

Laboratory Savita Oil Technologies Ltd., 17/17A, Thane Belapur Road, P.O. Vashi,
Navi Mumbai, Maharashtra

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7046 (in lieu of T-2197)

Page 1 of 4

Validity 12.04.2018 to 11.04.2020

Last Amended on --

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.	Transformer Oil	Appearance	IS 335:1993 (RA 2010) IEC:60296 Edition 4.0 2012-02	Qualitative
		Density at 29.5 °C	IS 1448(Part 16):1990 (RA 2007) ISO 3675:1998-06-15	0.800 g/cm ³ to 0.900 g/cm ³
		Kinematic Viscosity at 27 °C	IS 1448(Part 25):1976 (RA 2007)	5 cSt /mm ² /s to 30 cSt /mm ² /s
		Viscosity at 40 °C	ISO 3104:1994-10-15	5 mm ² /s to 20 mm ² /s
		Viscosity at 100 °C	ISO 3104:1994-10-15	1 mm ² /s to 5 mm ² /s
		Viscosity at -30 °C	ISO 3104:1994-10-15	200 mm ² /s to 2000 mm ² /s
		Interfacial tension at 27 °C	IS 6104:1971 (RA 2006) EN 14210:2004 ASTM D 971 ISO 6295:1999	0.001 N/m to 0.09 N/m (1 dynes/cm to 90 dynes/cm)
		Flash Point, PMCC	IS 1448 (Part 21):1992 (RA 2007) ISO 2719 1988-12-01	90 °C to 370 °C
		Pour Point	IS 1448(Pat 10):1970 (RA 2008) ISO 3016:1995-03-15	27 °C to (-) 50 °C
		Neutralisation Value	IS 1448 (Part 2):1967 (RA 2003) IS 1448 (Part 2):2007 (RA 2008) IEC 62021-2:2007 IEC 62021-1:2003-06	0.0005 mgKOH/g to 10 mgKOH/g

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Page 2 of 4

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		Corrosive sulphur	IS 335:1993 Annexure-B (RA 2010) DIN 51353:1985 ASTM D 1275B 2003 IEC 62535:2008-10	Qualitative (Corrosive/Non Corroive)
		Electric strength (Break Down Voltage)	IS 6792:1992 (RA 2008) IEC 60156:1995	Upto 100 kV
		Di - electric dissipation factor (tan delta) at 90°C	IS 6262:1971 (RA 2006) IEC 60247:2004	0.00001 to 19.99
		Specific resistance (Resistivity)	IS 6103:1971 (RA 2006) IEC 60247:2004	
		at 27 °C		10 MΩ-cm to 1000 x 10 ⁶ MΩ-cm
		at 90 °C		10MΩ to 1000 x 10 ⁶ MΩ-cm
		Oxidation stability at 100 °C/120 °C, 164 hrs	IS 335:1993 Annexure-C; IS 12422:1988	
		Neutralisation Value	IS 335 (RA 2010) Annexure-C	0.0005 mgKOH/g to 10 mgKOH/g
		Total sludge	IS 335 (RA 2010) Annexure-C	Upto 20 %
		Oxidation stability at 120 °C, 164 / 332 / 500 hrs	IEC 61125 (Method A, B & C) 2004-04	
		Total Acidity	IEC 61125 (Method A, B & C) 2004-04	0.0005 mgKOH/g to 10 mgKOH/g
		Sludge	IEC 61125 (Method A, B & C) 2004-04	Upto 20 %

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Page 3 of 4

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		Di - electric dissipation factor (tan delta) at 90°C	IEC 60247:2004	0.00001 to 19.99
		Ageing characteristics after accelerated Ageing(open beaker method with copper catalyst) 115 °C, 96 hrs	IS 12177-1987 (RA 2008)	
		Specific resistance , at 27 °C	IS 6103-1971 (RA 2006)	10MΩ to 1000 x 10 ⁶ MΩ
		90 °C	IS 6103-1971 (RA 2006)	10MΩ to 1000 x 10 ⁶ MΩ
		Di - electric dissipation factor (tan delta) at 90 °C	IS 6262-1971 (RA 2006)	0.00001 to 19.99
		Total acidity	IS 1448 (Part 2) 1967 (RA 2003)	0.0005 mgKOH/g to 10 mgKOH/g
		Total sludge	Annex A of IS 12177:1987 (RA 2008)	Upto 20%
		Presence of oxidation inhibitor	IS 13631-1993 (Sec.I) (RA 2008) IEC 60666:2010-04	100 mg/kg to 9000 mg/kg
		Water content	IS 13567-1992 (latest) (RA 2008) IEC 60814:1997-08	0.1mg/kg to 9999.9 mg/kg
		CarbonType Analysis of Mineral Oils by Infra- Red Spectrophotometry	IS 13155:1991 (RA 2006) IEC 60590:1977-01	4400 cm ⁻¹ to 400 cm ⁻¹
		% C _A		1.2% to 60%
		% C _P	% C _N = 100-(C _A + C _P)	29.9% to 100%
		% C _N		Qualitative (By Calculation)
		Dielectric Breakdown Voltage	ASTM D-3300:2012	Upto 280 kVp
		2 - Furfural & related comp. content	IEC 61198:1993	Upto 100 mg/kg

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Page 4 of 4

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		Oxidation Stability	ASTM D2112(a):2001 IS 12958:1990	Upto 500 min
		PCA content	BS 2000 (Part 346) 1996	0.0025% to 100%
		Polychlorinated Biphenyls	ASTM D 4059:2003 IEC 61619:1997	Upto 100 mg/kg
		Total Sulfur Content	ASTM D 4294-10 ISO 20847:2004E	3 mg/kg to 5000 mg/kg
		Di Benzyl Di Sulphide	IEC 62697-1Edition 1.0 2012-08	1 mg/kg to 100 mg/kg