



ELMEF TESTING & CALIBRATION LABORATORIES PVT. LTD.

SCOPE OF ACCREDITATION

Sl. No.	Product(s) / Material of test	Specific tests performed	* Test Method / Standard against which tests are performed	Range of Testing/ Limits of detection
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	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%
2	PVC insulated (Heavy Duty) Electric Cables Cross Linked Polyethylene Insulated, PVC Sheathed cables	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.15.1a.ii IS14255:1995 cl.10.1a.i	0-2500 kgf LC 0.1kgf
3	Aerial Bunched Cables for working voltages up to and Including 1100Volts	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.15.1a.iii IS14255:1995 cl.10.1a.ii	Qualitative
4		Conductor Resistance Test	IS:8130-2013 IS:10810 (Part 5):1984	0.02 micro ohm to 1.1.ohm

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			IS:694-2010 cl.10 Table-1, Sl. No iii.a.4 IS:1554(Part1)-1988 (RA-1999) cl.15.1a.4 IS:7098(Part1):1988 (RA-2003) cl.15.1.a.iv IS:14255:1995 cl.10.1a.iii	LC 1 micro Ohm
5		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 to 20 g/m ²
6		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 0-300 mm LC 0.01mm
7		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	0-250 kgf LC 0.1 kgf 0-100%
8		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 to 5 mg/cm ²
9		Tensile strength & elongation at	IS 5831:1984 IS:10810 (Part 11):1984	Ambient to 150 °C

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	Break(After Aging in Air Oven)	IS:694-2010 cl.10 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	0-2500 kgf LC 0.1 kgf Elongation 0-74.5 cm
10	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	0-300 mm LC 0.01mm
11	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
12	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 -180(H) mm, 0-160 (V), 0-60 (T) LC 0.01 mm
13	Thermal Stability	IS 5831:1984 IS 10810 (Part-60):1988 IS 694:2010 cl.10	Ambient to 300 deg C, LC 0.1 deg C

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			Table-1, iii.c.7 IS:1554(Part1)-1988 (RA-1999) cl.15.1d.7 IS:7098(Part1):1988 (RA-2003) cl.15.1e.vii	
14		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
15		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
16		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
17		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%
18		Test for Temperature Index	IS:10810 (Part 64):200 IS:694-2010 cl.10 Table-1, iii.c.12 IS:1554(Part1)-1988 (RA-1999) cl.15.1.1.d IS:7098(Part1):1988 (RA-2003)cl.15.1.1.d	Up to 300 °C

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19	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
20	Smoke density Rating	IS:13360 (Part6/Sec XI) 2001	0% to 100%
21	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
22	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
23	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
24	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 (RA-2003) cl.15.1.f IS:14255:1995 cl.10.1d.f	100-250- 500/1000 VDC 1 M Ohm to 10 ⁶ M Ohm LC 0.2M Ohm
25	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
26	Flame Retardant test on Single Cable (Swedish	IS:10810 (Part 61):1988 IS:1554(Part1)-1988 (RA-1999) cl.15.1.1.b	Up to 850 mm 3 mtr steel tape, LC 1mm

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		Chimney)	IS:7098(Part1):1988 (RA-2003) cl.15.1.1.b	
27		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
28		Dimension 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	0-300 mm LC 0.01 mm
		Tensile strength & Elongation at break of Armouring material	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	0-2500kgf LC 0.1kgf 0 to 74.5mm
29		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	0-9999 counts LC 1 count
30		Winding test for Steel strip for Armouring	IS:10810 (Part 39):1984 IS:1554(Part1)-1988 (RA-1999) cl.15.1.b.2.iv IS:7098(Part1):1988 (RA-2003) cl.15.1.b.2.iv IS:3975:1999 cl.8.3	Qualitative
31		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	Qualitative

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			IS:398 (Part 2):1996 cl.13.7	
32	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	0-400 g/m ²
33	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
34	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	0-100%
35	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
36	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
37	Elongation Test on Messenger conductor		IS:10810 (Part 2):1984 IS:14255:1995 cl.11.3	0 to 74.5mm
38	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
39	Bending Test on		IS:10810 (Part 50):1984	Qualitative

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		completed cable	IS:14255:1995 cl.11.4	
40		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):1994 cl.3.1.2 IS:398 (Part 5):1992 cl.13.3	0-300 mm LC 0.01 mm
2	Aluminum Conductors, Galvanized Steel Reinforced	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	0-300 mm LC 0.01 mm
3	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	0-2500 kgf LC 0.1 kgf
4	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
5		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

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6		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 to 9999 counts 0 to 74.5mm
7		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 0-400 g/m ²
III	Wiring Accessories			
1	Conduit for electrical Installations	Checking of Dimensions	IS:9537 (Part1)-1980 IS:9537 (Part3)-1983 (RA 2007) Cl.7.0	All gauges from 16 mm to 63 mm Light, Medium & Heavy
2	Rigid plain Conduits of Insulating Materials (plain & socket end).	Bending test	IS:9537 (Part1)-1980 IS:9537 (Part-3):1983 (RA 2007) Cl.9.2	Bending device for 16,20 &25 mm Qualitative
3		Compression Test	IS:9537 (Part1)-1980 IS:9537 (Part-3):1983 (RA 2007) Cl.9.3	Compression device 0 to 1500 N LC 1N
4		Impact test	IS:9537 (Part1)-1980 IS:9537 (Part-3):1983 (RA 2007) Cl.9.4	Falling weight of 0.5 kg & 2 kg
5		Collapse test	IS:9537 (Part1)-1980 IS:9537 (Part-3):1983 (RA 2007) Cl.9.5	Bending device for 16,20 &25mm Qualitative
6		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.
7		Resistance to Burning	IS:9537 (Part-3):1983 (RA 2007)	Bunsen Burner Max.3600 sec

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			Cl.11	LC 0.01 sec
8		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