

Laboratory Columbia Petro Chem Pvt. Ltd.-Liquid Dielectric Testing Laboratory,
Survey No. 144/1/1, Plot No. 12/13/14, Athal Silvassa, Dadra & Nagar Haveli

Accreditation Standard ISO/IEC 17025: 2005

Discipline Electrical Testing **Issue Date** 07.09.2013

Certificate Number T-2653 **Valid Until** 06.09.2015

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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. INSULATING MATERIALS & INSULATORS				
1.	Transformer Oil	Appearance	IS 335:1993 IEC 60296:2003 ASTM D 3487	Qualitative
		Density	ISO 3675 : 1993 IS 1448 (P:16) : 1990 R 2007	0.80 to 0.90g/cm ³
		Kinematic Viscosity	ISO 3104 :1994 IS 1448 (P:25) : 1976 R 2002 ASTM D 445	1.5 cSt. and above
		Pour Point	ISO 3016 : 1994 IS 1448 (P:10): 1970 R 2003	0 to -48°C
		Flash Point	ISO 2719 : 2002 IS 1448 (P:21) : 1988 R 2003	0 to 370° C
		Neutralization Value	IEC 62021-1:2003 IS 1448(P:2) 2007	0 to 100 mg KOH/g
		Corrosive sulfur	IEC 62535 : 2008 ASTM D 1275 B IS 335:1993 R 2005 Annex B DIN 51353:2005	Qualitative
		Electric strength	IEC 60156 : 1995 IS 6792:1992 R 2008	0 to 100 kV
		Dielectric Dissipation factor (Tan delta)	IEC 60247 : 2004 IS 6262 :1971 R 2001	0.0001 to 9.99

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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
	Transformer Oil	Specific Resistance	IS 6103 : 1971 R 2006	1×10^6 to 1×10^{13} ohm -cm
		A) Oxidation Stability	IEC 61125:1992 Method A &C	
		a. Total acidity	IS 335:1993 R 2005 Annex C	0 to 100 mg KOH/ gm
		b. Total sludge	IS 12422:1988	0 to 1 % by Weight
		c. Tan Delta		0.0001 to 9.99
		Ageing Characteristics	IS 12177: 1987, R 2003	
		a. Total acidity	Method A	0 to 25 mg KOH/ g
		b. Total sludge		0 to 1% by weight
		c. Specific resistance		1×10^7 to 1×10^{13} Ω cm
		d. Dielectric dissipation factor		0.0001 to 9.99
		Presence of oxidation inhibitor	IEC 60666:1979 - 01 IS 13631: 1993 R 2003	0 to 0.5%
		Water Content	IEC 60814 : 1997 IS 13567: 1992 R 2003	0.1 ppm and above
		Interfacial Tension	ISO 6295 : 1983 IS 6104 : 1971 R 2001	0 to 0.090 N/m
		PCB content	IEC 61619 : 1997	0.0001 to 0.025%
	PCA content	BS 2000 Part 346:1996	0.001 to 3.0 %	
	Carbon type composition (% of Aromatics and Paraffins)	IEC 60590 :1977 IS 13155 :1991	Paraffinic (C _p) : 0 to 100 % Aromatics (C _a): 0 to 100 %	
	Oxidation Stability (Rotating Bomb test)	ASTM D 2112e IS 12958 : 1990	1 minute and above	

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