

<b>Laboratory</b>	<b>Quality Control Department, BPCL-Kochi Refinery, Ambalamugal P.O., Ernakulam Dist., Kerala</b>		
<b>Accreditation Standard</b>	<b>ISO/IEC 17025: 2005</b>		
<b>Discipline</b>	<b>Chemical Testing</b>	<b>Issue Date</b>	<b>04.10.2014</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. PETROLEUM</b>				
<b>1.</b>	<b>Benzene</b>	Neutrality	ASTM D 847-08	Qualitative
		Bromine Index	ASTM D 5776-12	1 to 20
		Colour	ASTM D 1209-11	5 Colour unit to 30 Colour unit
		Solidification Point	ASTM D 852-08	4 °C to 6 °C
<b>2.</b>	<b>FO 380</b>	Strong Acid No	ASTM D 974-12	0.01 mg KOH/g to 5 mg KOH/g
<b>3.</b>	<b>Kerosene, HSD, LDO, FO 180, LSHS</b>	Acidity/ Acid No	IS 1448 (Part 2): 2007 ISO 6619-88	0.01 mg KOH/g to 5 mg KOH/g
<b>4.</b>	<b>ATF</b>	Acidity Total	IS 1448 (Part 113): 2006 (RA 2011) ASTM D 3242-11	0.001 mg KOH/g to 0.1 mg KOH/g
		Specific Energy	ASTM D 3338- 09	35 MJ/kg to 50 MJ/kg
		BOCLE	ASTM D 5001-10	0.3 mm to 1 mm
		Electrical Conductivity	ASTM D 2624-09 ISO 6297-97	15 pS/m to 600 pS/m
		Freezing Point	IS 1448 (Part 11): 2004 (RA 2010) ASTM D 2386-12 ISO 3013-97	(-) 80 °C to 20 °C
		Freezing Point -Auto	ASTM D 7153-10	(-) 80 °C to 20 °C

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	<b>ATF</b>	JFTOT	IS 1448 (Part 97): 2007 ASTM D 3241-11a ISO 6249-99	0 to 50 mm Hg
		Particle Counts	IP 565-09	ISO code 0 to ISO code 28
		Silver Corrosion	IP 227-99	0 to 4
		Water Reaction	IS 1448 (Part 42): 2006 ASTM D 1094-07	1 to 4
		MSEP	IS 1448 (Part 142): 2006 ASTM D 3948-11	50 to 100
		Particulate Contamination	ASTM D 5452-12 IP 423-10	0.1 mg/L to 5.0 mg/L
		Naphthalene Content - UV	IS 1448 (Part 118): 2007 ASTM D 1840-07	0 to 5 % (by Vol)
		Visual Appearance	ASTM D 4176-09	Qualitative
<b>5.</b>	<b>Benzene, Toluene</b>	Acid Wash Colour	ASTM D 848-09	1 Colour unit to 5 Colour unit
		Distillation	IS 5298: 1983 ASTM D 850-11	30 °C to 150 °C
		Hydrogen Sulphide	ASTM D 853-04	Qualitative
		Purity	IS 534-07	99.8 % to 100 % (by Wt)
		Sp Gravity	IS 852: 2007 ASTM D 4052-11	0.85 to 0.9

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6.	HSD, LDO, FO, LSHS	Ash Content	IS 1448 (Part 4): 2008 ASTM D 482- 07 ISO 6245-01	0.001 % to 0.18 % (by wt)
		RCR	IS 1448(Part 8): 2003 ASTM D 524-10 ISO 4262-93	0.05 % to 1 % (by wt) 8 % to 18 % (by wt)
		Sediment by Extraction	IS 1448 (Part 30): 2003 (RA 2008) ASTM D 473-07 (RA 2012)	0.01 % to 0.4 % (by Wt)
		Pour Point	IS 1448 (Part 10): 2003 (RA 2012) ASTMD 97-11 ISO 3016	(-)12 °C to 51 °C
		Pour Point	ASTMD 5950-12	(-)12 °C to 51 °C
		Water Content	IS 1448 (Part 40): 2006 ISO 3733	0.025 % to 10 % (by Vol).
7.	MS	Benzene Content	ASTM D 3606- 10	0.1 % to 5 % (by Vol)
		Oxidation Stability	IS 1448 (Part 28): 2008 ASTM D 525-12a IP 40-04 ISO 7536-94	10 minutes to 420 minutes
		Lead	ASTM D 5059-12 IP 352-00	0.0001 g/L to 0.2 g/L
		RON	IS 1448 (Part 27): 2003 (RA 2008) ASTM D 2699-08 ISO 5164	40 to 100

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	<b>MS</b>	<b>MON</b>	IS 1448 (Part 26): 2003 ASTMD 2700-08 ISO 5163	40 to 100
		<b>Oxygenates &amp; Oxygen Content</b>	IS 2796: 2008 ASTM D 4815-09	0.2 % to 12 %
<b>8.</b>	<b>Kerosene</b>	<b>Burning Quality</b>	IS 1448 (Part 5): 2003	5 mg/kg to 30 mg/kg
<b>9.</b>	<b>Naphtha, FO, LSHS</b>	<b>Calorific Value</b>	IS 1448(Part 6): 2002 ASTM D 240-09	6000 cal/g to 12400 cal/g
		<b>Calorific Value</b>	IS 1448 (Part 7): 2004 (RA 2011)	6000 cal/g to 12400 cal/g
<b>10.</b>	<b>FO</b>	<b>MCRT</b>	ASTM D 4530-11 ISO 10370-93	8 % to 18 % (by wt)
		<b>TSP</b>	ASTM D 4870-09 ISO 10307-02	0 to 0.4 %
		<b>CCAI</b>	IS 15217: 2002 ISO 8217	750 to 900
<b>11.</b>	<b>HSD</b>	<b>CCI</b>	ASTM D 4737- 10 ISO 4264-07	32.5 to 56.5
		<b>CFPP</b>	IS 1448 (Part 110): 2006 ASTM D 6371-10	(-) 6 °C to 18 °C
		<b>Colour</b>	IS 1488(Part 12): 2007 ASTM D 1500-07	0.5 Colour unit to 8.0 Colour unit
		<b>Sediments - Total</b>	ASTM D 2274-10	0.1 mg per 100 ml to 3 mg per 100 ml
		<b>Cetane Number</b>	IS 1448 (Part 9): 2007 ASTM D 613-10a ISO 5165-98	30 to 65

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	<b>HSD</b>	Polycyclic Aromatic Hydrocarbons(PAH)	EN 12916-06 ASTM D 6591-11 IP 391-07	0 to 26 %
		Total Contamination	EN 12662 -08 IP 440-08	2 ppm to 100 ppm
		Water content	IP 438-01 ISO 12937-00	30 ppm to 1000ppm
		HFRR	ASTM D 6079-11 ISO 12156-1	200 µm to 600 µm
<b>12.</b>	<b>Naphtha</b>	Chloride	ASTM D 4929B-07	1 ppm to 5 ppm
		Non-volatile matter	IS 1448 (Part 64): 2008	1 mg/100 ml to 30 mg/100 ml
<b>13.</b>	<b>Toluene</b>	Colour	IS 82: 1973	Qualitative
		Residue on Evaporation	IS 82: 1991	1 mg per 100 ml to 30 mg per 100 ml
<b>14.</b>	<b>SBPS, Naphtha, Kerosene, MTO, ATF, HSD, Benzene</b>		ASTM D 6045-09	Pt-Co: 5 Colour unit to 30 Colour unit  ASTM: 0.5 Colour unit to 8.0 Colour unit  Saybolt: (-)16 Colour unit to 30 Colour unit
<b>15.</b>	<b>SBPS, Naphtha, Kerosene, MTO, ATF</b>	Colour	IS 1448 (Part 14): 2003 (RA 2008) ASTM D 156-12	(-)16 Colour unit to 30 Colour unit

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16.	LPG, LPG Auto	Component	ASTM D 2163-07 IP 405-94 ISO 7941-88	0.1 % mole to 100 % mole
		Copper Corrosion	ASTM D 1838-12 ISO 6251-96	1 to 4
		Hydrogen Sulphide	ASTM D 2420-12 ISO 8819-93	Qualitative
		Total Sulphur	ASTM D 3246-11	10 ppm to 150 ppm
		Vapour Pressure	IS 1448 (Part 71): 2004 ASTM D 1267-07 ISO 4256-96	10 kPa to 1550 kPa
17.	MS,ATF, HSD, LDO, Kerosene	Copper Corrosion	IS 1448 (Part 15): 2004 (RA 2011) ASTM D 130-12 ISO 2160-98	1 to 4
18.	SBPS, Naphtha, MS, Kerosene, MTO, ATF, HSD, LDO,FO, LSHS, Crude	Density	(Part 16): 2007 (RA 2011) ASTM D 1298-12b ISO 3675-98	0.65 g/ml to 1.1 g/ml
		Density - Auto	ASTM D 4052-11 ISO 12185-96	0.68 g/ml to 0.97 g/ml
19.	Kero, MTO, ATF, HSD, SBPS, Naphtha, MS	Distillation	IS 1448(Part 18): 2006 (RA 2010) ASTM D 86- 11 ISO 3405- 00	20 °C to 400 °C
20.	SBPS, MTO, ATF, Toluene	Doctor Test	IS 1448 (Part 19): 2007	Qualitative

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21.	Bitumen, NRMB	Ductility	IS 1208-04 ASTM D 113-07	10 cm to 140 cm
		Flash COC	IS 1209-04 IS 1448 (Part 69): (RA 2008) ASTM D 92-12 ISO 2592-00	90 °C to 300 °C
		Penetration	IS 1203-04 ASTMD 5-13	20 tenths of mm to 200 tenths of mm
		Softening Point	IS 1205: 2004 ASTM D 36-00	30 °C to 80 °C
22.	Bitumen	RTFOT	ASTM D 2872-12	10 cm to 140 cm
		Kinematic Viscosity	IS 1206, (Part 3): (RA 2006) ASTM D 2170-10	120 cSt to 200 cSt 200 cSt to 4000 cSt
		Absolute Viscosity	IS 1206(Part 2): 2004	500 Poise to 5000 Poise
		Soluble Matter	IS 1216: 2004 IP 47-00	95 % to 100 % (by wt)
23.	NRMB	Elastic Recovery	IS 15462-04 ASTM D 6084-06	10 % to 80 %
24.	MS, ATF	Existent Gum	IS 1448, (Part 29): 2004 ASTM D 381-09 ISO 6246-95	1 mg per 100ml to 30 mg per 100ml
25.	Kerosene, MTO, ATF, HSD, HFD	Flash ABEL	IS 1448(Part 20): 1998 IP 170-09 ISO 13736 -08	19 °C to 70 °C
26.	LDO, FO, LSHS	Flash PMC	IS 1448 (Part 21): 2012 ASTM D 93-12 ISO 2719	40 °C to 150 °C

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27.	HSD, LDO, ATF, FO, LSHS,	Kinematic Viscosity	IS 1448 (Part 25): 2002 (RA 2007) ASTM D 445-12 ISO 3104-94	0.2 cSt to 6 cSt 10 cSt to 50 cSt
28.	LPG Auto	MON	ISO 7941 IS 14861: 2000	70 to 100
29.	Naphtha, SBPS	Evaporation Residue PIONA	ISO 13757-96 ASTM D 5134-08	5 mg/kg to 150 mg/kg 0.01 % to 30 %
30.	MTO, ATF, Naphtha, MS	FIA	IS 1448 (Part 23): 2004 (RA 2010) ASTM D 1319-10 ISO 3837-93	4 % to 50 % (by Vol)
31.	MTO	Residue on Evaporation	IS 1448 (Part 29): 2004 (RA 2011) ISO 6246-95	1 mg per 100 ml to 30 mg per 100 ml
32.	ATF, Kerosene	Smoke Point	IS 1448 (Part 31): 2003 (RA 2008) ISO 3014-93	10 mm to 30 mm
33.	LPG	Sp Gravity Volatility	IS 1448 (Part 76): 2003 IS 1448 (Part 72): 2003 ASTM D 1837-11	0.5 to 0.65 (-)-10 °C to 20 °C
34.	Naphtha, ATF	Sulphur - Mercaptan	IS 1448 (Part 36): 2003 IS 1448 (Part 109): 2004 ASTM D 3227-10 ISO 3012-99	3 ppm to 80 ppm



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35.	Benzene, Toluene, Naphtha, MS, HSD	Total Sulphur	ASTM D 5453-09 ASTM D 3120-08	1 ppm to 400 ppm
36.	Naphtha, MS, Kerosene, MTO, ATF, HSD, LDO, FO, LSHS	Total Sulphur	ISO 8754-03 ASTM D 4294-10 ISO 20847-04 ASTM D 2622-10 ISO 14596-07	17 ppm to 500 ppm 0.05 % to 4.6 % 3 ppm to 45000 ppm
37.	Naphtha, MS	RVP	IS 1448 (Part 39): 2003 ASTM D 323-08 ISO 3007	0.1 psi to 15 psi

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