

Laboratory	HV Test Laboratory, Siemens Ltd., Transformer Works, Thane Belapur Road, Airoli Post Office, Airoli, Navi Mumbai, Maharashtra		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	15.10.2014
Certificate Number	T-1832	Valid Until	14.10.2016
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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	Density	IS 1448 (Pt:16): 1990 (Reaffirmed 2007) ISO 3675: 1998	0.800 to 0.900 gm/cm ³ 0.001 gm/cm ³
		Water Content	IS 13567: 1992 (Reaffirmed 2008) IEC 60814: 1997	1 µl/l to 9999 µl/l 0.01 µl/l
		Break Down Voltage (BDV)	IS 6792: 1992 (Reaffirmed 2007) IEC 60156: 1995	1 kV to 100 kV 0.1 kV
		Dielectric Dissipation Factor (Tan δ)	IS 6262: 1971 (Reaffirmed 2006) IEC 60247: 2004	0.00001 to 4.910 0.00001
		Specific Resistance	IS 6103: 1971 (Reaffirmed 2006) IEC 60247: 2004	250MΩcm to 2000TΩcm 0.001 MΩcm
		Viscosity	IS 1448 (Pt-25): 1976 (Reaffirmed 2007) ISO 3104: 1994	3.847 to 42.61 cSt 0.01 cSt
		Interfacial Tension at 27 °C (IFT)	IS 6104: 1971 Reaffirmed 2007) ISO 6295: 1983	1 mN/m to 250 mN/m 0.01 mN/m

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	Transformer Oil	Flash Point	IS 1448 (Pt-21): 1992 (Reaffirmed 2008) ISO 2719: 2002	50°C to 300 °C 0.1°C
		Pour Point	IS 1448 (Pt-10): 1970 (Reaffirmed 2008) ISO 3016: 1994	Ambient to -70°C 1°C
		Dissolved Gas Analysis (DGA)		
		Oxygen (O ₂)	IS 10593: 2006 IEC 60599: 2007	1 µl/l to 10000 µl/l 0.0001 µl/l
		Nitrogen (N ₂)	IS 10593: 2006 IEC 60599: 2007	1 µl/l to 10000 µl/l 0.0001 µl/l
		Carbon Dioxide (CO ₂)	IS 10593: 2006 IEC 60599: 2007	1 µl/l to 10000 µl/l 0.0001 µl/l
		Ethylene (C ₂ H ₄)	IS 10593: 2006 IEC 60599: 2007	1µl/l to 5000 µl/l 0.0001 µl/l
		Ethane (C ₂ H ₆)	IS 10593: 2006 IEC 60599: 2007	1µl/l to 5000 µl/l 0.0001 µl/l
		Methane (CH ₄)	IS 10593: 2006 IEC 60599: 2007	01µl/l to 5000 µl/l 0.0001 µl/l
		Carbon Monoxide (CO)	IS 10593: 2006 IEC 60599: 2007	01µl/l to 5000 µl/l 0.0001 µl/l

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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
		Hydrogen (H ₂)	IS 10593: 2006 IEC 60599: 2007	10 µl/l to 5000 µl/l 0.0001 µl/l
		Acetylene (C ₂ H ₂)	IS 10593: 2006 IEC 60599: 2007	1µl/l to 5000 µl/l 0.0001 µl/l
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