-70 (RA 2003)	-18°C to 18°C
		Water and Sediment	ASTM D 2709-96 (Reapproved 2011)e1	0% to 0.10% vol.

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	High Speed Diesel Oil	Lubricity	ASTM D 6079-11 ISO 12156-1 / 97	100 µm to 650 µm
		Cold filter plugging point	ASTM D 6371-05 (Reapproved-2010) IS 1448 (Part-110)-81 (RA 2013)	-30°C to 30°C
		Total Sediment	UOP 413 / 82	0.0 to 15 mg/ 100 ml
		Mono Aromatic Hydrocarbon(MAHC) Di Aromatic Hydrocarbon (DAHC) Poly Aromatic Hydrocarbon (PAHC)	IP 391 / 2007	7% to 42% wt.
10.	High Speed Diesel, Kerosene	Acidity	ASTM D 664-11a IS 1448 (Part-2)-2007 (RA 2013)	0.1 to 150 mg/gKOH
11.	Ortho Xylene, Naphtha, Benzene, Para Xylene	Acidity	ASTM D 847-08	0 to 0.5 mgNaOH/100 ml
		Colour	ASTM D 1209-05 (Reapproved 2011)	0 to 60 Pt-Co Colour
12.	Benzene, Para Xylene, Ortho Xylene	Acid Wash Colour	ASTM D 848-14	0 to 6 Number
		Distillation	ASTM D 850-11	30°C to 250°C
13.	Para Xylene	Copper Strip Corrosion	ASTM D 849-11	Rating: 1a to 4c

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14.	Benzene	Solidification point	ASTM D 852-13	4.0°C to 6.0°C
		Benzene Purity	ASTM D 4492-10	99.8% to 100% wt.
15.	Motor Gasoline	Oxidation Stability	ASTM D 873-12 IS 1448 (Part-147)-2004 (RA 2011)	0 to 20 mg/ 100 ml
		Research Octane Number	ASTM D 2699-13B IS 1448 (Part-27)-2013	40 to 120 Number
		Motor OctaneNumber	ASTM D 2700-13B IS 1448 (Part-26)-2013	40 to 120 Number
		Benzene	ASTM D 3606-10	0.1% to 5.0% vol.
		Vapour Pressure	ASTM D 5191-13	7 kPa to 130 kPa
16.	Motor Gasoline, Naphtha	Bromine Numbers	ASTM D 1159-07 (Reapproved 2012) IS 1448 (Part-44)-1983 (RA 2011)	0 to 165 g/100g
		Trace Quantities of Sulphur	ASTM D 3120-08	3 mg/kg to 1000 mg/kg
		MTBE, ETBE, TAME, DIPE, tertiary-Amyl Alcohol and C1 to C4 Alcohols	ASTM D 4815-13	Ether: 0.2% to 20% mass Alcohol: 0.2% to 12% mass

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17.	Polypropylene	Melt Flow Index	ASTM D 1238-13	0.70 to 55 g/10 min
		Yellowness Index	ASTM D 6290-13	-7.0 to 20.0 Number
18.	Crude Oil, CBFS, HSD, Reduced Crude, Gas Oil Streams, Fuel Oil, Kerosene, Gasoline Streams, Vacuum Residue, Raw Oil, Methanol, Caustic Samples	Density	ASTM D 1298-2012b IS 1448 (Part-16)-90 (RA 2013)	600 to 1100 kg/m ³
19.	Motor Gasoline, Aviation Turbine Fuel	Aromatics, Olefins, Saturated1	ASTM D 1319-2013 IS 1448 (Part-23)-04 (RA 2011)	5.0% to 99.0% vol. 0.3% to 55.0% vol. 1% to 95% vol.
20.	Aviation ,Turbine Fuel, Kerosene,	Smoke Point	ASTM D 1322-12E2 IS 1448 (Part-31)-68 (RA 2013) ISO 3014 / 93	15 mm to 30 mm
		Density	ASTM D 4052-2011	0.6800 g/ml to 0.9700 g/ml
21.	Naphtha, Ortho Xylene	Nonvolatile residue	ASTM D 1353-13 IS 1448 (Part-64)-98 (RA 2013)	2.0 to 15 mg/ 100 ml
22.	Petroleum Coke	Sulphur	ASTM D 1552-08	0.5% to 10% mass
		Gross Calorific Value	ASTM D 5865-13 IS 1448 (Part-6)-84 (RA 2013)	3000 to 10000 Kcal/kg

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23.	Petroleum Coke	Moisture, Ash content & Volatile matter	ASTM D 7582-12	0.1% to 0.5 % wt. 0.1% to 1.0% wt. 7.0% to 15.0% wt.
		Moisture content	IS 1448 (Part-132)-89 (RA 2013)	1.0% to 10.0% wt. (As rec) 0.10% to 0.90% wt. (After Dry)
		Hardgrove Grindability Index	IS 4433-79 (RA 2010)	37 to 89 Number
	Liquefied Petroleum Gases	Volatility	ASTM D 1837-11 IS 1448 (Part-72)-68 (RA 2013)	-3.0°C to 5.0°C
		Copper Strip Corrosion	ASTM D 1838-12A IS 1448 (Part-15)-04 (RA 2011)	Rating: 1a to 4c
		Sulphur	ASTM D 3246-11	1.5 mg/kg to 100 mg/kg
		H ₂	UOP 539 / 97	0.1% to 99.9% mole
		N ₂		
		Cl		
		C ₂		
		C ₃		
		n-C ₄		
		i-C ₄		
		n-C ₅		
		i-C ₅		
		O ₂		
		CO ₂		
		Density and Vapor Pressure	IP 432-2000	Calculated

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24.	Aviation Turbine Fuel	Naphthalene	ASTM D 1840-07 (2013) IS 1448 (Part-118)-1985 (RA 2013)	0.0% to 5.0% vol.
		Freezing Point	ASTM D 2386-06 (Reapproved 2012) IS 1448 (Part-11)-2004 (RA 2011) IP 16 – 2012	-70 °C to -20 °C
		Electrical Conductivity	ASTM D 2624-09 IP 274 / 09	1 to 2000 pS/m
		Thermal Oxidation Stability	ASTM D 3241-13 IS 1448 (Part-97)-80 (RA 2013)	Tube rating: 0 to 4 mm Hg Pressure drop: 0 to 25 mm Hg
		Acidity	ASTM D 3242-11 IS 1448 (Part-113)-1983 (RA 2011)	0.000 to 0.100 mgKOH/g
		Water Separation Characteristics by Potable Separometer (MSEP)	ASTM D 3948-13 IS 1448 (Part-142)-1993 (RA 2011)	Rating: 60 to 100
		Lubricity (WSD)	ASTM D 5001-10	0.50 to 0.95 mm
		Particulate contaminant	ASTM D 5452-12	0.1 mg/l to 1.0 mg/l

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25.	Propylene	Methane, Ethane, Ethylene, Propane, Butane-1, Propadiene, n-Butane, t-2-butene, 1-Butene, I-Butylene, C-2-Butene, MA, 1, 3-Butadiene	ASTM D 2712-91(2010)	5 to 500 mg/kg
		Yellowness Index	ASTM D 6290-13	-7.0 to 20.0 Number
26.	Aviation Turbine Fuel, Kerosene, Naphtha	Mercaptan	ASTM D 3227-13 IS 1448 (Part-109)-2004 (RA 2011)	0.0003% to 0.01% mass
27.	Gasoline	Lead	ASTM D 3237-12 IP 352/07	2.5 mg/l to 25 mg/l 0.002 to 0.020 g Pb/L
		Benzene, Toluene, Ethyl Benzene, Xylenes, C9 & Heavier Aromatics and Total Aromatics	ASTM D 5580-13	Benzene: 0.1 to 5.0% vol. Toluene: 1 to 15% vol. Individual C8 Aromatics: 0.5 to 10% vol. Total C9 Aromatics & Heavies: 5 to 30% vol. Total Aromatics: 10 to 80% vol.

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28.	Ortho Xylene	OX-Purity	ASTM D 3797-05	95% to 100% wt.
29.	Crude Oil, Desalted Crude	Water and Sediment	ASTM D 4007-11E1 IS 1448 (Part-41)-92 (RA 2013)	0.025% to 1.0% vol.
30.	Carbon Black Feed Stock, Fuel Oil	Carbon Residue	ASTM D 4530-11	0.1% to 30% mass
31.	Naphtha Streams, Carbon Black Feed Stock, Para Xylene, Ortho Xylene, Diesel Oil, Vacuum Gas Oil, Coker Feed, Carbon Black Feed Stock (CBFS)	Nitrogen	ASTM D 4629-12	0.3 mg/kg to 100 mg/kg
32.	Crude Oil, Naphtha, High Speed Diesel Oil	Organic Chloride	ASTM D 4929-07	0 to 5 microgram/g
33.	Liquefied Petroleum Gases, Gasoline, Kerosene & Diesel Oil	Active Sulphur Species	ASTM D 4952-12	Qualitative
34.	P-Xylene, O-Xylene, Benzene	Bromine Index	ASTM D 5776-14	0 to 500 mg/100g

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35.	Carbon Black Feed Stock	Asphaltenes	ASTM D 6560-12 IP 143 / 2004 IS 1448 (Part-22)-1985 (RA 2013)	0.50% to 30.0% m/m
36.	Superior Kerosene, Aviation Turbine Fuel	Flash Point	IS 1448 (Part-20)-1998 (RA 2013) Method B IP 170 / 2009	19°C to 70°C
37.	Para Xylene	Impurities	UOP 720 / 08	0.002% to 0.200% mass
38.	Heavy Aromatics	Non-Aromatics Benzene Toluene Ethyl Benzene p-Xylene m-Xylene o-Xylene C9 Arom C10 Arom	UOP 744-2006	0.01% to 100% mass
39.	Para Xylene, Naphtha, Diesel	Chloride	UOP 779-08	1 to 1000 mg/kg
40.	Crude Oil	Salt content	IP 77 / 72 (2012) IS 1448 (Part-115)-84 (RA 2013)	0.002% to 0.02% wt.

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II. WATER

1. Potable Water,	Turbidity	IS : 3025 (Part 10) -84 (RA 2012)	0 to 5 NTU
	pH	IS : 3025 (Part 11) -83 (RA 2012)	7 to 8 mg/L
	Filterable residue (Total Dissolved Solids)	IS : 3025 (Part 16) -84 (RA 2006)	100 to 500 mg/L
	Total Hardness	IS : 3025 (Part 21) -83 (RA 2009)	50 to 300
	Chloride	IS : 3025 (Part 32) -88 (RA 2009)	50 to 100 mg/L
2. Process Water	Turbidity	IS : 3025 (Part 10) -84 (RA 2012)	0 to 50 NTU
	pH	IS : 3025 (Part 11) -83 (RA 2012)	4 to 10 mg/L
	Filterable residue (Total Dissolved Solids)	IS : 3025 (Part 16) -84 (RA 2006)	1 to 10 mg/L
	Total Suspended Solids	IS : 3025 (Part 17) -84 (RA 2012)]	10 to 100 mg/L
	Sulphide	IS : 3025 (Part 29) -86 (RA 2009)	1 to 100 mg/L
	Chloride	IS : 3025 (Part 32) -88 (RA 2009)	5 to 1000 mg/L
	Ammonia	IS : 3025 (Part 34) -88 (RA 2009)	1 to 1500 mg/L
	Oil and Grease	IS : 3025 (Part 39) -91 (RA 2009)	4 to 100 mg/L

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3.	Waste Water	Turbidity	IS : 3025 (Part 10) -84 (RA 2012)	0 to 250 NTU
		pH	IS : 3025 (Part 11) -83 (RA 2012)	7 to 9 mg/L
		Filterable residue (Total Dissolved Solids)	IS : 3025 (Part 16) -84 (RA 2006)	300 to 2000
		Total Suspended Solids	IS : 3025 (Part 17) -84 (RA 2012)	5 to 20 mg/L
		Filterable residue (Total Dissolved Solids)	IS 3025 (Part-16)-84 (RA 2006)	25 mg/l to 2500 mg/l
		Sulphates	IS : 3025 (Part 24) -86 (RA 2009)	10 to 200 mg/L
		Sulphide	IS : 3025 (Part 29) -86 (RA 2009)	0.1 to 20 mg/L
		Chloride,	IS : 3025 (Part 32) -88 (RA 2009)	50 to 700 mg/L
		Ammonia	IS : 3025 (Part 34) -88 (RA 2009)	5 to 70 mg/L
		Oil and Grease	IS : 3025 (Part 39) -91 (RA 2009)	4 to 100 mg/L
		Biological Oxygen Demand	APHA 5210D (22 nd edition)	0 to 700 mg/L
		Chemical Oxygen Demand	APHA 5220D (22 nd edition)	1 10 to 3000 mg/L

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