

Laboratory Power Electronical - Transformer Oil Testing Laboratory, Plot No. D-24, Classic Industrial Premises, M.I.D.C, Ambad, Nashik, Maharashtra

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-5250

Page 1 of 4

Validity 03.02.2019 to 02.02.2021

Last Amended on --

"In view of the transition for ISO/IEC 17025:2017, the validity of this accreditation certificate will cease on 30.11.2020"

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 – MINERAL INSULATING OIL			
	A. Permanent Lab			
1.	Transformer Oil	Appearance	IS 335/ IS 1866 IEC 60422	Qualitative (Clear & without visible contamination)
		Breakdown Voltage	IS 6792 IEC 60156:1995 IS 1866	1 to 100 kV
		Water Content	IS 13567 IS 1866	1 mg/kg to 1000 mg/kg
		Neutralization Value	ASTM D 974 (Ed. 2) IS 1866	0.01 mg KOH/g to 2 mg KOH/g
		Sediment & Sludge	Annex 'C' of IS1866 IEC 61125 (Cl. 4.8.1)	0 to 1 % by wt.
		Dielectric Dissipation Factor @ 90°C	IS 6262 IS 1866	0.0001 to 9.99
		Specific Resistance @ 90°C	IS 6103 IS 1866	10 MΩ m to 10 TΩ m
		Interfacial Tension @ 27°C	IS 6104 IS 1866	1 mN/m to 90 mN/m
		Flash Point (PMCC)	IS 1448 (P-21) ISO 2719 IS 1866	1 °C to 360°C
		Pour Point	IS 1448 (Part 10) (Sec 2) ISO 3016 IS 1866	Ambient to -25°C
		Density @ 20°C	IS 1448 (Part 16) IS 335	0.700 g/cm ³ to 1.000 g/cm ³

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Page 2 of 4

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Kinematic Viscosity @ 40°C	IS 1448 (Part 25/Sec 1) IS 1866	7 cSt to 35 cSt
		Dissolved Gas Analysis	IS 9434 Annex 'C'	1 µl/l and above
		Hydrogen (H ₂)	Toepler Pump Vacuum	
		Methane (CH ₄)	Extraction	
		Ethylene (C ₂ H ₄)	IS 1866	
		Ethane (C ₂ H ₆)		
		Acetylene (C ₂ H ₂)		
		Carbon Monoxide (CO)		
		Carbon Dioxide (CO ₂)		
		Oxygen (O ₂)		
		Nitrogen (N ₂)		
		Dissolved Gas Analysis	ASTM D 3612- Method C	1 µl/l and above
		Hydrogen (H ₂)	Headspace Sampling	
		Methane (CH ₄)	IS 1866	
		Ethylene (C ₂ H ₄)		
		Ethane (C ₂ H ₆)		
		Acetylene (C ₂ H ₂)		
		Carbon Monoxide (CO)		
		Carbon Dioxide (CO ₂)		
		Oxygen (O ₂)		
		Nitrogen (N ₂)		
		Furanic Compound Analysis (Liquid-liquid Extraction)	IEC 61198 ed.1.0;Method A	1 µg/kg to 30000 µg/kg
		5-hydroxymethyl-2-furfural (5-HMF)	Liquid-liquid Extraction	
		2-furfurylalcohol (FOL)		
		2-furfural (2-FAL)		
		2-acetyl furan (2-ACF)		

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Page 3 of 4

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		5-methyl-2-furfural (5-MEF)		
		Furanic Compound Analysis (Solid-liquid Extraction)	IEC 61198 ed.1.0;Method B Solid-phase Extraction	1 µg/kg to 30000 µg/kg
		5-hydroxymethyl-2-furfural (5-HMF)		
		2-furfurylalcohol (FOL)		
		2-furfural (2-FAL)		
		2-acetylfuran (2-ACF)		
		5-methyl-2-furfural (5-MEF)		
		15 Corrosive Sulphur	IEC 62535	Qualitative - Visual (Corrosive / Non Corrosive)
B. Mobile Lab				
		Appearance	IS 335 IS 1866 IEC 60422	Qualitative (Clear & without visible contamination)
		Breakdown Voltage	IS 6792 IEC 60156 IS 1866	1 kV to 100 kV
		Water Content	IS 13567 IS 1866	1 mg/kg to 1000 mg/kg
		Neutralization Value	ASTM D 974 Ed. 2 IS 1866	0.01 mg KOH/g to 2 mg KOH/g
		Dielectric Dissipation Factor at 90°C	IS 6262 IS 1866	0.0001 to 9.99
		Specific Resistance at 90°C	IS 6103 IS 1866	10 MΩ m to 10 TΩ m
		Interfacial Tension at 27°C	IS 6104 IS 1866	1 mN/m to 90 mN/m

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		Flash Point (PMCC)	IS 1448(Part 21) ISO 2719 IS 1866	1 °C to 360°C
		Density at 20°C	IS 1448(Part 16) IS 335	0.700 g/cm ³ to 1.000 g/cm ³
		Dissolved Gas Analysis (Headspace Sampling)	ASTM D 3612 – Method C Headspace Sampling IS 1866	1 µl/l and above
		Hydrogen (H ₂)		
		Methane (CH ₄)		
		Ethylene (C ₂ H ₄)		
		Ethane (C ₂ H ₆)		
		Acetylene (C ₂ H ₂)		
		Carbon Monoxide (CO)		
		Carbon Dioxide (CO ₂)		
		Oxygen (O ₂)		
		Nitrogen (N ₂)		