

Laboratory	Quality Marking & Testing Laboratory, M.P. Laghu Udyog Nigam Limited, Pologround Industrial Area, Indore, Madhya Pradesh		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	30.04.2015
Certificate Number	T-2608	Valid Until	29.04.2017
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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
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I. CABLES AND ACCESSORIES

1. PVC insulated heavy Duty Electric Cables for Working Voltage up to & incl. 1100 volt/ PVC Insulated Heavy Duty Electric Cables for working voltages from 3.3 kV upto & incl. 11kV/ PVC insulated cables for working voltages up to & incl. 1100 volts/ Cross linked Polyethylene Insulated PVC sheathed cables for working voltage up to & incl. 1100 volt/ Cross linked Polyethylene Insulated PVC sheathed cables for working voltage from 3.3kV up to & incl. 33 kV/ Cables for motor Vehicles, Aerial Bunched Cables for Working Voltage upto & Incl. 1100 Volt/ Elastomer insulated cables for working voltages upto & Incl. 1100 volts Welding Cables	Dimensional measurement	IS 694: 1990 (RA 2005) IS 1554 (Part 1): 1988 (RA 1999) IS 1554 (Part 2):1988 (RA 2005) IS 2465:1984 (RA 2001) IS 3975: 1999 (RA 2004) IS 3975: 1999 (RA 2004) IS 7098 (Part 1): 1988 (RA 2005) IS 7098 (Part 2): 1985 (RA 2005) IS 8130: 1984 (RA 2005) IS 9857: 1990 (RA 2005) IS 14255: 1995 (RA 2005)	0.01 mm to 100 mm 0.02 mm to 170 mm 0.02 mm to 300 mm
	Annealing Test	IS 10810 (Part 1): 1984 (RA 2001)	1 % to 100 %
	Persulphate Test	IS 10810 (Part 4): 1984 (RA 2006)	0.1 g/m ² to 20 g/m ²
	Application & Construction of Conductors/ Tape Insulation/ Inner & Outer Sheath/ Braid/ Screen/ Separator/ Armouring Wires/ Cores, Covering, Colour, Marking, Core Identification, Freedom from defect	IS 694: 1990 (RA 2005) IS 1554 (Part 1): 1988 (RA 1999) IS 1554 (Part 2): 1988 (RA 2005) IS 2465:1984 (RA 2001) IS 3975:1999 (RA 2004) IS 3975:1999 (RA 2004) IS 7098 (Part 1): 1988 (RA 2005) IS 7098 (Part 2): 1985 (RA 2005) IS 8130:1984 (RA 2005) IS 9857:1990 (RA 2005) IS 14255:1995 (RA 2005)	Qualitative
	Wrapping Test of Aluminium conductor & Armouring Wire	IS 1755: 1983 (RA 2006) IS 10810(Part 3): 1984 (RA 2006) IS 10810 (Part 39): 1984 (RA 2006)	Upto 5 mm dia.

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	PVC insulated heavy Duty Electric Cables for Working Voltage up to & incl. 1100 volt/ PVC Insulated Heavy Duty Electric Cables for working voltages from 3.3 kV upto & incl. 11kV/ PVC insulated cables for working voltages up to & incl. 1100 volts/ Cross linked Polyethylene Insulated PVC sheathed cables for working voltage up to & incl. 1100 volt/ Cross linked Polyethylene Insulated PVC sheathed cables for working voltage from 3.3kV up to & incl. 33 kV/ Cables for motor Vehicles, Aerial Bunched Cables for Working Voltage upto & Incl. 1100 Volt/ Elastomer insulated cables for working voltages upto & Incl. 1100 volts Welding Cables	Resistance Test	IS 10810 (Part 5): 1984 (RA 2001) IS 10810 (Part 42): 1984 (RA 2006)	1 $\mu\Omega$ to 19.99 Ω
		Elongation at Break	IS 10810 (Part 7): 1984 (RA 2001)	5 % to 1000 %
		High voltage Test	IS 694:1990, (RA 2005) IS 1554 (Part 1):1988 (RA 1999) IS 2465:1984 (RA 2001) IS 7098 (Part 1):1988 (RA 2005) IS 9857: 1990 (RA 2005) IS 9968 (Part 1): 1988 (RA 2005) IS 9857: 1990 (RA 2005) IS 9968 (Part 1): 1988 (RA 2005) IS 10810 (Part 45): 1984 (RA 2001) IS 14255: 1995 (RA 2005)	AC: 0.2 kV to 6 kV
		Tensile Strength / Breaking Load of Aluminium Conductor & Armouring wire	IS 1608: 2005 IS 10810 (Part 2): 1984 (RA 2001) IS 10810 (Part 37): 1984 (RA 2006)	Load : 2 N to 50 kN
		Heat Shock Test	IS 10810 (Part 14): 1984 (RA 2001)	Qualitative
		Hot Deformation Test	IS 10810 (Part 15): 1984 (RA 2001)	5 % to 100 %
		Cold Bend Test	IS 10810 (Part 20): 1984 (RA 2006)	Qualitative
		Cold Impact Test	IS 10810 (Part 21): 1984 (RA 2006)	Qualitative
		Hot Set Test	IS 10810 (Part 30): 1984 (RA 2006)	0.5 % to 250 %
		Water Absorption Test	IS 10810 (Part 33): 1984 (RA 2001)	Weight: 10 mg to 300 g

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	PVC insulated heavy Duty Electric Cables for Working Voltage up to & incl. 1100 volt/	Insulation Resistance Test/ Volume Resistivity	IS 10810 (Part 43): 1984 (RA 2001)	Resistance: 1 MΩ to 10 ⁸ MΩ
	PVC Insulated Heavy Duty Electric Cables for working voltages from 3.3 kV upto & incl. 11kV/	Additional Ageing Test	IS 694: 1990 (RA 2005)	AC: 0.2 kV to 6 kV
	PVC insulated cables for working voltages up to & incl. 1100 volts/	Colour Fastness to water test	IS 5831: 1984 (RA 2006)	Qualitative
	Cross linked Polyethylene Insulated PVC sheathed cables for working voltage up to & incl. 1100 volt/	High Voltage Test	IS 694: 1990 (RA 2005) IS 1554 (Part 1): 1988 (RA 1999) IS 10810 (Part 45): 1984-1990 (RA 2001)	AC: 0.2 kV to 6 kV DC: 0.1 kV to 3kV
	Cross linked Polyethylene Insulated PVC sheathed cables for working voltage from 3.3kV up to & incl. 33 kV/	Flammability Test	IS 10810 (Part 53): 1984-1990 (RA 2001)	1 mm to 600 mm, 0.1sec. to 900 sec.
	Cables for motor Vehicles, Aerial Bunched Cables for Working Voltage upto & Incl. 1100 Volt/	Thermal Stability Test	IS 5831: 1984 (RA 2006) IS 10810 (Part 60): 1988 (RA 2006)	1 min. to 300 min.
	Elastomer insulated cables for working voltages upto & Incl. 1100 volts	Torsion Test	IS 1717: 1985 (RA 2006) IS 10810 (Part 38): 1984 (RA 2006)	Up to 10 mm dia.
	Welding Cables	Mass of Zinc Coating	IS 6745: 1972 (RA 2001) IS 10810 (Part 41): 1984 (RA 2006)	10 g/m ² to 2000 g/m ²
		Uniformity of Zinc Coating	IS 2633: 1986 (RA 2006) IS 10810 (Part 40): 1984 (RA 2001)	Qualitative
		Adhesion Test	IS 3975: 1999 (RA 2004) IS 4826: 1979 (RA 2006)	Qualitative
		Sulphur	IS 228 (Part 9): 1989 (RA 1999)	0.01 % to 0.25 %

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	PVC insulated heavy Duty Electric Cables for Working Voltage up to & incl. 1100 volt/ PVC Insulated Heavy Duty Electric Cables for working voltages from 3.3 kV upto & incl. 11kV/ PVC insulated cables for working voltages up to & incl. 1100 volts/ Cross linked Polyethylene Insulated PVC sheathed cables for working voltage up to & incl. 1100 volt/ Cross linked Polyethylene Insulated PVC sheathed cables for working voltage from 3.3kV up to & incl. 33 kV/ Cables for motor Vehicles, Aerial Bunched Cables for Working Voltage upto & Incl. 1100 Volt/ Elastomer insulated cables for working voltages upto & Incl. 1100 volts Welding Cables	Phosphorus	IS 228 (Part 3): 1987 (RA 1997)	0.01 % to 0.25 %
		Elongation Test	IS 14255:1995 (RA 2005)	1 % to 100 %
		Bending Test	IS 10810 (Part 50): 1984 (RA 2006) IS 14255: 1995 (RA 2005)	Qualitative
		Oil Resistance Test	IS 10810 (Part 31): 1984 (RA 1996)	Load: 1 N to 2500 N
		Ageing in Oxygen Bomb	IS 10810 (Part 16): 1986	Load: 1 N to 2500 N
		Static Flexibility	IS 10810 (Part 54): 1984 (RA 2001)	100 mm to 1000 mm
		Tensile Strength of Insulation and Sheath	IS 10810 (Part 7): 1984 (RA 2001)	Load: 1N to 2500 N
		Elongation at Break	IS 10810 (Part 7): 1984 (RA 2001)	5 % to 1000 %
		Ageing in Air Oven	IS 10810 (Part 11): 1984 (RA 2001)	Load: 1 N to 2500 N
		Shrinkage	IS 10810 (Part 12): 1984 (RA 2006)	0.5 % to 50 %
	Ageing in Air Bomb	IS 10810 (Part 56): 1987 (RA 2002)	Load: 1 N to 2500 N	
	Loss of Mass	IS 10810 (Part 10): 1984 (RA 2001)	10 mg to 300g	
	Torsion Test	IS 398 (Part 2):1996 (RA 2002) IS 398 (Part 5): 1992 (RA 2002)	Up to 5 mm dia.	

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II. CONDUCTORS

1.	Paper Covered Aluminium conductors: Rectangular conductors, Round Conductors, Aluminium conductor for overhead transmission Purposes: Aluminium conductor Galvanized Steel reinforced, Aluminium Stranded conductor, Galvanized Steel Reinforced for Extra High Voltage. Winding wires of Submersible Motors: HR PVC Insulated Wires, Polyster and polypropylene Insulated Wires, Crosslinked Polyethene insulated and polyamide jacketed Wires	Mass of Zinc Coating	IS 6745: 1972 (RA 2001)	10 g/m ² to 2000 g/m ²
		Uniformity of Zinc coating	IS 2633:1986 (RA 2006)	Qualitative
		Elongation Test	IS 398 (Part 2): 1996 (RA 2002) IS 398 (Part 4): 1994 (RA 2004) IS 398 (Part 5): 1992 (RA 2002) IS 6162 (Part 1): 1971 (RA 1998) IS 6162 (Part 2): 1971 (RA 1998)	1 % to 100 %
		Freedom from defects, Direction of lay, Lay ratio stranding joints in wires. Grade of paper, application of paper, Arrangements of layers of paper	IS 398 (Part 1): 1996 (RA 2002) IS 398 (Part 2): 1996 (RA 2002) IS 398 (Part 4): 1992 (RA 2004) I S 398 (Part 5): 1992 (RA 2002) IS 6162 (Part 1): 1971 (RA 1998) IS 6162 (Part 2): 1971 (RA 1998)	Qualitative
		Tensile Strength/Breaking Load Test	IS 398 (Part 1): 1996 (RA 2002) IS 398 (Part 2): 1996 (RA 2002) IS 398 (Part 4): 1992 (RA 2004) IS 398 (Part 5): 1992 (RA 2002) IS 6162 (Part 1): 1971 (RA 1998) IS 6162 (Part 2): 1971 (RA 1998)	2 N to 50 kN

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	Paper Covered Aluminium conductors: Rectangular conductors, Round Conductors, Aluminium conductor for overhead transmission Purposes: Aluminium conductor Galvanized Steel reinforced, Aluminium Stranded conductor, Galvanized Steel Reinforced for Extra High Voltage. Winding wires of Submersible Motors: HR PVC Insulated Wires, Polyster and polypropylene Insulated Wires, Crosslinked Polyethene insulated and polyamide jacketed Wires	Resistance Test	IS 398 (Part 1): 1996 (RA 2002) IS 398 (Part 2): 1996 (RA 2002) IS 398 (Part 4): 1992 (RA 2004) IS 398 (Part 5): 1992 (RA 2002) IS 6162 (Part 1): 1971 (RA 1998) IS 6162 (Part 2): 1971 (RA 1998)	1 μ Ω to 19.99 Ω
		Dimension Measurement	IS 398 (Part 1): 1996 (RA 2002) IS 398 (Part 2): 1996 (RA 2002) IS 398 (Part 4): 1992 (RA 2004) IS 398 (Part 5): 1992 (RA 2002) IS 6162 (Part 1): 1971 (RA 1998) IS 6162 (Part 2): 1971 (RA 1998)	0.01 mm to 100 mm 0.02 mm to 170 mm 0.02 mm to 300 mm
		Volume Resistivity	IS 10810 (Part 43): 1984 (RA 2001)	Resistance: 1 M Ω to 10 ⁸ M Ω
		Heat Shock Test	IS 10810 (Part 14): 1984 (RA 2001)	Qualitative
		High Voltage Test	IS 10810 (Part 14): 1984 (RA 2001) IS 10810 (Part 45): 1984 (RA 2001) IS 8783 (Part 4/Sec. 1): 1995 (RA 2000) IS 8783 (Part 4/Sec. 2): 1995 (RA 2005) IS 8783 (Part 4/Sec. 3): 1995 (RA 2000)	AC: 0.2 kV to 6 kV
		Tensile Strength of Insulation and Sheath	IS 10810 (Part 7): 1984 (RA 2001)	Load: 1 N to 2500 N
		Elongation and Break	IS 10810 (Part 7): 1984 (RA 2001)	5 % to 1000 %

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		Shrinkage Test	IS 10810 (Part 12):1984 (RA 2006)	0.5 % to 50 %
		Water Absorption	IS 10810 (Part 33): 1984 (RA 2001)	Weight: 10 mg to 300 g
		Hot Set Test	IS 10810 (Part 30): 1984 (RA 2006)	0.5 % to 250 %
		Hot deformation Test	IS 10810 (Part 15): 1984 (RA 2001)	5 % to 100 %
		Dimensional Measurement	IS 8783 (Part 1): 1995	0.01 mm to 100 mm
			IS 8783 (Part 4/Sec. 1): 1995 (RA 2000)	0.02 mm to 170 mm
			IS 8783 (Part 4/Sec. 1): 1995 (RA 2005)	0.02 mm to 300 mm
			IS 8783 (Part 4/Sec. 3): 1995 (RA 2000)	
		Annealing Test	IS 10810 (Part 1): 1984 (RA 2001)	1 % to 100 %
	Resistance Test	IS 10810 (Part 5):1984, (RA 2001)	1 $\mu\Omega$ to 19.99 Ω	

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