

Laboratory "Shanthala Power Limited", "Electrical Testing Laboratory",
 "Shanthala No. 24", Priyadarshini Colony, Gokul Road, Hubli,
 Karnataka

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7910 (in lieu of T-0746)

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Validity 22.09.2018 to 21.09.2020

Last Amended on 26.09.2018

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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ELECTRICAL TESTING

I.	ELECTRICAL MATERIALS- LIQUID DIELECTRIC MATERIALS			
1.	Mineral insulating oil (Transformer Oil)	Colour and appearance	IS 335	Qualitative (Visual)
		Breakdown Voltage-BDV (Dielectric Strength)	IS 6792 IEC 60156	10 kV to 99 kV
		Water Content (Moisture Content)	IS 13567 IEC 60814	> 1 mg/kg
		Acidity test (Neutralization Number)	IS 1448 (Part 2) IEC 62021-1:	0 to 1.0 mg KOH/g
		Tan Delta Test at 90°C (Dielectric dissipation factor)	IS 6262 IEC 60247	0.0001 to 2.0
		Resistivity Test at 90°C (Specific Resistance)	IS 6103 IEC 60247	10 ⁷ to 10 ¹⁵ Ohm-cm
		Sludge and Sediment Test	IS 1866 Annexure A (Clause 4.3) IEC 60422 Annx. C	0.2 g to 600 g
		Interfacial Tension (IFT)	IS 6104 ASTM D 971	0.001 to 0.090 N/m
		Flash Point Test (PMCC)	IS 1448 (Part 21) ISO 2719	27° to 200°C
		Density at 27°C	IS 1448 (Part 16) IS 335 ISO 3675	0.80 to 0.90 g/cm ³
		Kinematic Viscosity at 27°C	IS 1448 (Part 25) ISO 3104	1 to 50 cSt
		Analysis Furanic compounds	IS 15668 IEC 61198	1 µg/kg and above
		5-Hydroxymethyl-2-furfural		

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		Furfurylalcohol		
		2-Furfural		
		2-Acetylfuran		
		5-Methyl-2-furfural		
		Dissolved Gas Analysis (DGA)	IS 10593	> 1 µl/l and above
		Methane	IEC 60599	
		Ethane	IS 9434:1992	
		Ethylene	IEC 60567	
		Acetylene	IEEE C57.104	
		Carbon Monoxide		
		Carbon dioxide		
		Hydrogen		