

Laboratory	Shriram Institute for Industrial Research, 19, University Road, Delhi		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	15.10.2014
Certificate Number	T-1022	Valid Until	14.10.2016
Last Amended on	-	Page	1 of 21

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
I. TRANSMISION LINE EQUIPMENT AND ACCESSORIES				
1.	Aluminum Conductors for overhead transmission purpose (Aluminium stranded Conductors)	Diameter of Aluminium wire	IS 398 (Part 1): 1996 Cl. 12.2	0.001-10mm
		Lay ratio test	Cl. 12.6	0.1-18
		Breaking load on individual Aluminium wire	Cl. 12.3	0.0001-100 kN
		Wrapping test on Aluminium Wire	Cl. 12.4	1-6 mm wire size
		Resistance test of Aluminium Wire	Cl. 12.5	1 $\mu\Omega$ -19.99 k Ω
2.	Aluminum Conductors for overhead transmission purpose (Aluminium Conductors, Galvanized Steel Reinforced)	Diameter of Aluminium & Steel wire	IS 398 (Part 2): 1996 Cl. 13.2	0.001-10mm
		Lay ratio test	Cl. 13.8	0.1-18
		Breaking load on individual Aluminium & steel wire	Cl. 13.3.1	0.0001-100 kN
		Ductility test on Galvanized Steel wire	Cl. 13.4	0.1-25 %
		i) Torsion test ii) Elongation test		
		Wrapping test on Aluminium Wire	Cl.13.5	1-6 mm wire size
		Resistance test of Aluminium Wire	Cl. 13.6	1 $\mu\Omega$ -19.99 k Ω
		Galvanizing test on steel wire	Cl. 13.7	1-500 g/m ²

Laboratory	Shriram Institute for Industrial Research, 19, University Road, Delhi		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	15.10.2014
Certificate Number	T-1022	Valid Until	14.10.2016
Last Amended on	-	Page	2 of 21

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
3.	Aluminum Conductors for overhead transmission purpose (Aluminium Conductors, Aluminized Steel - Reinforced)	Dimension of Aluminium wire,	IS 398 (Part 3): 1996 Cl. 7.1.1	0.001-10mm
		Breaking load on individual Aluminium wire	Cl. 12.2	0.0001-100 kN
		Ductility test on Galvanized Steel wire i) Torsion test ii) Elongation test	Cl. 12.3	0.1-25 %
		Wrapping test on Aluminium & Aluminized Wire	Cl.12.4	1-6 mm wire size
		Resistance test of Aluminium Wire	Cl. 12.5	1 $\mu\Omega$ -19.99 k Ω
4.	Aluminum Conductors for overhead transmission purpose (Aluminium alloy stranded conductors) [Al.-Magnesium-Silicon type]	Diameter of Aluminium wire & Stranded conductor	IS 398 (Part 4): 1994 Cl. 7.1 & 7.2	0.001-10mm
		Lay ratio test	Cl. 9.2	0.1-18
		Breaking load test	Cl. 12.2	0.0001-100 kN
		Elongation test	Cl. 12.3	0.1-25 %
		Resistance test	Cl. 12.4	1 $\mu\Omega$ -19.99 k Ω
5.	Aluminium conductors - galvanized steel - reinforced for extra high voltage (400 kV and above)	Diameter of Aluminium & Steel wire	IS 398 (Part 5): 1992 Cl. 13.3	0.001-10mm
		Lay ratio test,	Cl. 13.4	0.1-18

Laboratory	Shriram Institute for Industrial Research, 19, University Road, Delhi		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	15.10.2014
Certificate Number	T-1022	Valid Until	14.10.2016
Last Amended on	-	Page	3 of 21

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Aluminium conductors - galvanized steel - reinforced for extra high voltage (400 kV and above)	Breaking load on individual Aluminium & steel wire	Cl. 13.5.2	0.0001-100 kN
		Ductility test on Galvanized Steel wire i) Torsion test ii) Elongation test	Cl. 13.6	0.1-25 %
		Wrapping test on Aluminium Wire	Cl.13.7	1-6 mm wire size
		Resistance test of Aluminium Wire	Cl. 13.8	1 $\mu\Omega$ -19.99 k Ω
		Galvanizing test on steel wire	Cl. 13.9	1-500 g/m ²
II.	CABLES & ACCESSORIES			
1.	PVC Insulated Cable upto 1100 V/ PVC Insulated (Heavy duty) Cables upto 1100 V/ PVC Insulated (Heavy duty) Cables from 3.3 kV to 11000 V/ XLPE PVC Sheathed cables upto 1100 V/XLPE PVC Sheathed Cables from 3.3 kV to 33 Kv/ XLPE Thermoplastic Sheathed Cables	Annealing test for Copper Conductor	IS 10810 (Part 1): 1984 BS 6360-1997 Cl.9	0.4-25%
		Tensile Strength for Aluminium Conductor	IS 10810 (Part 2): 1984 BS 5467-1997 Cl.5	0.1-200 N/mm ²
		Wrapping test for Aluminium Conductor	IS 10810 (Part 3): 1984	0.5-5 mm wire size
		Conductor resistance	IS 10810 (Part 5): 1984 DIN-72551 (Part 5): 1993, Cl. 3.5 JASO D:611-2009, Cl.6.2 JIS:C 3406-1993, Cl. 6.2 IEC:60502-1-2004, Cl. 15 IEC:60502-2-2005, Cl. 16.2 IEC:60228-2004 Cl. 5.1.2 BS:6360-1991 Cl. 9 ISO 6722: 2006 Cl. 6.1 BS 6207 (Part 1): 1995, Cl.4.2	1 $\mu\Omega$ -19.99 k Ω

Laboratory	Shriram Institute for Industrial Research, 19, University Road, Delhi		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	15.10.2014
Certificate Number	T-1022	Valid Until	14.10.2016
Last Amended on	-	Page	4 of 21

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	from 66 kV to 220 kV/ Elastomer Insulated Cable upto 1100 V/ Elastomer Insulated Cable from 3.3 kV to 33 kV/ Cables for Motor Vehicles/ Welding Cables/ Arial bunched cable for working Voltage upto 1100 Volts/ Cables required to maintain circuit integrity under fire conditions/ Cables for rated voltages of 1 kV/ Cables for rated voltages from 6 kV	Tests on Insulation & sheath		
		Thickness	IS 10810 (Part 6): 1984 DIN-72551 (Part 5): 1993, Cl. 3 BS 7655-1997 Cl. 4 ISO 6722:2006 Cl. 5 BS 6207(Part 1): 1995, Cl. 5.3	0.05-140 mm
		Weight per unit length of cable	DIN-72551 (Part 5): 1993, Cl. 3.2.6	1 to 200 g
		Tensile strength & Elongation at break	IS 10810 (Part 7): 1984 DIN-72551 (Part 5): 1993, Cl.3 JASO D:611-2009,Cl.6.6 JIS C 3406-1993, Cl.6.4 IEC:60811-1-1-2001 Cl. 9 IEC:60811-1-2-1985 Cl. 8 BS:5467-1997 Cl. 6	0.1-30 N/mm ²
		Loss of mass test	IS 10810 (Part 10): 1984 IEC: 60811-3-2-1985 Cl.8	0.1-0.5 mg/cm ²
		Ageing in air oven test	IS 10810 (Part 11): 1984 IEC 60811-1-2-1985 Cl. 8 ISO 6722: 2006 Cl. 10	40 – 150 °C 0.1-30 N/mm ²
		Shrinkage test	IS 10810 (Part 12): 1984 DIN-72551 (Part 5): 1993, Cl.3.4.1 JASO D:611-2009,Cl.6.13 IEC:60811-1-3-2001 Cl.10 ISO 6722:2006 Cl. 10.4	0.1-5 %
		Heat shock test	IS 10810 (Part 14): 1984 DIN-72551 (Part 5): 1993 Cl.3 JASO D:611-2009,Cl.6.11 IEC:60811-3-1-1985 Cl.9	1-200 °C

Laboratory	Shriram Institute for Industrial Research, 19, University Road, Delhi		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	15.10.2014
Certificate Number	T-1022	Valid Until	14.10.2016
Last Amended on	-	Page	5 of 21

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Hot deformation test	IS 10810 (Part 15): 1984 DIN-72551 (Part 5): 1993 Cl.3.4.2 IEC:60811-3-1-1985 Cl.8 JASO D:611-2009,Cl.6.7 ISO 6722:2006 Cl. 7.1	1-50%
		High voltage test / Electric Strength test	IS 10810 (Part 45): 1984 DIN-72551 (Part 5): 1993 Cl.3.5.3 JASO D:611-2009,Cl.6.3 ISO 6722:2006 Cl. 6.2 BS 6207(Part 1): 1995, Cl. 5.4	1-60 kV AC 1-3 KV DC
		Insulation resistance	IS 10810 (Part 43): 1984 DIN-72551 (Part 5): 1993, Cl.3.6.1 JASO D:611-2009, Cl.6.5 IEC:60502-1-2004 Cl.17 ISO 6722:2006 Cl. 6.4 BS 6207(Part 1): 1995, Cl. 5.2	10^3 - 10^{15} Ω
		Flammability test	IS 10810 (Part 53): 1984 DIN-72551 (Part 5): 1993, Cl.3.7.1 JASO D:611-2009, Cl.6.17 IEC:60332-I-1993 ISO 6722:2006 Cl. 12	0.1-100 mm
		Circuit integrity test under fire condition (resistance to fire alone) 450-900 °C	IEC 60331-21-1999 BS 6387-1994, Cl. 11.1	0.01-1.2 kV
		Thermal stability	IS 5831-1984 (App. B) DIN-72551 (Part 5): 1993, Cl.3 IEC:60811-3-2-1985	1-100 minute
		Water absorption (Gravimetric)	IS 10810 (Part 33): 1984 IEC:60811-1-3-2001	0.1 - 2 mg/cm ²

Laboratory	Shriram Institute for Industrial Research, 19, University Road, Delhi		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	15.10.2014
Certificate Number	T-1022	Valid Until	14.10.2016
Last Amended on	-	Page	6 of 21

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Hot set test for insulation	IS 10810 (Part 30): 1984 IEC:60811-2-1-2001, Cl. 9	1-200 %
		Adhesion Force	JASO D:611-2009, Cl.6.8 ISO 6722:2006 Cl. 7.2 DIN-72551 (Part 5): 1993, Cl.3.3.2	0.1-30 N
		Thickness of metallic sheath	IS 10810 (Part 34): 1984	0.001-5 mm
		Oxygen index test	IS 10810 (Part 58): 1984 ASTM D2863-2010	0.1-40 %
		Temperature index test	IS 10810 (Part 64): 1984 ASTM D-2863-2010	1 to 350 °C
		Halogen acid gas evolution test	IS 10810 (Part 59): 1984 IEC:60754-I-2011	0.1-30%
		Smoke density	IS 10810 (Part 63): 1993 ASTM D-2843-2010	1-100 %
		Test for Armouring wires & strips		
		Dimension for armouring material	IS 10810 (Part 36): 1984 IEC:60502-1-2004, Cl. 16 IEC:60502-2-2005, Cl. 12.4 BS 5467-1997, Cl. 10	0.01-10 mm
		Tensile strength & Elongation at break	IS 10810 (Part 37): 1984 BS EN 10002-1-2001 BS 5467-1997, Cl. 10	0.1-600 N/mm ² & 0.4-25%
		Torsion test on Galvanized steel wire for armouring	IS 10810 (Part 38): 1984 BS 5467-1997, Cl. 10	0-20 turns
		Winding test on Galvanized steel strips for armouring	IS 10810 (Part 39): 1984	0.1-1.4 mm
		Uniformity of Zinc coating	IS 10810 (Part 40): 1984	Qualitative (Visual)

Laboratory	Shriram Institute for Industrial Research, 19, University Road, Delhi		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	15.10.2014
Certificate Number	T-1022	Valid Until	14.10.2016
Last Amended on	-	Page	7 of 21

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Mass of Zinc coating Resistivity & Conductance test of Armour (Wires/strips)	IS 10810 (Part 41): 1984 IS 10810 (Part 42): 1984 BS 5467-1997, Cl. 10	1-500 g/m ² 0.1X10 ⁻⁶ -16.0 X 10 ⁻⁶ Ωcm
		Additional Tests Oil/ Fluid resistance	JASO D:611-2009, Cl. 6.14 JIS:C 3406-1993, Cl. 6.5 ISO 6722:2006, Cl. 11.2	0-1 kV
		Battery fluid resistance	JASO D:611-2009, Cl. 6.15	0-1 kV
		Marking durability	JASO D:611-2009 Cl. 6.16 ISO 6722:2006, Cl. 11.3 DIN-72551 (Part 5): 1993 Cl.3.4.3	1-10 N
		Heat resistance/ thermal overload	DIN-72551 (Part 5): 1993, Cl. 3.6.2 JASO D:611-2009, Cl. 6.11 JIS:C 3406-1993, Cl. 6.6 ISO 6722:2006, Cl. 10.3	0-300 mm 450 - 4500 g
		Low temperature resistance	DIN-72551 (Part 5): 1993, Cl. 3.6.3 JASO D 611-2009, Cl. 6.9 JIS C 3406-1993, Cl. 6.7 ISO 6722:2006, Cl. 8	-40 °C to ambient 0.5-30 kg
		Impact test at ambient temperature	BS 6387-1994, Cl. 9.1	0-500 g 0-25 ⁰ C
		Accelerated service life test	DIN-72551 (Part 5): 1993, Cl. 3.7.1	0-1000 °C
		Burning resistance	DIN-72551 (Part 5): 1993, Cl. 3.7.1 JASO D:611-2009, Cl. 6.17 JIS C 3406-1993, Cl. 6.8	0.01– 60 seconds

Laboratory	Shriram Institute for Industrial Research, 19, University Road, Delhi		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	15.10.2014
Certificate Number	T-1022	Valid Until	14.10.2016
Last Amended on	-	Page	8 of 21

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Abrasion resistance (Tape abrasion)	JASO D 611-2009, Cl. 6.10 (a) JIS C 3406-1993, Cl. 6.9 ISO 6722: 2006 Cl. 9.2	0.1– 10000 mm
		Abrasion resistance (Scrape resistance)	DIN-72551 (Part 5): 1993, Cl. 3.3.3 JASO D 611-2009, Cl. 16.10 (b) ISO 6722: 2006 Cl. 9.3	1 to 9999 abrasion cycles
III.	WIRING ACCESSORIES			
1.	Conduit for Electrical installation of insulating material/ Metallic Conduit for Electrical wiring		IS 9537 (Part I): 1980 IS 9537 (Part II): 1981 IS 9537 (Part III): 1983	
		Dimension	Cl. 7	1-5000mm
		Compression test	Cl.9.3	1-25 %
		Impact test	Cl. 9.4	1-100 °C
		Resistance of heat test	Cl.10	0.01-2mm
		Resistance of burning test	Cl.11	0.01-60 Sec
		Electrical Characteristics	Cl. 12	
		-Electrical strength	Cl.12.1.1	0-2 kV AC
		-Insulation resistance	Cl. 12.1.2	10 ³ Ω-10 ¹⁵ Ω
		Bending	Cl. 9.2	0 – 500 mm
		Collapse	Cl. 9.5	10.9-17.7 mm
		External Influences	Cl. 13	0 to 50 °C

Laboratory	Shriram Institute for Industrial Research, 19, University Road, Delhi		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	15.10.2014
Certificate Number	T-1022	Valid Until	14.10.2016
Last Amended on	-	Page	9 of 21

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
2.	Plug & Socket outlet of rated voltage upto & including 250 V & rated current upto & including 16 amps Switches for domestic & similar purposes	Marking	IS 1293: 2005 IS 3854: 1997 IS 302 -1: 1979 IS 302-1: 2008 Cl. 8	Qualitative
		Checking of dimension	Cl.9	0.01-150 mm
		Insulation resistance & electric Strength(after humidity treatment)	Cl.16	$10^3 \Omega$ - $10^{15} \Omega$
		Protection against electric shock	Cl.10	0-100 N
		Provision for earthing,	Cl.11	0.1- 12V, 0.1-10A (0.01 to 1.2 Ω)
		Creepage distance, clearance & distance through sealing compound	Cl.27	0.01-150 mm
IV. DOMESTIC ELECTRICAL APPLIANCES				
1.	Electric Ceiling type Fans Electric table type fan		IS 374: 1979 IS 555: 1979 IS 302 -1: 1979 IS 302-1: 2008	
		Air Delivery	Cl. 10.3	5-400 m ³ /min.
		Temperature rise	Cl.10.4	1-100°C
		Leakage current	Cl. 10.5	0.001-1mA
		High voltage	Cl. 10.6	0 – 5 kV AC
		Insulation resistance	Cl. 10.7	$10^3 \Omega$ - $10^{15} \Omega$

Laboratory	Shriram Institute for Industrial Research, 19, University Road, Delhi		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	15.10.2014
Certificate Number	T-1022	Valid Until	14.10.2016
Last Amended on	-	Page	10 of 21

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Starting	Cl. 10.8	Qualitative
		Fan speed	Cl. 10.9	1-15000 RPM
		Input	Cl.10.9	0.002-4kW
		Earthing connections	Cl.10.10	0.1- 12V, 0.1-195A (0.01 to 1.2 Ω)
		Suspension system	Cl.10.14	Qualitative
		Creepage distance & Clearances	Cl.10.15	0.01-150 mm
		Moisture resistance	Cl.10.12	0 – 5 kV $10^3 \Omega$ - $10^{15} \Omega$
2.	Electric Pedestal Type Fans		IS1169: 1967 IS 302 -1: 1979 IS 302-1: 2008	
		Air Delivery, (upto 400 mm only)	Cl. 16.2	5-400 m ³ /min.
		Temperature rise	Cl.16.3	1-100°C
		Power Factor	Cl. 16.7	0.02 – 1.00
		AC Leakage Test	Cl. 16.8	0.01-2mA
		High voltage	Cl. 16.9	0 – 5 kV AC
		Insulation resistance	Cl. 16.14	$10^3 \Omega$ - $10^{15} \Omega$
		Starting	Cl. 16.11	Qualitative
		Fan speed	Cl. 16.12	1-15000 RPM
		Input	Cl.16.11	0.002-4kW
		Earthing continuity	Cl.16.10	0.1- 12V, 0.1-10A (0.01 to 1.2 Ω)

Laboratory	Shriram Institute for Industrial Research, 19, University Road, Delhi		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	15.10.2014
Certificate Number	T-1022	Valid Until	14.10.2016
Last Amended on	-	Page	11 of 21

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
3.	Propeller Type AC Ventilating Fan		IS 2312: 1967 IS 302 -1: 1979 IS 302-1: 2008 Cl.14.3	1- 100°C, 1°C
		Temperature rise,		
		Power Factor	Cl. 14.6	0.02 – 1.00
		AC Leakage Test	Cl. 14.7	0.001-2mA
		High voltage	Cl. 14.8	0 – 5 kV AC
		Insulation resistance	Cl. 14.9	10 ³ Ω-10 ¹⁵ Ω
		Starting	Cl. 10.1	Qualitative
		Fan speed	Cl. 14.12	1-15000 RPM
		Input	Cl.14.11	0.002-4kW
		Earthing continuity	Cl.14.10	0.1- 12V, 0.1-10A (0.01 to 1.2 Ω)
4.	Railway Carriage Fan		IS 6680: 1992 IS 302 -1: 1979 IS 302-1: 2008 Cl. 19.2	5-400 m ³ /min
		Air Delivery		
		Temperature rise	Cl.19.3	1-100°C
		Power Factor	Cl. 19.5	0.02 – 1.00
		Leakage Test	Cl. 19.6	0.001-2mA
		High voltage	Cl. 19.7	0 – 5 KV AC
		Insulation resistance	Cl. 19.11	10 ³ Ω-10 ¹⁵ Ω

Laboratory	Shriram Institute for Industrial Research, 19, University Road, Delhi		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	15.10.2014
Certificate Number	T-1022	Valid Until	14.10.2016
Last Amended on	-	Page	12 of 21

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
5.	Mineral filled Sheathed Heating Element Electric immersion water heater	Starting	Cl. 12	Qualitative
		Fan speed	Cl. 19.9	1-15000 RPM
		Input	Cl.16.8	0.002-4kW
			IS 4159: 2002 IS 368: 1992 IS 302 -1: 1979 IS 302-1: 2008 IS 302-2-201: 2008	
		Marking	Cl. 7	Qualitative
		Protection against electric shock	Cl.8	0 – 20 N
		Provision for earthing	Cl.27	0.1- 12V, 0.1-10A (0.01 to 1.2 Ω)
		Creepage distance, clearance & distance through sealing compound	Cl. 29	0.01-150 mm
		Temperature rise	Cl.11	1-300 °C
		Resistance to rusting	Cl.31	Qualitative
		Stability & mechanical hazard	Cl.20	0 – 20 °
		Terminal for external conductor	Cl.26	0.01 – 150 mm
		Screw & Connections	Cl. 28	Qualitative
		Internal wiring	Cl. 23	Qualitative
		Abnormal operation	Cl. 29	1-300 °C

Laboratory	Shriram Institute for Industrial Research, 19, University Road, Delhi		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	15.10.2014
Certificate Number	T-1022	Valid Until	14.10.2016
Last Amended on	-	Page	13 of 21

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Components	Cl. 24	Qualitative
		Construction	Cl. 22	Qualitative
		Elect. Insulation & leakage current	Cl. 13	0.5-15 kV; (1-1000 μ A)
		Endurance	Cl. 18	0 – 3 kV
		Input	Cl.10	0.002-4kW
		Elect. Insulation & elect. Strength(after humidity treatment)	Cl. 16	10 ³ Ω -10 ¹⁵ Ω 0-5 kV
		Mechanical strength	Cl. 21	0.5J
		Moisture resistance	Cl. 15	10 k Ω -10 ¹⁵ Ω
		Operation under overload condition	Cl. 12	Qualitative
		Resistance to heat & fire	Cl. 31	0.01 – 150 mm
6.	Stationary Storage Type Electric Water Heater	Standing loss	Cl.16 of IS 2082: 1993 Cl.10 of IS 2082: 1993	0.1-100 kWh
		Input	Cl.15 of IS 2082: 1993 Cl. 21 of IS 2082: 1993	0.002-4kW
		Capacity		0.1-50 l
		Cyclic temp. variation		1-300 °C
		Deviation of dial calibration	Cl. 20 of IS 2082: 1993	1 -300 °C
		Hot water output	Cl. 17 of IS 2082: 1993	1 -300 °C
		Mixing factor	Cl.19 of IS 2082:1993	1-300 °C

Laboratory	Shriram Institute for Industrial Research, 19, University Road, Delhi		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	15.10.2014
Certificate Number	T-1022	Valid Until	14.10.2016
Last Amended on	-	Page	14 of 21

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Reheating time	Cl. 18 of IS 2082:1993	1 -300 °C
		Endurance	Cl. 23 of IS 2082: 1993	Qualitative
		Protection against electric shock	Cl.8 of IS 302-2-21	Qualitative
		Temperature rise,	Cl.11 of IS 302-2-21	1-300 °C
		Operation under overload condition	Cl.12 of IS 302-2-21	1 – 100 °C
		Resistance to rusting	Cl.31 of IS 302-2-21	Qualitative
		Overload protection	Cl.17 of IS 302-2-21	Qualitative
		Abnormal operation	Cl.19 of IS 302-2-21	1 – 300 °C
		Mechanical strengt	Cl. 21 of IS 302-2-21	0.5 J
		Internal wiring	Cl.23 of IS 302-2-21	Qualitative
		Creepage distance & clearance	Cl.29 of IS 302-2-21	0.01-150 mm
		Earthing	Cl.27 of IS 302-2-21	0.1- 12V, 0.1-10A (0.01 to 1.2 Ω)
		Terminal for external conductor	Cl. 26 of IS 302-2-21	0.01 – 150 mm
		Components	Cl.24 of IS 302-2-21	Qualitative
		Construction	Cl.22 of IS 302-2-21	Qualitative
		Elect. Insulation & leakage current	Cl.13 of IS 302-2-21	0.5-15 kV; 1-500μA 10 ³ Ω-10 ¹⁵ Ω

Laboratory	Shriram Institute for Industrial Research, 19, University Road, Delhi		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	15.10.2014
Certificate Number	T-1022	Valid Until	14.10.2016
Last Amended on	-	Page	15 of 21

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Elect. Insulation & electric strength after humidity treatment	Cl.16 of IS 302-2-21	$10^3 \Omega$ - $10^{15} \Omega$
		Moisture resistance	Cl.15 of IS 302-2-21	$10^3 \Omega$ - $10^{15} \Omega$
		Screws & connections	Cl.28 of IS 302-2-21	0.01– 10 Nm
		Provision for earthing	Cl.27 of IS 302-2-21	0.1- 12V, 0.1-10A (0.01 to 1.2 Ω)
		Resistance to heat & fire	Cl.30 of IS 302-2-21	0.01 – 150 mm
V.	BATTERIES			
1.	Lead Acid Storage Batteries for Motor Vehicle		IS 7372: 1995	Qualitative
		Physical Examination	Cl. 9.3	
		Dimension & Layout	Cl. 9.4	0.01-300 mm
		Marking	Cl. 9.5	Qualitative
		Air Pressure	Cl. 9.6	1-720mmWC
		Capacity	Cl. 9.7	0.01-12 V
		High rate discharge at normal temperature	Cl. 9.9	0.1s-30 minute
		High rate discharge at low temperature	Cl. 9.10	0.1s-30 minute
		Retention of charge	Cl. 9.12	0.01-12 V
		Resistance to overcharge	Cl. 9.13	0.01-12 V/ 1-600 A & 0.1-36 V/1-30 A
		Life	Cl. 9.14	0.01-12 V/ 1-600 A & 0.1-36 V/1-30 A
		Storage	Cl. 9.15	0.01-12 V 0.1s-30 minute

Laboratory	Shriram Institute for Industrial Research, 19, University Road, Delhi		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	15.10.2014
Certificate Number	T-1022	Valid Until	14.10.2016
Last Amended on	-	Page	16 of 21

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
2.	Lead Acid Storage Batteries for Motor Vehicles with Light Weight & High Cranking Performance	Physical Examination	IS 14257: 1995 Cl. 9.3.1	Qualitative
		Dimension & Layout	Cl. 9.3.2	0.01-300 mm
		Marking	Cl. 9.3.3	Qualitative
		Charge Acceptance	Cl. 9.3.6	0.01-12 V/ 1-600 A & 0.1-36 V/1-30 A
		5 – h Capacity	Cl. 9.3.4	0.01-12 V
		High rate at -15 °C	Cl. 9.3.5	0.1s-30 minute
		Life Cycle test	Cl. 9.3.7	0.01-12 V/10-600 A & 0.1-36 V/1-30 A
		Strength of terminal	Cl. 9.3.10	0-100 Nm
		Robustness of fastening	Cl. 9.3.11	Qualitative
		Reverse capacity	Cl. B-1.1	0.1s-30 minute
		Cold Cranking Performance	Cl. B-1.2	0.01-12 V
3.	Lead Acid Batteries Electric Road Vehicle	Visual Examination	IS 13514-1995 Cl. 8.6	Qualitative
		Checking of Dimension	Cl. 8.7	0.01-300 mm
		Air Pressure Test	Cl. 8.9	1-720mmWC
		Test for Capacity	Cl. 8.10	0.01-12 V
		Charge Retention test	Cl. 8.11	0.01-12 V
		High rate discharge performance test	Cl. 8.12	0.1s-30 minute

Laboratory	Shriram Institute for Industrial Research, 19, University Road, Delhi		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	15.10.2014
Certificate Number	T-1022	Valid Until	14.10.2016
Last Amended on	-	Page	17 of 21

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
4.	Stationary Lead Acid Batteries (with Tubular Positive Plates) in Mono-Block Container	Verification of Construction Requirement	IS 13369: 1992 Cl. 11.2	Qualitative
		Verification of Marking	Cl. 11.3	Qualitative
		Verification of Dimensions	Cl. 11.4	0.01-300mm
		Test for Capacity	Cl. 11.5	0.01-12 V
		Ampere-Hour & Watt- Hour Efficiency Test	Cl. 11.8	0.01-12 V/ 1-600 A & 0.1-36 V/1-30 A (1 % to 99 %)
		Test for loss of Capacity on storage	Cl. 11.6	0.01-12 V/ 1-600 A & 0.1-36 V/1-30 A (1 % to 99 %)
5.	Stationary Cells & Batteries Lead Acid Type (with Tubular Positive Plates) (IS 1651-1991)		IS 1651: 1991	
		Verification of Constructional Requirement	Cl. 12.2	Qualitative
		Verification of Marking	Cl. 12.3	Qualitative
		Verification of Dimensions	Cl. 12.4	0.01-300 mm
		Test for Capacity	Cl. 12.5	0.01-12 V, 0.01 V
		Test for voltage during discharge	Cl. 12.10	0.01-12 V, 0.01 V
		Ampere-Hour & Watt- Hour Efficiency Test	Cl. 12.9	0.01-12 V/ 1-600 A & 0.1-36 V/1-30 A (1 % to 99 %)
		Test for loss of Capacity on storage	Cl. 12.7	0.01-12 V/ 1-600 A & 0.1-36 V/1-30 A (1 % to 99 %)

Laboratory	Shriram Institute for Industrial Research, 19, University Road, Delhi		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	15.10.2014
Certificate Number	T-1022	Valid Until	14.10.2016
Last Amended on	-	Page	18 of 21

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
6.	Stationary Valve Regulated Lead Acid Batteries	Visual Examination	IS 15549: 2005 Cl. 4.1 to 4.9 & 8.1	Qualitative
		Checking of Dimensions as per manufacturer's drawing		0.01-300mm
		Test for C 10 capacity & voltage during discharge	Cl. 12.1	0.01-12 V
		Test for C 1 capacity & voltage during discharge	Cl. 12.2	0.01-12 V
		Ampere-Hour/ Watt- Hour	Cl. 12.4 & Cl. 12.5	0.01-12 V/ 1-600 A & 0.1-36 V/1-30 A (1 % to 99 %)
		Test for retention of charge	Cl. 12.6	0.01-12 V/ 1-600 A & 0.1-36 V/1-30 A (1 % to 99 %)
		Acid retention capability test on separators	Cl. 12.7	0.1 – 210 g, 0.1 mg
		Wicking test on separators	Cl. 12.7	1-1000mm
7.	Lead Acid Starter Batteries	Capacity check	IEC 60095-1-2000 Cl. 4.1.3	1-180 Ah
		Reserve capacity checking	Cl. 7.2	0.1s-30 minute
		Cranking performance	Cl. 7.3	0.01-12 V
		Charge acceptance	Cl. 7.4	0.01-12 V/ 1-600 A & 0.1-36 V/1-30 A

Laboratory	Shriram Institute for Industrial Research, 19, University Road, Delhi		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	15.10.2014
Certificate Number	T-1022	Valid Until	14.10.2016
Last Amended on	-	Page	19 of 21

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Charge retention	Cl. 7.5	0.01-12 V
		Water consumption	Cl. 7.9	0.1g/ Ah – 20 kg/Ah
		Electrolyte retention	7.11	Qualitative
VI. ELECTRICAL MATERIALS				
1.	Pressure Sensitive Adhesive Insulating Tapes for Electrical Purposes		IS 7809 (Part 2): 1977 Cl. 3.2,3.3,3.4	
		Dimensions		0.01 – 150 mm
		Tensile strength	Cl. 4.1	0.0001-100 kN
		Adhesion to steel	Cl. 4.2	0.0001-100 kN
		Adhesion to backing	Cl. 4.3	0.0001-100 kN
		Electric strength at room temperature	Cl.4.4	0-15 kV AC
		Electric strength after humid conditioning	Cl.4.5	0-15 kV AC
		Flammability	Cl.4.6	0.01- 150 mm
		Electrolytic corrosion	Cl.4.7	Qualitative
		Stability to accelerated ageing	Cl.4.8	1 - 300 mm/min 0-50 N/10 mm width
		Insulation resistance	Cl.4.9	10 ³ Ω-10 ¹⁵ Ω
2.	Pressure Sensitive Adhesive Insulating Tapes		IS 7809 (Part 1): 1975 Cl. 4	
		Appearance		Qualitative

Laboratory	Shriram Institute for Industrial Research, 19, University Road, Delhi		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	15.10.2014
Certificate Number	T-1022	Valid Until	14.10.2016
Last Amended on	-	Page	20 of 21

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	for Electrical Purposes	Freedom from Defects	Cl. 5	Qualitative
		Dimension	Cl. 6	0.01 to 150 mm
		Minimum Storage Life	Cl. 7	0 – 50 °C 30 – 80 % RH

VII. LAMPS, LUMINARIS AND ACCESSORIES

1.	Self Ballasted Lamps for General Lighting Services	Marking	IS 15111 (Part 1): 2002 Cl. 6	Qualitative
		Insulation Resistance	Cl. 9	10 K-10 ¹⁵ Ω
		Mechanical strength	Cl. 10	0.01-10 Nm 10K-10 ¹⁵ Ω
		Resistance to heat	Cl. 12	0.01 mm -150 mm
		Dimensions	IS 15111 (Part 2): 2002 Cl. 6	0.01 mm -150 mm
		Lamp Wattage	Cl. 9	0.002-4 kW
		Power Factor	Cl. 16	0.02-1.00
		Luminous Flux	Cl. 10	1-10000 lux
		Life	Cl. 13	0.1-10000 hrs
		Lumen Maintenance	Cl. 12	0.1-10000 hrs
2.	High Pressure sodium Vapour Lamp	Marking	IS 9974-1981 Cl. 5	Qualitative
		Insulation Resistance	Cl. 4.3.4	10 K-10 ¹⁵ Ω
3.	Luminaires for	Protection Against Electric	IS 10322 (Part 2): 1982	Qualitative

Laboratory	Shriram Institute for Industrial Research, 19, University Road, Delhi		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Electrical Testing	Issue Date	15.10.2014
Certificate Number	T-1022	Valid Until	14.10.2016
Last Amended on	-	Page	21 of 21

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
--------------	---------------------------------------	--------------------------------	--	---

Road & Street Lighting	Shock
---------------------------------------	--------------

-X-X-X-X-X-X-X-X-X-X-X-X-