



**National Accreditation Board for
Testing and Calibration Laboratories**

(A Constituent Board of Quality Council of India)



CERTIFICATE OF ACCREDITATION

ELMEF TESTING AND CALIBRATION LABORATORIES PVT. LTD.

has been assessed and accredited in accordance with the standard

ISO/IEC 17025:2005

"General Requirements for the Competence of Testing & Calibration Laboratories"

for its facilities at

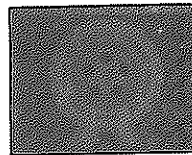
Rh-8, Countywalk, Village- Jhalaria, Indore, Madhya Pradesh

in the field of

TESTING

Certificate Number TC-5861

Issue Date 30/06/2017



Valid Until 29/06/2019

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the relevant requirements of NABL.

(To see the scope of accreditation of this laboratory, you may also visit NABL website www.nabl-india.org)

Signed for and on behalf of NABL

N. Venkateswaran
Program Director

Anil Relia
Chief Executive Officer



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SCOPE OF ACCREDITATION

Laboratory ELMEF Testing And Calibration Laboratories Pvt. Ltd., Rh-8, Countywalk, Village- Jhalaria, Indore, Madhya Pradesh

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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
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ELECTRICAL TESTING

I	CABLES & WIRES			
1	Polyvinyl Chloride Insulated unsheathed and sheathed cables/cords with rigid and flexible conductor for rated voltages up to and including 1100 Volts PVC insulated (Heavy Duty) Electric Cables Cross Linked Polyethylene Insulated, PVC Sheathed cables Aerial Bunched Cables for working voltages up to and Including 1100Volts	Annealing test for copper wire	IS:8130-2013 IS:10810 (Part1):1984 IS:694-2010 cl.10, Table-1, Sl. No. iii.a.1 IS:1554(Part1)-1988 (RA-1999) cl.15.1a.1 IS:7098(Part1):1988 (RA-2003) cl.15.1a.1	1% to 100 %
		Tensile Test for Aluminum (at ambient temp.)	IS:8130-2013 IS:10810 (Part2):1984 IS:694-2010 cl.10 Table-1, Sl. No.iii.a.2 IS:1554(Part1)-1988 (RA-1999) cl.15.1a.2 IS:7098(Part1):1988 (RA-2003) cl.15.1.a.ii IS14255:1995 cl.10.1a.i	0 to 2500 kgf LC 0.1kgf
		Wrapping test for Aluminum	IS:8130-2013 IS:10810 (Part3):1984 IS:694-2010 cl.10 Table-1, Sl. No iii.a.3 IS:1554(Part1)-1988 (RA-1999) cl.15.1a.3 IS:7098(Part1):1988 (RA-2003) cl.15.1.a.iii IS14255:1995 cl.10.1a.ii	Qualitative
		Conductor Resistance Test	IS:8130-2013 IS:10810 (Part 5):1984 IS:694-2010 cl.10 Table-1, Sl. No iii.a.4 IS:1554(Part1)-1988 (RA-	0.02 micro ohm to 1.1.ohm LC 1 micro Ohm

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			1999) cl.15.1a.4 IS:7098(Part1):1988 (RA-2003) cl.15.1.a.iv IS:14255:1995 cl.10.1a.iii	
		Persulphate test for tinned copper conductor cable only	IS:8130-2013 IS:10810 (Part 4) IS:694-2010, Cl.10 Table-1, Sl. No. iii.a.5	0.1 g/m ² to 20 g/m ²
		Test for Overall dimensions and thickness of insulation/sheath	IS:10810 (Part 6):1984 IS:694-2010 cl.10 Table-1, Sl. No .iii.b IS:1554(Part1)-1988 (RA-1999) cl.15.1c IS:7098(Part1):1988 (RA-2003) cl.15.1c IS:14255:1995 cl.10.1e	0-25mm LC 0.001 mm 0 mm to 300 mm LC 0.01mm
		Tensile Strength & Elongation at Break of Insulation & Sheath	IS 5831 IS:10810 (Part 7):1984 IS:694-2010 cl.10 Table-1, Sl. No .iii.c.1 IS:1554(Part1)-1988 (RA-1999) cl.15.1d.1 IS:7098(Part1):1988 (RA-2003) cl.15.1d.1 IS:14255:1995 cl.10.1c.1	0 to 250 kgf LC 0.1 kgf 0 % to 100 %
		Loss of Mass in Air Oven	IS 5831:1984 IS:10810 (Part 10):1984 IS:694-2010 cl.10 Table-1, Sl. No .iii.c.2 IS:1554(Part1)-1988 (RA-1999) cl.15.1d.5 IS:7098(Part1):1988 (RA-2003) cl.15.1e..iii	0 mg/cm ² to 5 mg/cm ²
		Tensile strength & elongation at Break(After Aging in Air Oven)	IS 5831:1984 IS:10810 (Part 11):1984 IS:694-2010 cl.10	Ambient to 150 °C 0 to 2500 kgf LC 0.1 kgf

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			Table-1, Sl. No .iii.c.3 IS:1554(Part1)-1988 (RA-1999) cl.15.1d.2 IS:7098(Part1):1988 (RA-2003) cl.15.1d.ii IS:14255:1995 cl.10.1c.ii	Elongation 0 cm to 74.5 cm
		Shrinkage test	IS 5831:1984 IS:10810 (Part 12):1984 IS:694-2010 cl.10 Table-1, Sl. No .iii.c.4 IS:1554(Part1)-1988 (RA-1999) cl.15.1d.3 IS:7098(Part1):1988 (RA-2003) cl.15.1d.iv IS:14255:1995 cl.10.1c.iv	0 mm to 300 mm LC 0.01mm
		Heat Shock test	IS 5831:1984 IS:10810 (Part 14):1984 IS:694-2010 cl.10 Table-1, Sl. No .iii.c.5 IS:1554(Part1)-1988 (RA-1999) cl.15.1d.6 IS:7098(Part1):1988 (RA-2003) cl.15.1e.vi	Qualitative
		Hot deformation Test	IS 5831:1984 IS:10810 (Part 15):1984 IS:694-2010 cl.10 Table-1, iii.c.6 IS:1554(Part1)-1988 (RA-1999)cl.15.1d.4 IS:7098(Part1):1988 (RA-2003) cl.15.1e.v	Ambient to 100 °C 0 to180(H) mm, 0 to 160 (V), 0 to 60 (T) LC 0.01 mm
		Thermal Stability	IS 5831:1984 IS 10810 (Part-60):1988 IS 694:2010 cl.10 Table-1, iii.c.7 IS:1554(Part1)-1988	Ambient to 300 deg C, LC 0.1 deg C

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			(RA-1999) cl.15.1d.7 IS:7098(Part1):1988 (RA-2003) cl.15.1e.vii	
		Cold Bend test	IS 5831:1984 IS:10810 (Part 20):1984 IS:694-2010 cl.10. Table-1, iii.c.8 IS:1554(Part1)-1988 (RA-1999) cl.15.4.a IS:7098(Part1):1988 (RA-2003) cl.15.4a	Ambient to (-)20 Deg C Qualitative
		Cold Impact test	IS 5831:1984 IS:10810 (Part 21):1984 IS: 694-2010 cl.10. Table-1, iii.c.9 IS:1554(Part1)-1988 (RA-1999) cl.15.4.b IS:7098(Part1):1988 (RA-2003) cl.15.4.b	Ambient to (-)20 Deg C Qualitative
		Flammability test	IS:10810 (Part 53):1988 IS:694-2010 cl.10 Table-1, iii.c.10 IS:1554(Part1)-1988 (RA-1999) cl.15.1.h IS:7098(Part1):1988 (RA-2003) cl.15.1.h	Up to 600 mm 0 to 3600 seconds
		Oxygen Index Test	IS:10810 (Part 58):1988 IS:694-2010 cl.10 Table-1, iii.c.11 IS:1554(Part1)-1988 (RA-1999)cl.15.1.1.a IS:7098(Part1):1988 (RA-2003)cl.15.1.1.a	Up to 40 %
		Test for Temperature Index	IS:10810 (Part 64):200 IS:694-2010 cl.10 Table-1, iii.c.12	Min 250 °C & beyond

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			IS:1554(Part1)-1988 (RA-1999) cl.15.1.1.d IS:7098(Part1):1988 (RA-2003)cl.15.1.1.d	
		Test for Halogen Acid Gas Evolution	IS:10810 (Part 59):1988 IS:694-2010 cl.10 Table-1, iii.c.13 IS:1554(Part1)-1988 (RA-1999) cl.15.1.1.f IS:7098(Part1):1988 (RA-2003) cl.15.1.1.f	0.1 % to 40 % by weight
		Smoke density Rating	IS:13360 (Part6/Sec XI) 2001	0 % to 100 %
		Water absorption Test (Gravimetric)	IS:10810 (Part 33):1984 IS:7098(Part1):1988 (RA-2003) cl.15.1d.v IS:14255:1995 cl.10.1c.v	Ambient to 100 °C LC 0.1° C
		High Voltage test (Water Immersion Test)	IS:10810 (Part 45):1984 IS:694-2010 cl.10 Table-1, iii.e.1 IS:1554(Part1)-1988 (RA-1999) cl.15.1.f	0-5 - 10 kV, AC 0-3kV DC LC 0.01kV
		High Voltage test (At room temperature)	IS:10810 (Part 45):1984 IS:694-2010 cl.10 Table-1, iii.e.4 IS:1554(Part1)-1988 (RA-1999) cl.15.1.g IS:7098(Part1):1988 (RA-2003) cl.15.1.g IS:14255:1995 cl.10.1.g	0-5-10 kV, AC 0-3kV DC LC 0.01kV
		Insulation Resistance test	IS 5831:1984 IS:10810 (Part 43):1984 IS:694-2010 cl.10 Table-1, iii.e.3 IS:1554(Part1)-1988 (RA-1999) cl.15.1e IS:7098(Part1):1988	100-250-500/1000 VDC 1 M Ohm to 10 ⁶ M Ohm LC 0.2M Ohm

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			(RA-2003) cl.15.1.f IS:14255:1995 cl.10.1d.f	
		Additional Ageing test (OU Cables only)	IS:694-2010 cl.10 Table-1, iii.e.6	0-5-10 kV, AC 0-3kV DC LC 0.01kV
		Flame Retardant test on Single Cable (Swedish Chimney)	IS:10810 (Part 61):1988 IS:1554(Part1)-1988 (RA-1999) cl.15.1.1.b IS:7098(Part1):1988 (RA-2003) cl.15.1.1.b	Up to 850 mm 3 mtr steel tape, LC 1mm
		Flame Retardant test on bunched Cable	IS:10810 (Part 62):1993 IS:1554(Part1)-1988 (RA-1999) cl.15.1.1.c IS:7098(Part1):1988 (RA-2003) cl.15.1.1.c	Up to 3.5 meter
		Dimension of Armouring material Tensile strength & Elongation at break of Armouring material	IS:10810 (Part 36):1984 IS:1554(Part1)-1988 (RA-1999) cl.15.1.b.1 IS:7098(Part1):1988 (RA-2003) cl.15.1.b IS:10810 (Part 37):1984 IS:1554(Part1)-1988 (RA-1999) cl.15.1.b.2.i & ii IS:7098(Part1):1988 (RA-2003) cl.15.1.b.2.i & ii IS:3975:1999 cl.8	0 mm to 300 mm LC 0.01 mm 0 kgf to 2500 kgf LC 0.1 kgf 0 mm to 74.5 mm
		Torsion test on Steel wire for Armoring (Round wire only)	IS:10810 (Part 38):1984 IS:1554(Part1)-1988 (RA-1999) cl.15.1.b.2.iii IS:7098(Part1):1988 (RA-2003) cl.15.1.b.2.iii IS:3975:1999 cl.8.2	0 counts to 9999 counts LC 1 count
		Winding test for Steel strip for Armoring	IS:10810 (Part 39):1984 IS:1554(Part1)-1988 (RA-1999) cl.15.1.b.2.iv IS:7098(Part1):1988	Qualitative

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			(RA-2003) cl.15.1.b.2.iv IS:3975:1999 cl.8.3	
		Uniformity of Zinc Coating (Dip Test)	IS:10810 (Part 40):1984 IS:1554(Part1)-1988 (RA-1999) cl.15.1.b.2.v IS:7098(Part1):1988 (RA-2003) cl.15.1.b.2.v IS:3975:1999 cl.9.2 IS:398 (Part 2):1996 cl.13.7	Qualitative
		Mass of Zinc Coating	IS:10810 (Part 41):1984 IS:1554(Part1)-1988 (RA-1999) cl.15.1.b.2.vi IS:7098(Part1):1988 (RA-2003) cl.15.1.b.2.vi IS:3975:1999 cl.9.1	0 g/m ² to 400 g/m ²
		Resistivity test on Armor wire & Strips	IS:10810 (Part 42):1984 IS:1554(Part1)-1988 (RA-1999) cl.15.1.b.2.vii IS:7098(Part1):1988 (RA-2003) cl.15.1.b.2.vii IS:3975:1999 cl.8.4	100-250-500/1000 VDC 1 M Ohm to 10 ⁶ M Ohm LC 0.2M Ohm
		Armour coverage percentage test	IS:1554(Part1)-1988 (RA-1999) cl.13.1.2 Amend.5 App. C IS:7098(Part1):1988 (RA-2003) cl.13.1.2 Amend.5 App. C	0 % to 100 %
		Hot set test	IS:10810 (Part 30):1984 IS:7098(Part1):1988 (RA-2003) cl.15.1.d.iii IS:14255:1995 cl.10.1c.iii	Up to 250 °C, L.C. 0.1° C 0 to 999 min, LC 1 min 0 to 300 mm, LC 0.01mm 0 to 15 LPM, LC 0.5 LPM
		Breaking Load Test on Messenger Conductor	IS:10810 (Part 2):1984 IS:14255:1995 cl.10.1.b.i	0 to 2500 kgf LC 0.1 kgf

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		Elongation Test on Messenger conductor	IS:10810 (Part 2):1984 IS:14255:1995 cl.11.3	0 to 74.5mm
		Resistance Test on messenger Conductor	IS:10810 (Part 5):1984 IS:14255:1995 cl.11.3	0.02 micro ohm to 1.1.ohm LC 1 micro Ohm
		Bending Test on completed cable	IS:10810 (Part 50):1984 IS:14255:1995 cl.11.4	Qualitative
		Copper purity test	IS 191:2007 & IS: 440:1964	0 % to 100 %
II CONDUCTORS & CONDUCTING MATERIALS				
1	Aluminum conductors for overhead transmission purposes Aluminum stranded conductors	Measurement of Diameter of Individual Aluminum & galvanized steel wires	IS:398 (Part 1):1996 cl.12.2 IS:398 (Part 2):1996 cl.13.2 IS:398 (Part 4):1994cl.3.1.2 IS:398 (Part 5):1992 cl.13.3	0 mm to 300 mm LC 0.01 mm
		Lay Ratio & Direction	IS:398 (Part 1):1996 cl.12.6 IS:398 (Part 2):1996 cl.13.8 IS:398 (Part 4):1994 cl.9.2 IS:398 (Part 5):1992 cl.13.4	0 mm to 300 mm LC 0.01 mm
	Aluminum Conductors, Galvanized Steel Reinforced Aluminum Alloy Stranded Conductors (Aluminum-Magnesium-Silicon Type)	Breaking Load Test of individual wires	IS:398 (Part 1):1996 cl.12.3 IS:398 (Part 2):1996 cl.13.3 & 13.4.2 IS:398 (Part 4):1994 cl.12.2 & 12.3 IS:398 (Part 5):1992 cl.13.5.2	0 kgf to 2500 kgf LC 0.1 kgf
	Aluminum Conductors-Galvanized Steel Reinforced-For extra High Voltage	Wrapping test on Aluminum Wires & Galvanized Steel wires	IS:398 (Part 1):1996 cl.12.4 IS:398 (Part 2):1996 cl.13.5 IS:398 (Part 5):1992 cl.13.7	Qualitative
		Resistance Test of Aluminum Wires	IS:398 (Part 1):1996 cl.12.5 IS:398 (Part 2):1996 cl.13.6 IS:398 (Part 4):1994 cl.12.4 IS:398 (Part 5):1992 cl.13.8	LC 1 micro Ohm 0.02 micro Ω to 1.1 Ω
		Ductility Test (Torsion Test & Elongation Test)	IS:398 (Part 2):1996 cl.13.4 IS:398 (Part 5):1992 cl.13.6.1 & 13.6.2	0 counts to 9999 counts 0 mm to 74.5 mm

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		Galvanizing Test 1. Uniformity of Zinc Coating 2. Mass of Zinc Coating	IS:398 (Part 2):1996 cl.13.5.2 IS:398 (Part 5):1992 cl.13.9	Qualitative 0 g/m ² to 400 g/m ²
III.	WIRING ACCESSORIES			
1.	Conduit for Electrical Installations Rigid Plain Conduits Of Insulating Materials (Plain & Socket End).	Checking of Dimensions	IS:9537 (Part1)-1980 IS:9537 (Part3)-1983 (RA 2007) Cl.7.0	Qualitative
		Bending test	IS:9537 (Part1)-1980 IS:9537 (Part-3):1983 (RA 2007) Cl.9.2	Qualitative
		Compression Test	IS:9537 (Part1)-1980 IS:9537 (Part-3):1983 (RA 2007) Cl.9.3	0 to 1500 N
		Impact test	IS:9537 (Part1)-1980 IS:9537 (Part-3):1983 (RA 2007) Cl.9.4	Qualitative
		Collapse test	IS:9537 (Part1)-1980 IS:9537 (Part-3):1983 (RA 2007) Cl.9.5	Qualitative
		Resistance to Heat	IS:9537 (Part1)-1980 IS:9537 (Part-3):1983 (RA 2007) Cl.10.1	Ambient to 150 Deg C Ball pressure apparatus 20N, 5 mm ball.
		Resistance to Burning	IS:9537 (Part-3):1983 (RA 2007) Cl.11	Max.3600 sec
		Electrical Characteristics i)Electrical Strength ii)Insulation Resistance	IS:9537 (Part-3):1983 (RA 2007) Cl. 12	1 cubic meter water bath AC HV 5/10kV 100-250-500/1000 VDC 1 M Ohm to 10 ⁶ M Ohm LC 0.2M Ohm

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