

Laboratory	Apar Industries Ltd., Lube Blending Plant, Plot No.18, T.T.C. MIDC Ind. Area, Thane Belapur Road, Rabale, Thane, Maharashtra		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	08.12.2014
Certificate Number	T- 1513	Valid Until	07.12.2016
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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. ELECTRICAL MATERIALS- LIQUID DIELECTRIC MATERIALS				
1.	Transformer Oil/Rubber Processing Oil/ Industrial Oil	Density	ASTM D 1298-12b IS 1448(Part 16): 90 (RA 2007) ISO 3675, ASTM D 4052	0.800 g/cm ³ to 0.950 g/cm ³
		Viscosity, cSt (-40 -100 °C)	ASTM D 445: 2012 IS 1448 (Part 25): 76 (RA 2007) ISO 3104 , ASTM D 7042 -12a	2 cSt to 2000 cSt
		Pour Point, °C	ASTM D 97 – 2012 IS 1448 (Part 10): 70 (RA 2008) ISO 3016	- 54 °C to 20 °C
		Total Acid No./ Neutralisation Value	ASTM D 974 -2012 IS1448(Part 2): 2007 IEC 62021-1or 2	0.0001 mg KOH/gm to 10 mg KOH/gm
		Sulfur Content	ASTM D-4294 : 2010 ISO 20847-2004	0 to 0.5 % Max.
		Appearance	Visual	The oil shall be clear, transparent and free from suspended matter or sediment
		Colour	ASTM D 1500 -12	0.5 Units to 8.0 Units
2.	Transformer Oil	Flash Point,(PMCC),°C	ASTM D 93 – 2013E1 IS 1448(Part 21): 2012 ISO 2719:2002	90 °C to 300 °C
		Interfacial tension at 25/27 °C	ASTM D 971: (Reapproved 2012) IS 6104: 1971 (RA 2006) ISO 6295	0 to 90 dynes/cm

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	Transformer Oil	Antioxidant / Oxidation Inhibitor	ASTM D-2668 – 07(2013) IS 13631:1993 (RA 2008) (Section- I & II) IEC- 60666	0 to 0.9 %
		Water Content	ASTM D-1533–12, IS 13567: 1992 (RA 2008) IEC- 60814	0 to 10000 mg/kg
		Break Down Voltage	ASTM D-877-13 IS 6792 : 1972 (RA 2008) IEC- 60156	0 to 100 kv
		Dielectric Dissipation Factor (25 -100 °C)	ASTM D-924 -08 IS 6262: 1971 (RA 2006) IEC- 60247	0 to 0.20
		Specific Resistance (from 27 -100°C)	ASTM D- 1169 – 11 IS 6103: 1971 (RA 2006) IEC 60247	1 X 10 ⁹ to 1 X 10 ¹⁸ .Ω.cm
		Oxidation Stability (After oxidation at 100 °C/110 °C/120 °C) a) Neutralization value b) Sludge c) Tan Delta @90°C	ASTM D-2440-13 IS 335 (RA 2010) Annex C IEC- 74 IEC- 61125, Method A ,C-2003	0.0001 mgKOH/gm and above
		Ageing Characteristics (After ageing at 115 °C for 96 hrs) a) Sp. Resistance @ 27 °C & 90 °C b) Dielectric Dissipation Factor @ 90°C c) Total Acidity, d) Total Sludge, % wt.	IS 12177:1987 (RA 2008) MethodA IS 6103: 1971 (RA 2006) IS 6262: 1971 (RA 2006) IS 1448 (Part 2): 2007 IS 12177- 87 (RA 2008) Annex A	1X 10 ⁹ to 1 X 10 ¹⁸ Ω.cm 1 to 1 X 10 ⁻⁵ 0.0001 mg KOH/gm & above 0 to 20 % wt.

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	Transformer Oil	Total Furans Content	ASTM D-5837 -12 IEC 61198-1993	0 to 200 µg/kg
		PCB Content	IEC 61619-1997 ASTM D-4059-00 (Reapproved 2010)	0 to 500 mg/kg
		Gassing Tendency @ 50 Hz after 120 Min.	IEC 60628 A ASTM D- 2300-08	10 to +30 mm ³ /min
3.	Rubber Processing Oil/ Industrial Oil	Flash Point, (COC)	ASTM D 92 –12B IS 1448 (Part 66): 1969 (RA2008)	50 °C to 400 °C
		Viscosity Index from Kinematic Viscosity at 40°C & 100°C	ASTM D- 2270-10e1 IS 1448 (Part 56) : 2013/ ISO 2909: 2002	0 to 300
4.	Transformer Oil/Industrial Oil	Corrosive Sulphur	ASTM D 130 -2012 IS 335 Annex B (RA 2010), DIN 51353,ASTM D- 1275B -06 ISO 5662, IEC- 62535	Corrosive/Non –Corrosive Positive /Negative
		Rotating Bomb Oxidation Stability Test (RBOT)	ASTM D- 2112-01a (Reapproved 2007) ASTM D-2272-11 IS:12958 :1990 IEC 61125 Method B	<2000 minutes
5.	Transformer Oil/Rubber Processing Oil	Carbon Type Analysis	IS 13155 : 1991 (RA 2006) IEC: 60590 ASTM D-2140-08	Aromatic : 0 to 20 Paraffinic : 30 to 80 Naphthenic: 20 to 60

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	Transformer Oil/Rubber Processing Oil	PCA Content	BS 2000 (Part 346): 1996	0 to 10 %
		Aniline Point	ASTM D-611-12 IS:1448 (Part 3): 2007 ISO 2977-1997	25 °C to 170 °C
6.	Industrial Oil	Apparent Viscosity of Engine Oils Between -5 to -30°C Using Cold-Cranking Simulator	ASTM D 5293-10e-1	500 mPas to 15000 mPas

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