

Laboratory **KC India Test Laboratories LLP, 12/54, Site IV, Sahibabad Industrial Area, Ghaziabad, Uttar Pradesh**

Accreditation Standard **ISO/IEC 17025: 2005**

Certificate Number **TC-5844**

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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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CHEMICAL TESTING

1.	BUILDING MATERIAL			
1.	Cement (OPC)	SiO ₂	IS 4032: 1985	5.0 % to 30.0 %
		Loss on Ignition	IS 4032 : 1985	0.5 % to 10 %
		Alumina (Al ₂ O ₃)	IS 4032: 1985 Cl.4.6.1	0.5 % to 10 %
		Iron Oxide (Fe ₂ O ₃)	IS 4032: 1985 Cl.4.5.2	0.5 % to 10 %
		Lime (CaO)	IS 4032: 1985 Cl.4.7.2	1.0 % to 70.0 %
		Magnesia (MgO)	IS 4032: 1985 Cl.4.8.2	0.5 % to 10 %
		Sulphuric Anhydride (SO ₃)	IS 4032 : 1985 Cl.4.9	0.1 % to 10 %
		Insoluble Residue	IS 4032 : 1985 Cl.4.10	0.5 % to 40 %
		Total Chloride	IS 4032: 1985	0.001 % to 0.5 %
		Total Sodium Oxide (Na ₂ O)	IS 4032 : 1985	0.01 % to 5 %
		Total Potassium Oxide (K ₂ O)	IS 4032 : 1985	0.01 % to 5 %
2.	Cement (PPC)	Silica (SiO ₂)	IS 4032 : 1985	5.0% to 30.0 %
		Loss on Ignition (LOI)	IS 4032 : 1985	0.5% to 10 %
		Alumina (Al ₂ O ₃)	IS 4032 : 1985 Cl.4.6.1	0.5% to 15 %
		Iron Oxide (Fe ₂ O ₃)	IS 4032 : 1985 Cl.4.5.2	0.5% to 10 %

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		Lime (CaO)	IS 4032: 1985 Cl.4.7.2	1.0% to 60.0 %
		Magnesia (MgO)	IS 4032: 1985 Cl.7.2	0.5% to 10 %
		Sulphuric Anhydride (SO ₃)	IS 4032: 1985 Cl.4.9 & 7.3	0.1% to 10 %
		Insoluble Residue	IS 4032: 1985 Cl.4.10 & 7.4	0.5% to 40 %
		Total Chloride (Cl)	IS 4032: 1985	0.001% to 0.5%
		Total Sodium Oxide (Na ₂ O)	IS 4032: 1985	0.01 % to 5%
		Total Potassium Oxide (K ₂ O)	IS 4032: 1985	0.01% to 5%
3.	Cement Concrete	Cement content	ASTM C 1084:2010	20% to 40%
II.	METALS & ALLOYS			
1.	Copper	Purity	IS 440:1964	90 to 99.97%
2.	Plain Carbon Steel Low Alloy Steel	Carbon	IS 228 (Part 1):1987	0.05 % to 1.00 %
		Sulphur	IS 228 (Part 9):1989	0.010 % to 2.5 %
		Phosphorus	IS 228 (Part 3):1987	0.010 % to 0.5 %
		Manganese	IS 228 (Part 2):1987	0.1 % to 1.5 %
		Silicon	IS 228 (Part 8):1989	0.05 % to 5 %

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III.	WATER			
1.	Drinking Water, Surface, Water, Ground, Water, Potable, Water, Reagent grade Water, Swimming Pool Water	pH Value	IS 3025:Part-11:1983 (RA 2006)	1 to 14
		Alkalinity (as CaCO ₃)	IS 3025:Part-23:1986 (RA 2003)	2to 1000 mg/l
		Total Residual Chlorine	IS 3025:Part-26:1986 (RA 2009)	0.5 to 10 mg/l
		Oxygen absorbed in 4 hours at 27°C,	IS 3025:Part-51:2003	0.1 to 500 mg/l
		Filterable residue, (Total Dissolved Solids)	IS 3025:Part-16:1984 (RA 2006)	1.0 to 25000 mg/l
		Colour	IS 3025:Part-4:983 (RA 2012)	5 to 100 Hazen Unit
		Turbidity	IS 3025:Part-10:1984 (RA 2006)	1 to 1000 NTU
		Specific Conductivity at 25 °C	IS: 3025:Part-14:2013 (RA 2006)	1.0 to 20000 µs/cm
		Total Residue, (Total solid-dissolved and suspended)	IS 3025:Part-15:1984	5.0 to 10000 mg/l
		Filterable residue, (Total Dissolved Solids),	IS 3025:Part-16:1984 (RA 2006)	5.0 to 25000 mg/l
	Total suspended Solids, (Non-filterable residue)	IS 3025:Part-17:1984 (RA 2012)	5.0 to 25000 mg/l	
	Volatile and fixed residue, (total filterable and non-filterable)	IS 3025:Part-18:1984 (RA 2012)	5.0to 25000 mg/l	
	Total Hardness (as CaCO ₃)	IS 3025:Part-21:2009 (RA 2009)	1to 2000 mg/l	

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		Acidity (as CaCO ₃)	IS 3025:Part-22:1986 (RA 2003)	1 to 500 mg/l
		Sulphate (as SO ₄)	IS 3025:Part-24:1986 (RA 2003)	1 to 100 mg/l
		Chlorine demand	IS 3025:Part-26:1986 (RA 2009)	0.05 to 5 mg/l
		Sulphide (as H ₂ S)	IS 3025:Part-29:1986 (RA 2009)	0.5 to 20 mg/l
		Phosphorus (as PO ₄)	IS 3025:Part-31:1988 (RA 2003)	0.05 to 100 mg/l
		Chloride	IS 3025:Part-32:1988 (RA 2003)	1 to 25000 mg/l
		Nitrate (as NO ₃)	IS 3025:Part-34:1988 (RA 2003)	0.05 to 100 mg/l
		Nitrite (as NO ₂)	IS 3025:Part-34:1988 (RA 2003)	0.01 to 50 mg/l
		Total Kjeldhal Nitrogen (as N)	IS 3025:Part-34:1988 (RA 2003)	1.0 to 500 mg/l
		Ammonia(as NH ₃)	IS 3025:Part-34:1988 (RA 2003)	1.0 to 500 mg/l
		Silica (as SiO ₂)	IS 3025:Part-35:1988	0.1 to 100 mg/l
		Calcium(as Ca)	IS 3025:Part-40:1991 (RA 2003)	1 to 100 mg/l
		Potassium (as K)	IS 3025:Part-45:1993 (RA 2003)	0.2 to 200 mg/l
		Magnesium (as Mg)	IS 3025:Part-46:1994 (RA 2003)	0.05 to 100 mg/l
		Hexavalent Chromium (as Cr ⁺⁶)	IS 3025:Part-52:2003	0.05 to 10 mg/l
		Iron (as Fe)	IS 3025:Part-53:2003	0.01 to 50 mg/l
		Boron (s B)	IS 3025:Part-57:2005	0.01 to 50 mg/l
		Manganese (as Mg)	IS 3025:Part-59:2006	0.05 to 50 mg/l

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		Fluoride (as Fe)	IS 3025:Part-60:2008	0.1 to 100 mg/l
		Phenol (asC ₆ H ₅ OH)	IS 3025:Part-52:1992 (RA 2003)	0.01 to 5.0 mg/l
		Sodium (as Na)	IS 3025:Part-45:1993 (RA 2003)	0.2 to 500 mg/l
	Construction Water	Alkalinity	IS 3025 (Part 23) : 1986	1 to 50 ml
		pH	IS 3025 (Part 11) : 1983	1 to 14
		Colour	IS 3025 (Part 4) : 1983	5 to 70 Hazen
		Turbidity	IS 3025 (Part 10) : 1984	1to 1000 NTU
		Temperature	IS 3025 (Part 9) : 1984	10 to 60 °C
		Acidity	IS 3025 (Part 22) : 1986	1 to 10 ml
		Chloride	IS 3025 (Part 32) : 1988	1 to 10000
		Total Dissolved Solid	IS 3025 (Part 16) : 1986	5 to 10000 mg/l
		Sulphate	IS 3025 (Part 24) : 1986	1 to 1000
		Inorganic Residue	IS 3025 (Part 18) : 1984	2.5 to 1000 mg/l
	Organic Residue	IS 3025 (Part 18) : 1984	2.5 to 1000 mg/l	
	Total Suspended Solid	IS 3025 (Part 17) : 1984	2.5 to 1000 mg/l	
IV.	RESIDUE IN WATER			
1.	Trace Metal (Water and Waste Water)	Arsenic (as As)	IS 3025:Part-37:1988 (RA 2003)	0.1 to 50 mg/l
		Cadmium (as Cd)	IS 3025:Part-41:1992 (RA 2003)	0.1to 10 mg/l
		Copper (as Cu)	IS 3025:Part-42:1992 (RA 2003)	0.1to 100mg/l
		Lead (as Pb)	IS 3025:Part-47:1994 (RA 2009)	0.1 to 10 mg/l
		Mercury (as Hg)	IS 3025:Part-48:1994 (RA 2003)	0.01 to 5 mg/l
		Zinc (as Zn)	IS 3025:Part-49:1994 (RA 2003)	0.1to 100 mg/l

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		Nickel (as Ni)	IS 3025:Part-54:2003	0.1to 100 mg/l
		Bismuth (as Bi)	3500-Bi(3111A&B) APHA 23rd Edition 2015	0.1to 10 mg/l
		Silver (as Ag)	IS 13428: 2005 Annex J	0.1to 10 mg/l
V.	ATMOSPHERIC POLLUTION			
1.	Ambient Air, Work Environment and Indoor Air Quality, Fugitive emission	Sulphur Dioxide (SO ₂)	IS 5182 (P-2)-2001	5 to 100 µg/m ³
		Nitrogen Oxide (NO ₂)	IS 5182 (P-6)-1975 (RA 2006)	5.0 to 100 µg/m ³
		RSPM (PM10)	IS 5182 (P-23)-1999 (RA 2006)	5.0 to 1000 µg/m ³
		RSPM (PM 2.5)	KCL/SOP/CH/AIR/03 Based on CPCB guideline Issue NO 01/ Date : 02.01.2017	5.0 to 500 µg/m ³
		Ozone (O ₃)	IS 5182 (P-9)-1974	10 to 200 µg/m ³
		Lead (Pb)	IS 5182 (P-22)-1974	0.4to 10 µg/m ³
		Ammonia (NH ₃)	KCL/SOP/CH/AIR/07 CPCB Manual Volume II Issue NO 01/ Date : 02.01.2017	4.0 to 50 µg/m ³
		Arsenic (As)	IS 5182 (P-22)-1974	5to 50 ng/ m ³
		Nickel (Ni)	IS 5182 (P-22)-1974	10to 50 ng/ m ³
2.	Stack Emission, Fugitive Emission, DG Set	Sulphur Dioxide (SOX)	IS 11255 (P-2)(RA 2003)	1 to 300 mg/Nm ³
		Oxide of Nitrogen (NO _x)	IS 11255 (P-7) 1995 (RA 2005)	4 to 400 mg/Nm ³
		Particular Matter (PM)	IS 11255P-1)-1999 (RA 2005)	20 to 500 mg/Nm ³
		Carbon monoxide (CO)	IS 3270: 1992	1 to 50 %
		Carbon dioxide (CO ₂)	IS 13270: 1992	1 to 20 %
		Oxygen (O ₂)	IS 13270: 1992	1 to 20 %

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3.	Noise Level Monitoring	1) Noise level LeqdB(A)	IS 9989 : 1981	34 to 130 dB
		2) Noise Level Source	IS 4758 : 1968	34 to 130 dB
VI.	POLLUTION & ENVIRONMENT			
1.	Waste Water (Effluents/ Sewage)	Colour	APHA 23rd Edition 2015 2120- B	1 to 70, Hazen units
		Turbidity	APHA 23rd Edition 2015 2130- B	1 to 1000 NTU
		pH Value	APHA 23rd Edition 2015 4500-H ⁺ B	1 to 14
		Conductivity	APHA 23rd Edition 2015 2510- B	1.0 to 20000 μ s/cm
		Total solid Dried at 103–105°C	APHA 23rd Edition 2015 2540- B	1.0 to 25000 mg/l
		Total Dissolved Solids Dried at 180°C	APHA 23rd Edition 2015 2540- C	1.0to 25000 mg/l
		Total suspended Solids Dried at 103–105°C	APHA 23rd Edition 2015 2540- D	1.0to 10000 mg/l
		Fixed and Volatile solids Ignited at 550°C	APHA 23rd Edition 2015 2540- E	1.0to 10000 mg/l
		Total Hardness (as CaCO ₃)	APHA 23rd Edition 2015 2340- B&C	1to 2000 mg/l
		Acidity (as CaCO ₃)	APHA 23rd Edition 2015 2310- B	1to 1000 mg/l
		Alkalinity (as CaCO ₃)	APHA 23rd Edition 2015 2320- B	1to 1000 mg/l
		Sulphate (as SO ₄)	APHA 23rd Edition 2015 4500-SO ₄ C&E	1 to 1000 mg/l
		Residual Free Chlorine	APHA 23rd Edition 2015 4500-Cl, B	0.5 to 10mg/l

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		Sulphide (as H ₂ S)	APHA 23rd Edition 2015 4500-S ² , F	0.5 to 20 mg/l
		Phosphorus (as PO ₄)	APHA 23rd Edition 2015 4500-P, D	0.05 to 100 mg/l
		Chloride	APHA 23rd Edition 2015 4500-Cl B	1 to 20000 mg/l
		Nitrate (as NO ₃)	APHA 23rd Edition 2015 4500-NO ₃ B	0.1 to 100 mg/l
		Nitrite (as NO ₂)	APHA 23rd Edition 2015 4500-NO ₂ , B	0.01 to 100 mg/l
		Total Kjeldhal Nitrogen (as N)	APHA 23rd Edition 2015 4500- B	0.1 to 500 mg/l
		Ammonia(as NH ₃)	APHA 23rd Edition 2015 4500-NH ₃ B&C.	0.1 to 500 mg/l
		Silica (as SiO ₂)	APHA 23rd Edition 2015 4500-SiO ₂ , C.	0.02 to 100 mg/l
		Calcium (as Ca)	APHA 23rd Edition 2015 3500-Ca B.	1 to 1000 mg/l
		Potassium (as K)	APHA 23rd Edition 2015 3500-K B.	0.2 to 500 mg/l
		Sodium (as Na)	APHA 23rd Edition 2015 3500-Na B.	0.2 to 500 mg/l
		Magnesium (as Mg)	APHA 23rd Edition 2015 3500-Mg B.	1.0 to 2000 mg/l
		Fluoride (as F)	APHA 23rd Edition 2015 3500-F D.	0.05 to 20 mg/l
		Hexavalent Chromium(as Cr ⁺⁶)	APHA 23rd Edition 2015 3500-Cr B.	0.05 to 100 mg/l
		Iron (as Fe)	APHA 23rd Edition 2015 2340- Fe B	0.05 to 500 mg/l
		Boron(as B)	APHA 23rd Edition 2015 2310- B B.	0.05 to 20 mg/l

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		Manganese(as Mg)	APHA 23rd Edition 2015 2320- Mn B.	0.05 to 200 mg/l
		Phenol(as C ₆ H ₅ OH)	APHA 23rd Edition 2015 5530 C.	0.01 to 100 mg/l
		Chemical Oxygen Demand	IS 3025 (Part 58) : 2006	5 to 20000 mg/l
		Bio-Chemical Oxygen Demand	IS 3025 (Part 44) : 1993	1 to 100 mg/l & 3 to 15000
		Oil & Grease	IS 3025 (Part 39) : 1991	3 to 100

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<u>ELECTRICAL TESTING</u>				
I.	WIRING ACCESSORIES			
1.	Fittings For Rigid Non-Metallic Conduit	Verification of Marking	Cl. 8 & Cl. 5 of IS 3419-1989	Qualitative
		Verification of Checking of dimension	Cl. 9 & Cl. 5 of IS 3419-1989	0.01 to 150 mm
		Resistance to Heat	Cl. 10 of IS 3419-1989	0.1 to 400°C, 0.01 to 150 mm
		Resistance to Burning	Cl. 11 of IS 3419-1989	0.01/ 1 sec. to 24 hrs. 0.01 to 150 mm
		Moisture Absorption Test	Cl. 12 of IS 3419-1989	0.1 to 400 °C 0.01 to 600 gm,
		Resistance to Chemical Action	Cl. 13 of IS 3419-1989	5 to 500ml, 0.01 to 600 gm, (Qualitative)
		Copper Test	Cl. 14 of IS 3419-1989	0.1 to 400 °C (Qualitative)
		Resistance to Oil	Cl. 15 of IS 3419-1989	0.01 to 150 mm 0.1 to 400 °C, 0.01/ 1 sec. to 24 hrs.
		Resistance to Impact	Cl. 16 of IS 3419-1989	Qualitative
		Electric Strength	Cl. 17.2 of IS 3419-1989	0.01 to 5/10 kV (Qualitative)
		Insulation Resistance	Cl. 17.3 of IS 3419-1989	1 to 100 x 10 ⁶ MΩ Voltage:500VDC
2.	Low Carbon	Chemical	Cl. 6 of IS 3975-1999, IS	0.010 % to 2.5 %

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	Galvanized Steel Wires, Formed Wires And Tapes For Armouring Cable	Composition* i) Sulphur ii) Phosphorus	228(Part-3)-1987 & IS 228(Part-9)-1989	0.01 % to 0.5 %
		Dimensions for Armouring	Cl. 7 of IS 3975-1999 & IS 10810(Pt-36)-1984	0.01 to 150 mm 0.001 to 25mm
		Tensile Strength of Armouring	Cl.8.1 of IS 3975-1999 & IS 1608-1995	0.01 to 50 kN
		Elongation Test Armouring	Cl.8.1 of IS 3975-1999 & IS 1608-1995	0.5 to 300 mm
		Torsion Test (Galvanized Steel Wire Only)	Cl. 8.2 of IS 3975-1999 & IS 1717-2011	Qualitative
		Wrapping Test (Galvanized steel strips only)	Cl.8.3 of IS 3975-1999 & IS 1755-1971	Qualitative
		Mass of Zinc coating	Cl.9.1 of IS 3975-1999, IS 6745-1972 & IS 4826-1979	60 to 250 g/m ²
		Uniformity of zinc coating	Cl.9.2 of IS 3975-1999, IS 2633-1986 & IS 4826-1979	Qualitative
		Resistivity test of Armouring (Wire/Strips)	Cl.8.4 of IS 3975-1999 & IS 10810(Pt-42)-1984	Up to 14.5 x 10 ⁻⁶ Ω-cm
		Adhesion Test	Cl.9.3 of IS 3975-1999	Qualitative
		Free from defect	Cl.11 of IS 3975-1999	Qualitative
3.	Conduits For	Construction	IS 9537 (Part 3) ,Cl.8	Qualitative

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	Electrical Installations (Rigid Steel Conduits)			
		Verification of Marking	IS 9537 (Part 3) ,Cl.6.1	Qualitative
		Durability Of Marking	IS 9537 (Part 1) ,Cl.6.4	Qualitative
		Dimensions		
		Max. Outside Dia.	IS 9537 (Part 3) ,Cl.7.1.1	20 mm to 50 mm
		Min. Outside Dia.	IS 9537 (Part 3) ,Cl.7.1.1	20 mm to 50 mm
		Min. Inside Dia.	IS 9537 (Part 3) ,Cl.7.2	20 mm to 50 mm
		Length Of Conduit	IS 9537 (Part 3) ,Cl.7.3	20 mm to 50 mm
		Uniformity Of Wall Thickness	IS 9537 (Part 3) ,Cl.7.4	0.01 to 150 mm
		Dimensions Of Socket	IS 9537 (Part 3) ,Cl.6.4	20 mm to 50 mm
		Mechanical Properties		
		Bending	IS 9537 (Part 3) ,Cl.9.2	Qualitative
		Compression	IS 9537 (Part 1) ,Cl.9.3	0.1 N to 5000 N 0.01 to 150 mm
		Impact	IS 9537 (Part 1) ,Cl.9.4	(-)-20 °C to 60 °C
		Collapse	IS 9537 (Part 1) ,Cl.9.5	(-)-20 °C to 60 °C
	Resistance to Heat	IS 9537 (Part 3) ,Cl.10	0.1°C to 400 °C 0.001 to 25mm	
	Resistance to Burning	IS 9537 (Part 1) ,Cl.11	0.5 mm to 600 mm	
	Electrical Characteristics			
	Electrical Strength	IS 9537 (Part 1) ,Cl.12.1.1	0.1 kV to 10 kV AC	
	Insulation Resistance	IS 9537 (Part 1) ,Cl.12.1.2	1 to 100 x10 ⁶ MΩ 500 V	

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4.	Conduits For Electrical Installations (Rigid Steel Conduits)	Construction	Cl.8 of IS 9537 (Pt.2)-1981 & Cl.8 of IS 9537 (Pt.1)-1980	Qualitative Test	
		Marking	Cl.6.1 & 6.2 of IS 9537 (Pt.2)-1981	Qualitative Test	
		Durability of marking	Cl.6.3 of IS 9537(Pt.2):1981 & Cl.6.4 of IS 9537 (Pt.1)-1980	Qualitative Test	
		Dimensions: (Cl. 7)			
		Outside diameter	Cl. 7.1 & table-1 of IS 9537 (Part 2): 1981 (RA 2017)	0.01 mm to 150 mm LC- 0.01 mm	
		Wall thickness	Cl. 7.3 & table-1 of IS 9537 (Part 2): 1981 (RA 2017)	0.001 mm to 25 mm LC- 0.001 mm	
		Checking minimum outside diameter	Cl. 7.2.1 of IS 9537 (Part 2): 1981 (RA 2017)	OD of gauges- 19.70, 24.60, 31.60, 39.60, 49.50 mm (Qualitative)	
		Checking maximum outside diameter	Cl. 7.2.2 of IS 9537 (Part 2): 1981 (RA 2017)	OD of gauges- 20.04, 25.04, 32.04, 40.04, 50.04 mm (Qualitative)	
		Screw threads	Cl.7.4 & Appendix B of IS 9537(Pt.2):1981& IS 4211: 1993 (RA 2008)	0.4 to 6 Thread Pitch Gauge (Qualitative)	
		Bending test	Cl. 9.2 of IS 9537 (Part 2): 1981 (RA 2017)	OD of gauges- 13, 16 mm (Qualitative)	
Compression test	Cl. 9.3 of IS 9537 (Part 1): 1980 (RA 2015)	1 to 5000 N LC- 1N (Qualitative)			

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		External influences	Cl. 13 of IS 9537 (Part 1): 1980 (RA 2015)	Qualitative
5.	Fittings For Rigid Steel Conduit	Verification of Marking	Cl. 7 IS 14768 (Pt.2):2003, IS 14768 (Pt.1):2000	Qualitative Test
		Dimensions	Cl. 8 IS 14768 (Pt.2):2003 & IS 14768 (Pt.1):2000	Threadable & Non Threadable Gauges 20 to 50 mm (Qualitative Test)
		Construction	Cl. 9 IS 14768 (Pt.2):2003 & IS 14768 (Part 1):2000	Torque: 0.4 to 10.0 Nm (Qualitative Test)
		Mechanical Properties	[Cl.10/IS 14768 (Part 2): 2003 & IS 14768 (Part 1): 2000]	
		Impact Test	Cl. 10.3 of IS 14768 (Part 1): 2000	0.5 to 300, LC:0.5/1mm, Mass of Hammer: 0.5, 1.0, 2.0, 6.8 kg. (Qualitative Test)
		Electrical Characteristics [Cl. 1 of IS 14768 (Part 2): 2003 & IS 14768 (Part 1): 2000]	[Cl. 1 of IS 14768 (Part 2): 2003 & IS 14768 (Part 1): 2000]	
		Electrical Impedance Test	Cl. 13.7 of IS 14768 (Part 1): 2000	Torque Screw Driver: 0.4 to 10.0 Nm, Current Source: upto 40A, Voltage: upto 240V
		Earth Terminal Test	Cl. 13.9 of IS 14768 (Part 1): 2000	Current Source: upto 40A, Voltage: upto 240V
		External Influences	[Cl. 14 of IS 14768 (Part 2): 2003 & IS 14768 (Part 1):	

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			2000]	
		a) Degree of Protection- Ingress of Solid Objects	Cl. 14.2 of IS 14768 (Part 1): 2000	IP 1x, 2x, 3x, 4x, 5x, 6x Chamber Size:115x115x115cm, (Qualitative Test)
		b) Degree of Protection- Ingress of Water	Cl. 14.3 of IS 14768 (Part 1): 2000	IP x1, x2, x3, x4, x5, x6, x7, x8,(Qualitative Test)
6.	General requirements for enclosures for accessories for household and similar fixed electrical installation	Verification of Marking	Cl. 7 of IS 14772 : 2000	Qualitative
		Checking of dimension	Cl. 8 of IS 14772 : 2000	Under Consideration
		Protection against electric shock	Cl. 9 of IS 14772 : 2000	0.1 to 60V, 0.01/1sec to 24 hrs, 0.1 to 1000 N,
		Provision for earthing	Cl. 10 of IS 14772 : 2000	0.01 to 9.99 V, 0.1 to 30A,
		Constructional requirements	Cl. 11 of IS 14772 : 2000	10 to 50cNm, 40 to 200 cNm, 0.01 to 150 mm,
		Resistance to ageing, to humid conditions, to ingress of solid objects and to harmful ingress of water	Cl. 12 of IS 14772 : 2000	0.1 to 400°C, 0.1 to 1000 N, -20 to 60°C, 0.1 to 100%RH, 0.1 to 99999.9 Hour, 0.01/1sec to 24 hrs, 1 to 100 MΩ; 500VDC, 0.1 to 10 kV
		Mechanical strength	Cl. 13 of IS 14772 : 2000	150 gm, 1Kg, 500N, 250N
		Resistance to heat	Cl. 14 of IS 14772 : 2000	0 to 400°C, Weight: 20N, Dia of Ball: 5mm;

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				0-25mm, 0 - 24 hrs,
		Resistance of insulating material to abnormal heat and to fire	Cl. 15 of IS 14772 : 2000	1 to 1200°C, 0.5 A to 200 A 1 to 60 sec
		Resistance to rusting	Cl. 16 of IS 14772 : 2000	0.1 to 400°C, 0.1 to 100 % RH 0.01/1 sec to 24 hrs
		Resistance to tracking	Cl. 17 of IS 14772 : 2000	0.01 to 600 V 0.01 to 5 Amp
7.	Trunking and Ducting Systems for Electrical Installations	Verification of Marking	IS 14927 (Pt.1)-2001, Cl. 7	Qualitative
		Dimensions	IS 14927 (Pt.1)-2001, Cl.8	0.001 to 25 mm, 0.01 to 150 mm, 10 to 15000 mm
		Construction: i) Access to live part	IS 14927 (Pt.1)-2001, Cl.9.4	19.98 to 50.0 V, 0.1 to 900.0 N
		Mechanical Properties:		
		i) Cable Supporting test for Surface mounting	IS 14927 (Pt.1)-2001, Cl.10.2	50 to 140°C, 0.001 to 11 mm, 10 sec to 23:59 hour
		ii) Impact test	IS 14927 (Pt.2)-2001, IS 14927 (Pt.1)-2001, Cl.10.3	50 to 300°C, -20 to 50°C
		Resistance to Flame Propagation:		
		i) Flame test	IS 14927 (Pt.1)-2001, Cl.11.1.1	0.5 to 600 mm, 10 sec to 23:59 hour
		Electrical Characteristics: IS:14927 (Pt.1)-2001, Cl. 12		

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		Electrical Insulating Strength and Insulation Resistance Test:		
		i) Insulation Resistance test	IS 14927 (Pt.1)-2001, Cl. 12.3	15 to 55°C, 30.3 to 94.4 RH, 10 sec to 23:59 hour, 1 to 100 x 10 ⁶ MΩ 500 V DC
		ii) Electrical Insulating Strength test		0.8 to 8.12KV AC 9.98 to 200.0 mA 29.94 to 180 sec.
8.	Switches for Domestic & Similar Purpose	Ratings	Cl.6 of IS 3854-1997	Qualitative
		Classification	Cl.7 of IS 3854-1997	Qualitative
		Marking	Cl.8 of IS 3854-1997	Qualitative
		Checking of Dimensions	Cl.7 of IS 3854-1997	0.1 to 150 mm
		Protection against electric Shock	Cl.10 of IS 3854-1997	Qualitative 0.1 to 60V
		Provision For Earthing	Cl.11 of IS 3854-1997	0.1 to 25 A, 0.01 to 5 V
		Constructional Requirements	Cl.13 of IS 3854-1997	Qualitative
		Resistance to ageing, to Harmful ingress of water and Humidity	Cl.15 of IS 3854-1997	Qualitative 15 to 35 °C, 1 to 100 % RH
		Insulation Resistance & Electric Strength	Cl.16.1&16.2 of IS 3854-1997	15 to 35 °C, 1 to 100 % RH, 500V DC, 2 to 100 MΩ, 0.1 to 3 kV AC
		Temperature Rise	Cl.17 of IS 3854-1997	1 to 100 °C
		Making and Breaking	Cl.18 of IS 3854-1997	Qualitative

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		Capacity		
		Normal Operation	Cl.19 of IS 3854-1997	Qualitative
		Mechanical Strength	Cl.20 of IS 3854-1997	0.15 kg.
		Resistance to heat	Cl.21 of IS 3854-1997	0.1 to150mm, 20N force
		Screws, Current carrying parts and connections	Cl.22 of IS 3854-1997	Qualitative
		Creepage distances and Clearances and distance through sealing compound	Cl.23 of IS 3854-1997	0.01to 150 mm
		Resistance to Abnormal heat and fire	Cl.24.1 of IS 3854-1997	Qualitative Test
		Resistance to rusting	Cl.25 of IS 3854-1997	Qualitative Test
9.	Plugs and Sockets	Ratings	Cl.6 of IS 1293-2005	Qualitative Test
		Classification	Cl.7 of IS 1293-2005	Qualitative Test
		Marking	Cl.8 of IS 1293-2005	Qualitative Test
		Checking of Dimensions	Cl.9 of IS 1293-2005	0.1to 150 mm
		Protection against electric Shock	Cl.10 of IS 1293-2005	Qualitative Test
		Provision For Earthing	Cl.11 of IS 1293-2005	0.1 to 25 A, 0.01-5 V
		Terminals	Cl.12 of IS 1293-2005	0.01 to 150 mm
		Construction Requirement of fixed socket outlet	Cl.13 of IS 1293-2005	Qualitative Test
		Construction of Plugs and portable socket outlets	Cl.14 of IS 1293-2005	Qualitative Test
		Resistance to ageing,	Cl.16 of IS 1293-2005	15 to35 ⁰ C,

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		to harmful ingress of water and to humidity		1 to 100 % RH
		Insulation resistance & Electric Strength	Cl.15 of IS 1293-2005	500V DC, 2-100 MΩ , 0.1 to 3 KV AC
		Temperature Rise	Cl.19 of IS 1293-2005	1 to 100°C
		Making and Breaking Capacity	Cl.20 of IS 1293-2005	Qualitative Test
		Normal Operation	Cl.21 of IS 1293-2005	Qualitative Test
		Force necessary to withdraw the plug	Cl.22 of IS 1293-2005	50, 54N force
		Flexing cable & their Connection	Cl.23 of IS 1293-2005	Qualitative Test
		Mechanical strength	Cl.24 of IS 1293-2005	0.1 to 2.5 Nm (Qualitative Test)
		Resistance to heat	Cl.25 of IS 1293-2005	0.01 to 150mm, 20 N force
		Screws, current, carrying parts and connections	Cl.26 of IS 1293-2005	Qualitative Test
		Creepage distances, clearances and distance through sealing compound	Cl.27 of IS 1293-2005	0.01 to 150 mm
		Resistance of insulation material to abnormal heat, to fire and to tracking	Cl.27 of IS 1293-2005	Qualitative Test
		Resistance to rusting	Cl.27 of IS 1293-2005	Qualitative Test
		Additional tests on pins provided with insulating Sleeves	Cl.30 of IS 1293-2005	Qualitative Test

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II.	CABLES & ACCESSORIES			
1.	PVC Insulated Unsheathed and Sheathed Cables/ Cords With Rigid and Flexible Conductor for Rated Voltages Upto and Including 1100 V	Test on Conductor		
		Annealing test for Copper	IS 694:2010 & Cl.6.2.3 of IS 8130-1984 RA 2011 IS 10810(Part.-1)-1984 RA 2011	0.5 to 600 mm
		Tensile test (for aluminum)	IS 694:2010 & Cl.6.2.1 of IS 8130-1984 RA 2006 IS 10810(Part.-2)-1984 RA 2011	0.01 to 50 kN
		Wrapping test (for aluminum)	IS 694:2010 & Cl.6.2.2 of IS 8130-1984 RA 2011 IS 10810 (Part.-3)-1984 RA 2011	Qualitative
		Conductor Resistance	IS 694:2010 & Cl.6.3 of IS 8130-1984 RA 2011 IS 10810(Part.-5)-1984 RA 2011	Upto 4.61 Ω /km
		Persulphate test for Tinned copper	IS 694:2010 & Cl.6.1.1 of IS 8130-1984 RA 2011 IS 10810(Part.-4)-1984 RA 2011	0.1 mg to 200 gm
		Test for Overall dimension,	Cl.16.1.3 & 18.1.6 of IS 694-2010	0.01 to 150 mm 0.001 to 25mm

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		thickness of insulation & sheath	IS 10810(P-6)-1984 RA 2011	
		Test on insulation & Sheath:		
		Tensile strength & Elongation at break	IS 694:2010 &Cl.4.1 of IS 5831-1984 RA-2011 IS 10810(Part.-7)-1984 RA 2011	0.1 to 2500 N 0.5 to 300 mm
		Ageing in Air Oven	IS 694:2010 &Cl.4.1 of IS 5831-1984 RA-2011 IS 10810(Part.-11)-1984 RA 2011	0.1 to 400 °C
		Loss of mass test	IS 694:2010 &Cl.4.1 of IS 5831-1984 RA 2011 IS 10810(Part.-10)-1984 RA 2011	0.1 mg to 200 gm
		Shrinkage Test	IS 694:2010 &Cl.4.1 of IS 5831-1984 RA-2011 IS 10810(Part.-12)-1984 RA 2011	0.1 to 400 °C
		Heat Shock Test	IS 694:2010 &Cl.4.1 of IS 5831-1984 RA-2011 IS 10810(Part.-14)-1984 RA 2011	0.1 to 400 °C
		Hot Deformation Test	IS 694:2010 &Cl.4.1 of IS 5831-1984 RA-2011 IS 10810(Part.-15)-1984	0.1 to 400 °C

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			RA 2011	
		Thermal Stability Test	IS 694:2010 & Cl.4.1 of IS 5831-1984 RA-2011 IS 10810(Part.-60)-1988 RA 2015	0.1 to 400 °C 0.01 sec to 23:59 hour
		Cold Bend Test	IS 694:2010 & Cl.4.1 of IS 5831-1984 RA 2011 IS 10810(Part.-20)-1984 RA 2011	-20°C to 60°C
		Cold Impact Test	IS 694:2010 & Cl.4.1 of IS 5831-1984 RA 2011 IS 10810(Part.-21)-1984 RA 2011	-20°C to 60°C
		Insulation Resistance test	IS 694:2010 & Cl.4.1 of IS 5831-1984 RA 2011 IS 10810(Part.-43)-1984 RA 2011	1 to 100 x 10 ⁶ MΩ 500 V DC
		High Voltage Test at Room Temp.	IS 694:2010 & Cl.10.1 of IS 694:2010 IS 10810(Part.-45)-1984 RA 2011	0.01 to 5/10 kV AC
		Water Immersion Test (High Voltage test) a) AC Test b) DC Test	IS 694:2010 & Cl.10.1 of IS 694:2010 IS 10810(Part.-45)-1984 RA 2011	0.01 to 5/10 kV AC & 0.01 to 3 kV DC
		Flammability Test	IS 694:2010 & Cl.10.4 of IS 694:2010 IS 10810(Part.-53)-1984	0.5 to 600 mm

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			RA 2011	
		Additional Ageing Tests	Clause 10.9 of IS 694:2010	0.1 to 400 °C
		FR/FR-LSH properties:		
		Flame retardant test on single cable	IS 694-2010 IS 10810(Part.-61)-1988 RA 2015	1°C to 400 °C
		Temperature Index	Cl.10.7 of IS 694-2010 IS 10810(Part.-64)-2003 RA 2013	0.1 to 300 °C
		Oxygen Index	Cl.10.5 of IS 694-2010 IS 10810(Part.-58)-1988 RA 2014	10 % to 98%
		Halogen Acid Gas Evaluation	Cl.10.6 of IS 694-2010 IS 10810(Part.-59)-1988 RA 2015	Upto 1000°C
		Smoke Density test	IS 13360 (Pt.6/Sec.9)-2001	Upto 100%
2.	PVC Insulated (Heavy Duty) Electric Cables For Working Voltages Upto and Including 1100 V	Tests on Conductor:		
		Annealing test (for Copper)	IS 1554(Part.-1)-1988&Cl.6.2.3 IS 8130-1984 RA 2011 IS 10810(Part.-1)-1984 RA 2011	0.5 to 600 mm
		Tensile test (for Aluminum) Conductor	IS 1554(Part.-1)-1988&Cl.6.2.1 of IS 8130-1984 RA 2006 IS 10810(Part.-2)-1984 RA 2011	0.01 to 50 kN
		Wrapping test (for	IS 1554(Part.-1)-	Qualitative

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		Aluminum) Conductor	1988&Cl.6.2.2 of IS 8130-1984 RA 2011 IS 10810(Part.-3)-1984 RA 2011	
		Conductor Resistance test	IS 1554(Part.-1)-1988&Cl.6.3 of IS 8130-1984 RA 2011 IS 10810(Part.-5)-1984 RA 2011	Upto 4.61 Ω/km
		Tests for Armouring wires/strips:		
		Dimensions for Armouring	IS 1554(Part.-1)-1988&Cl.7 of IS 3975-1999 IS 10810(Part.-36)-1984 RA 2011	0.01 to 150 mm/ 0.001 to 25mm
		Tensile Strength of Armouring	IS 1554(Part.-1)-1988&Cl.8.17 of IS 3975-1999 IS 10810(Part.-37)-1984 RA 2011	0.01 to 50 kN
		Elongation Test Armouring	IS 1554(Part.-1)-1988&Cl.8.17 of IS 3975-1999 IS 10810(Part.-37)-1984 RA 2011	0.5 to 300 mm
		Torsion Test (Galvanized Steel Wire Only)	IS 1554(Part.-1)-1988&Cl.8.2 of IS 3975-1999 IS 10810(Part.-38)-1984 RA 2011	Qualitative
		Winding Test (Galvanized steel strips only)	IS 1554(Part.-1)-1988&Cl.8.3 of IS 3975-1999	Qualitative

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			IS 10810(Part.-39)-1984 RA 2011	
		Uniformity of zinc coating	IS 1554(Part.-1)-1988&Cl.9.2 of IS 3975-1999 IS 10810(Part.-40)-1984 RA 2011	Qualitative
		Mass of Zinc coating	IS 1554(Part.-1)-1988&Cl.9.1 of IS 3975-1999 IS 10810(Part.-41)-1984 RA 2011	60 to 250 g/m ²
		Resistivity test of Armouring (Wire/Strips)	IS 1554(Part.-1)-1988&Cl.8.4 of IS 3975-1999 IS 10810(Part.-42)-1984 RA 2011	Upto 14.5 x 10 ¹⁰ Ω to cm
		Test for thickness of insulation and sheath	Cl.16.1.3 & 18.1.6 of IS 1554(Part.-1)-1988 IS 10810(P-6)1984 RA 2011	0.01 to 150 mm/ 0.001 to 25mm
		Physical tests for Insulation and outer Sheath:		
		Tensile strength & Elongation at break	IS 1554(Part.-1)-1988&Cl.4.1 of IS 5831-1984 Reff-2011 IS 10810(Part.-7)-1984 RA 2011	0.1 to 2500 N 0.5 to 300 mm
		Ageing in Air Oven	IS 1554(Part.-1)-1988&Cl.4.1 of IS 5831-1984	0.1 to 400 °C

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			RA 2011 IS 10810(Part.-11)-1984 RA 2011	
		Loss of mass test	IS 1554 (Part.-1)-1988& Cl.4.1 of IS 5831-1984 RA 2011 IS 10810(Part.-10)-1984 RA 2011	0.1 mg to 200 gm
		Shrinkage Test	IS 1554(Part.-1)- 1988&Cl.4.1 of IS 5831- 1984 RA 2011 IS 10810(Part.-12)-1984 RA 2011	0.1 to 400 °C
		Hot Deformation Test	IS 1554(Part.-1)- 1988&Cl.4.1 of IS 5831- 1984 RA 2011 IS 10810(Part.-15)-1984 RA 2011	0.1 to 400 °C
		Heat Shock Test	IS 1554(Part.-1)- 1988&Cl.4.1 of IS 5831- 1984 RA 2011 IS 10810(Part.-15)-1984 RA 2011	0.1 to 400 °C
		Thermal Stability Test	IS 1554(Part.-1)- 1988&Cl.4.1 of IS 5831- 1984 RA 2011 IS 10810(Part.-60)-1988 RA 2015	0.1 to 400 °C 0.01 sec to 23:59 hour
		Insulation Resistance Test	IS 1554(Part.-1)- 1988&Cl.4.1 of IS 5831-	1 to 100 x 10 ⁶ MΩ 500 V DC

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			1984 RA 2011 IS 10810 (Part.-12)-1984 RA 2011	
		Water Immersion Test (High Voltage test) a) AC Test b) DC Test	Cl.16.3.1 of IS 1554 (P-1)-1988 IS 10810:(P-45)-1984, RA 2011	0.01 to 5/10 kV AC & 0.01 to 3 kV DC
		High Voltage Test at Room Temp.	Cl.16.2 of IS 1554(Part.-1)-1988, IS 10810 -(P-45)-1984 RA 2011	0.01 to 5/10 kV AC
		Flammability Test	Cl.16.4 of IS 1554(Part.-1)-1988 IS 10810(P-53)-1984 RA-2011	0.5 to 600 mm
		Cold Bend test	IS 1554(Part.-1)-1988&Cl.4.1 of IS 5831-1984 RA 2011 IS 10810(P-20)-1984 RA 2011	to 20°C to 60°C
		Cold Impact test	IS 1554(Part.-1)-1988 & Cl.4.1 of IS 5831-1984 RA 2011 IS 10810(P-21)-1984 RA 2011	to 20°C to 60°C
		FR/FR-LSH properties		
		Flame retardant test on single cable	Cl.16.6 of Amendment No.1 of IS 1554 (Pt.1)-1988, IS 10810(Part.-61)-1988 RA 2015	Qualitative
		Temperature Index	Cl.16.10 of Amendment No.1 of IS 1554 (Pt.1)-	0.1 to 300 °C

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			1988, IS 10810(Part.-64)-2003 RA 2013	
		Oxygen Index	Cl.16.5 of Amendment No.1 of IS 1554 (Pt.1)-1988, IS 10810(Part.-58)-1988 RA 2014	10 % to 98 %
		Halogen Acid Gas Evaluation	Cl.16.9 of Amendment No.1 of IS 1554 (Pt.1)-1988, IS 10810(Part.-59)-1988 RA 2015	Up to 1000 °C
		Smoke Density test	Cl.16.11 of Amendment No.1 of IS 1554 (Pt.1)-1988, IS 13360 (Pt.6/Sec.9)-2001	Upto 100 %
3.	Cross linked Polyethylene Insulated PVC Sheathed Cables for Working Voltages Upto and Including 1100 V	Test on Conductor:		
		Annealing test (for Copper)	IS 7098(Part.-1)-1988&Cl.6.2.3 IS 8130-1984 RA 2011 IS 10810(Part.-1)-1984 RA 2011	0.5 to 600 mm
		Tensile test (for aluminium)	IS 7098(Part.-1)-1988&Cl.6.2.1 IS 8130-1984 RA 2006 IS 10810(Part.-2)-1984 RA 2011	0.01 to 50 KN
		Wrapping test (for aluminium)	IS 7098(Part.-1)-1988&Cl.6.2.2 IS 8130-1984 RA 2011	Qualitative

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			IS 10810(Part.-3)-1984 RA 2011	
		Conductor Resistance test	IS 7098(Part.-1)-1988&Cl.6.3 of IS 8130-1984 RA 2011 IS 10810(Part.-5)-1984 RA 2011	Upto 4.61 Ω/km
		Tests for Armouring wires/strips:		
		Dimensions for Armouring Material	IS 7098 (Part.-1)-1988 & Cl. 7 of IS 3975-1999 IS 10810(Part.-36)-1984 RA 2011	0.01 to 150 mm/ 0.001 to 25mm
		Tensile Strength of Armouring	IS 7098(Part.-1)-1988&Cl.8.17 of IS 3975-1999 IS 10810(Part.-37)-1984 RA 2011	0.01 to 50 KN
		Elongation Test Armouring	IS 7098(Part.-1)-1988&Cl.8.17 of IS 3975-1999 IS 10810(Part.-37)-1984 RA 2011	0.5 to 300 mm
		Torsion Test (Galvanized Steel Wire Only)	IS 7098(Part.-1)-1988&Cl.8.2 of IS 3975-1999 IS 10810(Part.-38)-1984 RA 2011	Qualitative
		Winding Test (Galvanised steel strips)	IS 7098(Part.-1)-1988&Cl.8.3 of IS 3975-	Qualitative

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		only)	1999 IS 10810(Part.-39)-1984 RA 2011	
		Uniformity of zinc coating	IS 7098(Part.-1)-1988&Cl.9.2 of IS 3975-1999 IS 10810(Part.-40)-1984 RA 2011	Qualitative
		Mass of Zinc Coating	IS 7098(Part.-1)-1988&Cl.9.1 of IS 3975-1999 IS 10810(Part.-41)-1984 RA 2011	60 to 250 g/m ²
		Resistivity test of Armouring (Wire/Strips)	IS 7098(Part.-1)-1988&Cl.8.4 of IS 3975-1999 IS 10810(Part.-42)-1984 RA 2011	Up to 14.5 x 10 ^{to 6} Ω to cm
		Test for thickness of insulation and sheath	Cl.9.12 &14 Table 2 of IS 7098(Part.-1)-1988 RA 2010 IS 10810(P-6)1984 Reff-2011	0.01 to 150 mm 0 to 25mm
		Physical Tests for Insulation:		
		Tensile strength and Elongation at break	Table 1, IS 7098(P-1)-1988 Reff-2010 IS 10810(Part.-7)-1984 RA 2011	0.1 to 2500 N 0.5 to 300 mm
		Ageing in Air Oven	Table 1, IS 7098(P-1)-1988 Reff-2010 IS 10810(Part.-11)-1984 RA 2011	0.1 to 400 °C

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		Hot Set Test	Table 1, IS 7098(P-1)-1988 Reff-2010 IS 10810(Part.-30)-1984 RA 2011	0.1 to 400 °C
		Shrinkage Test	Table 1, IS 7098(P-1)-1988 Reff-2010 IS 10810(Part.-12)-1984 RA 2011	0.1 to 400 °C
		Water absorption test (Gravimetric)	Table 1, IS 7098(Part-1)-1988 RA-2010 IS 10810(Part.-33)-1984 RA 2011	0.1 to 400 °C
		Physical Tests for outer Sheath:		
		Tensile strength and Elongation at break	IS 7098(Part.-1)-1988&Cl.4.1, IS 5831-1984 RA 2011 IS 10810(Part.-7)-1984 RA 2011	0.1 to 2500 N 0.5 to 300 mm
		Ageing in Air Oven	IS 7098(Part.-1)-1988&Cl.4.1, IS 5831-1984 RA 2011 IS 10810(Part.-11)-1984 RA 2011	0.1 to 400 °C
		Loss of mass test	IS 7098(Part.-1)-1988&Cl.4.1, IS 5831-1984 RA 2011 IS 10810(Part.-10)-1984 RA 2011	0.1 mg to 200 gm
		Shrinkage Test	IS 7098(Part.-1)-1988&Cl.4.1, IS 5831-1984 RA 2011 IS 10810(Part.-12)-1984	0.1 to 400 °C

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			RA 2011	
		Hot Deformation Test	IS 7098(Part.-1)-1988&Cl.4.1, IS 5831-1984 RA 2011 IS 10810(Part.-15)-1984 RA 2011	0.1 to 400 °C
		Heat Shock Test	IS 7098(Part.-1)-1988&Cl.4.1, IS 5831-1984 RA 2011 IS 10810(Part.-14)-1984 RA 2011	0.1 to 400 °C
		Thermal Stability Test	IS 7098(Part.-1)-1988&Cl.4.1, IS 5831-1984 RA 2011 IS 10810(Part.-60)-1988 RA 2011	0.1 to 400 °C 0.01 sec to 23:59 hour
		Insulation Resistance (Volume Resistivity Test)	Table 1, IS 7098(Part-1)-1988 Ref-2010 IS 10810(Part.-43)-1984 RA 2011	1 to 100 x 10 ⁶ MΩ 500 V DC
		High Voltage Test at Room Temp.	Cl.16.2, IS 7098(Part-1)-1988 Ref-2010 IS 10810(Part.-45)-1984 RA 2011	0.01 to 5/10 kV AC
		Flammability Test	Cl.16.3 IS 7098(Part-1)-1988 Ref-2010 IS 10810(Part.-53)-1984 RA 2011	0.5 to 600 mm
		Cold Bend Test	IS 7098(Part.-1)-1988&Cl.4.1 of IS 5831-1984 RA 2011 IS 10810(Part.-20)-1984 RA 2011	to 20°C to 60°C

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		Cold Impact Test	IS 7098(Part.-1)-1988&Cl.4.1 of IS 5831-1984 RA 2011 IS 10810(Part.-21)-1984 RA 2011	to 20°C to 60°C
		FR/FR-LSH properties		
		Flame retardant test on single cable	Cl.16.10 of IS 7098(P-1)-1988, IS 10810(Part.-61)-1988 RA 2015	1°C to 400 °C
		Temperature Index	Cl.16.14 of IS 7098(P-1)-1988, IS 10810(Part.-64)-2003 RA 2013	0.1 to 300 °C
		Oxygen Index	Cl.16.9 of IS 7098(P-1)-1988, IS 10810(Part.-58)-1988 RA 2014	10 % to 98 %
		Halogen Acid Gas Evaluation	Cl.16.13 of IS 7098(P-1)-1988, IS 10810(Part.-59)-1988 RA 2015	Up to1000 °C
		Smoke Density test	Cl.16.15 of IS 7098(P-1), IS 13360 (Pt.6/Sec.9)-2001	Up to 100 %
4.	Elastomer Insulated Cables for working Voltages Upto and Including 1100 V	Test on Conductor:		
		Persulphate test (for copper)	IS 9968(Part.-1):1988&Cl.6.1.1 of IS 8130-1984 RA 2011 IS 10810(Part.-4)-1984 RA 2011	0.1 mg to 200 gm
		Annealing test (for Copper)	IS 9968(Part.-1):1988&Cl.6.2.3 IS 8130-	0.5 – 600mm

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			1984 RA 2011 IS 10810(Part.-1)-1984 RA 2011	
		Tensile test (for aluminum)	IS 9968(Part.-1):1988&Cl.6.2.1 IS 8130-1984 RA 2006 IS 10810(Part.-2)-1984 RA 2011	0.01 to 50 KN
		Wrapping test (for aluminium)	IS 9968(Part.-1):1988&Cl.6.2.2 IS 8130-1984 RA 2011 IS 10810(Part.-3)-1984 RA 2011	Qualitative
		Conductor Resistance test	IS 9968(Part.-1):1988&Cl.6.3 of IS 8130-1984 RA 2011 IS 10810(Part.-5)-1984 RA 2011	Upto 4.61 Ω/km
		Test for thickness of insulation and sheath and overall diameter	Cl.12.2 of IS 9968-1988 IS 10810(Part.-6)-1984 RA 2011	0.01 to 150 mm/ 0.001 to 25mm
		Physical tests for Insulation & Sheath:		
		Tensile strength and Elongation at break	IS 9968(Part.-1):1988&Table 2&3 of IS 6380-1984 IS 10810(Part.-7)-1984 RA 2011	0.1 to 2500 N 0.5 to 300 mm
		Ageing in Air Oven	IS 9968(Part.-	0.1 to 400 °C

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			1):1988&Table 2&3 of IS 6380-1984 IS 10810(Part.-11)-1984 RA 2011	
		Ageing in Air bomb	IS 9968(Part.-1):1988&Table 2&3 of IS 6380-1984 IS 10810(Part.-56)-1984 RA 2012	0.1 to 200 °C
		Ageing in oxygen bomb	IS 9968(Part.-1):1988 & Table 2&3 of IS 6380-1984 IS 10810(Part.-16)-1984 RA 2011	0.1 to 200 °C
		Hot Set Test	IS 9968(Part.-1):1988 & Table 2&3 of IS 6380-1984 IS 10810(Part.-30)-1984 RA 2011	0.1 to 400 °C
		Oil Resistance test	IS 9968(Part.-1):1988 & Table 2 & 3 of IS 6380-1984 IS 10810 (Part.-31)-1984 RA 2011	0.1 to 400 °C
		Tear Resistance test	IS 9968(Part.-1):1988 & Table 2&3 of IS 6380-1984 IS 10810 (Part.-17)-1984 RA 2011	0.1 to 2500 N 0.5 to 300 mm
		Insulation Resistance test	IS 9968(Part.-1):1988 & Table 2&3 of IS 6380-1984 IS 10810(Part.-43)-1984 RA 2011	1 to 100 x 10 ⁶ MΩ 500 V DC
		High Voltage (Water immersion) test	Cl.22.2 of IS 9968-1988 IS 10810(Part.-45)-1984 RA 2011	0.1 to 10 kV AC

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		Flammability Test	Cl.22.3 of IS 9968-1988 IS 10810(Part.-53)-1984 RA 2011	0.5 to 600 mm
5.	Cables for Motor Vehicles	Test on Conductor:		
		Annealing test (for Copper)	IS 2465-1984&Cl.6.2.3 IS 8130-1984 RA 2011 IS 10810(Part.-1)-1984 RA 2011	0.5 to 600 mm
		Persulphate test (for tinned copper only)	IS 2465-1984&Cl.6.1.1 of IS 8130-1984 RA 2011 IS 10810(Part.-4)-1984 RA 2011	0.1 mg to 200 gm
		Conductor Resistance test	IS 2465-1984&Cl.6.3 of IS 8130-1984 RA 2011 IS 10810(Part.-5)-1984 RA 2011	Up to 4.61 Ω/km
		Test for thickness of insulation and sheath and other dimensional checks	Cl.7.2 of IS 2465-1984 IS 10810(Part.-6)-1984 RA 2011	0.01 to 150 mm 0.001 to 25mm
		Physical Tests for PVC Insulation and Sheath:		
		Tensile Strength and elongation at break	IS 2465-1984&Cl.4.1 of IS 5831-1984 Ref-2011 IS 10810(Part.-7)-1984 RA 2011	0.1 to 2500 N 0 to 800 %
		Ageing in Air oven	IS 2465-1984&Cl.4.1 of IS 5831-1984	0.1 to 400 °C

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			RA-2011 IS 10810(Part.-11)-1984 RA 2011	
		Loss of mass test	IS 2465-1984&Cl.4.1 of IS 5831-1984 RA-2011 IS 10810(Part.-10)-1984 RA 2011	0.1 mg to 200 gm
		Hot Deformation Test	IS 2465-1984&Cl.4.1 of IS 5831-1984 RA-2011 IS 10810(Part.-15)-1984 RA 2011	0.1 to 400 °C
		Heat Shock Test	IS 2465-1984&Cl.4.1 of IS 5831-1984 RA-2011 IS 10810(Part.-14)-1984 RA 2011	0.1 to 400 °C
		Shrinkage Test	IS 2465-1984&Cl.4.1 of IS 5831-1984 RA-2011 IS 10810(Part.-12)-1984 RA 2011	0.1 to 400 °C
		Physical Tests for Elastomeric Insulation:		
		Tensile Strength and elongation at break	IS 2465-1984&Table 2 of IS 6380-1984 IS 10810 (Part.-7)-1984 RA 2011	0.1 to 2500 N 1 to 800 %
		Ageing in Air Oven	IS 2465-1984&Table 2 of IS 6380-1984 IS 10810	0.1 to 400 °C

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			(Part.-11)-1984 RA 2011	
		Ageing in oxygen bomb	IS 2465-1984&Table 2 of IS 6380-1984 IS 10810(Part.-16)-1984 RA 2011	1 to 800 %
		High Voltage Test	Cl.14.1 and 14.3 of IS 2465-1984	0.1 to 10 kV AC
		Effect of lubricating oil, brake fluid oil, diesel and petrol	Cl.20 of IS 2465-1984	0.01 to 150 mm (Qualitative)
6.	Aerial Bunched Cables for Working Voltages Upto and Including 1100 V	Tests on Phase/Street light Conductor:		
		Tensile test	IS 14255:1995&Cl.6.2.1 IS 8130-1984 RA 2006 IS 10810(Part.-2)-1984 RA 2011	0.01 to 50 KN
		Wrapping test	IS 14255:1995&Cl.6.2.2 IS 8130-1984 RA 2011 IS 10810(Part.-3)-1984 RA 2011	Qualitative
		Resistance test	IS 14255:1995&Cl.6.3 of IS 8130-1984 RA 2011 IS 10810(Part.-5)-1984 RA 2011	Up to 4.61 Ω/km
		Test on Messenger Conductor:		
		Breaking Load	Cl.6.2 of IS 14255-1995	0.01 to 50KN

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			IS 10810(Part.-2)-1984 RA 2011	
		Elongation Test	Cl. 11.3 of IS 14255:1995 RA 2005	0.1 to 200%
		Resistance Test	IS 14255:1995&Cl.12.4 of IS 398 (Pt. 4)-1994 RA 2011 IS 10810(Part.-5)-1984 RA 2011	Up to 4.61 Ω/km
		Test for Thickness of insulation	Cl.7.2 &14 Table 4 of IS 14255-1995 IS 10810 (Part.-6)-1984 RA 2011	0.01 to 150 mm/ 0.001 to 25mm
		Physical tests for XLPE Insulation:		
		Tensile Strength and elongation at break	Table 1, IS 14255-1995 IS 10810(Part.-7)-1984 RA 2011	0.1 to 2500 N 1 to 800 %
		Ageing in Air Oven	Table 1, IS 14255-1995 IS 10810 (Part.-11)-1984 RA 2011	0.1 to 400°C
		Hot Set test	Table 1, IS 14255-1995 IS 10810 (Part.-30)-1984 RA 2011	0.1 to 400°C
		Shrinkage test	Table 1, IS 14255-1995 IS 10810 (Part.-12)-1984 RA 2011	0.1 to 400°C
		Water absorption (Gravimetric)	Table 1, IS 14255-1995 IS 10810 (Part.-33)-1984 RA 2011	0.1 to 400°C
		Physical test for PE insulation:		

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		Tensile Strength and elongation at break	Table-2 of IS 14255-1995 IS 10810(Part.-7)-1984 RA 2011	0.1 to 2500 N 1 to 800 %
		Melt flow index	Table-2 of IS 14255-1995 IS 10810(Part.-23)-1984 RA 2011	0.1 to 400°C
		Vicat softening point	Table-2 of IS 14255-1995 IS 10810(Part.-22)-1984 RA 2011	0.1 to 300°C
		Environmental stress cracking	Table-2 of IS 14255-1995 IS 10810(Part.-29)-1984 RA 2011	Qualitative
		Insulation Resistance (Volume Resistivity Test)	Table-1&2 of IS 14255-1995 IS 10810(Part.-43)-1984 RA 2011	1 to 100 x 10 ⁶ MΩ 500 V DC
		High Voltage Test at Room Temp.	Cl.11.2, IS 14255-1995 IS 10810(Part.-45)-1984 RA 2011	0.1 to 10 kV AC
		Bending Test on complete cable (optional test)	Cl.10.4 & Cl. 11.4 of IS 14255-1995	20 mm to 460 mm
7.	Welding Cables	Tests on Conductor:		
		Annealing test	IS 9857:1990&Cl.6.2.3 IS 8130-1984 RA 2011 IS 10810(Part.-1)-1984 RA 2011	0.5 to 600mm
		Conductor Resistance test	IS 9857:1990&Cl.6.3 of IS 8130-1984 RA 2011 IS 10810(Part.-5)-1984 RA 2011	Up to 4.61 Ω/km
		Test for thickness of	Cl.9.2 of IS 9857-1990	0.01 to 150 mm

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		covering	IS 10810 (Part.-6)-1984 RA 2011	0.001 to 25mm
		Physical Tests on for covering:		
		Tensile Strength and elongation at break	IS 9857:1990& Table 3 of IS 6380-1984 IS 10810(Part.-7)-1984 RA 2011	0.1 to 2500 N 1 to 800 %
		Ageing in Air Oven	IS 9857:1990& Table 3 of IS 6380-1984 IS 10810(Part.-11)-1984 RA 2011	0.1 to 400 °C
		Ageing in air Bomb	IS 9857:1990& Table 3 of IS 6380-1984 IS 10810(Part.-56)-1984 RA 2011	1 to 800 %
		Oil Resistance test	IS 9857:1990& Table 3 of IS 6380-1984 IS 10810(Part.-31)-1984 RA 2011	1 to 800 %
		Hot Set test	IS 9857:1990& Table 3 of IS 6380-1984 IS 10810(Part.-30)-1984 RA 2011	0.1 to 400 °C
		High Voltage Test (Water immersion test)	Cl.11.1 of IS 9857-1990 IS 10810(Part.-45)-1984 RA 2011	0.1 to 10 kV AC
		Static Flexibility Test	Cl.11.3 of IS 9857-1990 IS 10810(Part.-54)-1984 RA 2011	0.5 to 600 mm
		Flammability Test	Cl.11.4 of IS 9857-1990 IS 10810(Part.-53)-1984 RA 2011	0.5 to 600 mm

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III.	ELECTRICAL MATERIALS-CONDUCTORS			
1.	Winding Wires for Submersible Motors	Test on Conductor		
		Conductor Diameter	IS 8783(Part.-4/Sec-3):1995 & Clause 4.4 of IS 8783(Part.-1):1995	0.001 to 25 mm
		Conductor Resistance	IS 8783(Part.-4/Sec-3):1995& Cl.6 of IS 8783(Pt.1)-1995 IS 10810 (Part.-5)-1984 RA 2011	Up to 4.61 Ω/km
		Annealing test(Elongation)	IS 8783(Part.-4/Sec-3):1995& Cl.6.2.3 of IS 8130-1984 RA 2011 IS 10810(Part.-1)-1984 RA 2011	0.5 to 600mm
		Test for Insulation and Jacket:		
		Test for thickness	Cl.4.1of IS 8783(Part.-4/Sec- 3):1995 IS 10810(Part.-6)-1984 RA 2011	0.01 to 150mm
		Tensile Strength and elongation	IS 8783(Part.-4/Sec-3):1995& Cl.4.1of IS 8783(Part.-2)-1995 IS 10810(Part.-7)-1984 RA 2011	0.1 to 2500N 1 to 800%
		Thermal ageing in air	IS 8783(Part.-4/Sec-	0.1 to 2500N

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			3):1995& Cl.4.1of IS 8783(Part.-2)-1995 IS 10810(Part.-11)-1984 RA 2011	
		Heat Shock Test	IS 8783(Part.-4/Sec-3):1995& Cl.4.1of IS 8783(Part.-2)-1995 IS 10810(Part.-14)-1984 RA 2011	0.1 to 300°C
		Tests on Finished Wire:		
		Overall dimensions	IS 8783(Part.-4/Sec-3):1995& Annex A of IS 8783 (Pt.3):1995	0.01 to 150 mm
		High Voltage test	Cl.4.5 of IS 8783(Part.-4/Sec- 3):1995 IS 10810(Part.-45)-1984 RA 2011	0.1 to 10 kV AC
		Volume Resistivity	IS 8783 (Part.-4/Sec- 3): 1995 & Cl.4.1of IS 8783(Part.-2)-1995 IS 10810(Part.-43)-1984 RA 2011	1 to 100 x 10 ⁶ MΩ 500 V DC
		Shrinkage Test	IS 8783(Part.-4/Sec-3):1995& Cl.4.1of IS 8783(Part.-2)-1995 IS 10810(Part.-12)-1984 RA 2011	0.1 to 400 °C
		Hot Deformation Test	IS 8783(Part.-4/Sec- 3): 1995 & Cl.4.1of	0.1 to 400 °C

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			IS 8783 (Part.-2)-1995 IS 10810 (Part.-15)-1984 RA 2011	
		Water absorption Gravimetric	IS 8783(Part.-4/Sec- 3): 1995 & Cl.4.1of IS 8783(Part.-2)-1995 IS 10810(Part.-33)-1984 RA 2011	0.1 to 400 °C
2.	Aluminium Conductor for Overhead Transmission Purpose	Measurement of diameter of Aluminium wire	IS 398(Part.-1):1996 Clause 12.2	0.001 to 25 mm/ 0.01 to 150 mm
		Breaking load test of individual Aluminium wire	IS 398(Part.-1):1996 Clause 12.3	0.01 to 50 KN
		Conductor Resistance test	IS 398(Part.-1):1996 Clause 12.5	Up to 4.61 Ω/km
		Wrapping test for Aluminium	IS 398(Part.-1):1996 Clause 12.4	Qualitative
		Measurement of lay ratio	IS 398(Part.-1):1996 Clause 12.6	0.5 to 300 mm/ 0.5 to 600 mm
		Diameter of Individual wires	IS 398(Part.-2):1996 Clause 13.2	0.001 to 25 mm/ 0.01 to 150 mm
		Breaking load of Aluminium wire	IS 398(Part.-2):1996 Clause 13.3	0.01 to 50 KN
		Breaking load of steel wire	IS 398(Part.-2):1996 Clause 13.3	0.01 to 50 KN
		Conductor resistance test	IS 398(Part.-2):1996 Clause 13.6	Up to 4.61 Ω/km
		Wrapping test	IS 398(Part.-2):1996 Clause 13.5	Qualitative
		Measurement of lay ratio	IS 398(Part.-2):1996 Clause 13.8	0.5 to 300 mm/ 0.5 to 600 mm
		Ductility test	IS 398(Part.-2):1996	Qualitative

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			Clause 13.4	
		Weight of coating	IS 398(Part.-2):1996 Clause 13.7	60 to 250 g/m ²
		Diameter of wire	IS 398(Part.-4):1994 Clause 7.1	0.001 to 25 mm/ 0.01 to 150 mm
		Breaking load test of individual wire	IS 398(Part.-4):1994 Clause 12.2	0.01 to 50 KN
		Elongation Test	IS 398(Part.-4):1994 Clause 12.3	1 to 800%
		Conductor resistance test	IS 398(Part.-4):1994 Clause 12.4	Up to 4.61 Ω/km
		Measurement of lay ratio	IS 398(Part.-4):1994 Clause 9.2	0.5 to 300 mm/ 0.5 to 600 mm
IV.	SWITCHGEAR EQUIPMENT			
1.	Electrical Accessories - Circuit-Breakers For Over Current Protection for Household and Similar Installations	Verification of Marking	IS/IEC 60898-1 : 2002, Cl. 9.3/ Cl. 6	Qualitative
		Mechanical Design	IS/IEC 60898-1 : 2002 Cl. 9.4, 9.5, 9.13/ Cl. 8.1	10 to 50cNm, 40 to 200cNm, 1/100sec – 24 hrs, 0.01 to 150.00mm, 0.1 to 1000 N
		Protection Against Electric Shock	IS/IEC 60898-1 : 2002 Cl. 9.6/ Cl. 8.2	0.1 to 60V, 1/100sec to 24 hrs, 0.1 to 1000 N
		Dielectric properties and isolating capability	IS/IEC 60898-1 : 2002 Cl. 9.7/ Cl. 8.3	to 20 to 60°C, RH 100%, 500V DC, 1 to 100 X 10 ⁶ MΩ, 0.1 to 10 kV,0.1 to 10kV DC
		Temperature Rise	IS/IEC 60898-1 : 2002, Cl. 9.8, 9.9/ Cl. 8.4	1 to 999°C
		Resistance to mechanical shock and impact,	IS/IEC 60898-1 : 2002, Cl. 9.13/ Cl. 8.9	150 gm

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		Resistance to heat	IS/IEC 60898-1 : 2002, Cl. 9.14/ Cl. 8.10	1 to 400°C, 0.01 to 150mm 0.1 to 1000 N, 20 N
		Resistance to abnormal heat and to fire,	IS/IEC 60898-1 : 2002, Cl. 9.15/ Cl. 8.11	1 to 1200°C, 0.1 to 200A, 1 to 60Sec
		Resistance to rusting	IS/IEC 60898-1 : 2002 Cl. 9.16/ Cl. 8.12	1 to 400°C, 1/100sec to 24 hrs Trichloroethylene, Ammonium Chloride
2.	Residual Current Operated Circuit Breaker For Household And Similar Uses	Marking and other product information	IS 12640 (Part 1): 2008, Cl. 9.3/Cl.6	Qualitative
		Mechanical Design	IS 12640 (Part 1): 2008, Cl. 9.4,9.5 / Cl. 8.1.3,8.1.4,8.1.5	10 to 50cNm, 40 to 200cNm, 1/100sec to 24 hrs, 0.01 to 150.00mm, 0.1 to 1000 N
		Protection Against Electric Shock	IS 12640 (Part 1): 2008, Cl. 9.6/ Cl. 8.2	0.1 to 60V, 1/100sec to 24 hrs, 0.1 to 1000 N
		Dielectric properties and Isolating capability	IS 12640 (Part 1): 2008 Cl. 9.7/ Cl. 8.3	to 20 to 60°C, RH 100%,500V DC, 1 to 100 X 10 ⁶ MΩ , 0.1 to 10 kV,0.1 to 10 kV DC
		Temperature Rise	IS 12640 (Part 1): 2008, Cl. 9.8/ Cl. 8.4	1 to 999°C
		Resistance to mechanical shock and impact,	IS 12640 (Part 1): 2008, Cl. 9.12/ Cl. 8.8	150 gm
		Resistance to heat	IS 12640 (Part 1): 2008, Cl. 9.13/ Cl. 8.9	1 to 400°C, 0.01 to 150mm 0.1 to 1000 N,20 N
		Resistance to	IS 12640 (Part 1): 2008,	1 to 1200°C,

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		abnormal heat and to fire,	Cl. 9.14/ Cl. 8.10	0.1 to 200A, 1 to 60 Sec
		Marking and other product information	IS 12640 (Part 2): 2008, Cl. 9.3/Cl. 6	Qualitative
		Mechanical Design	IS 12640 (Part 2): 2008 Cl. 9.4, 9.5/ Cl. 8.1.3, 8.1.4, 8.1.5	10 to 50cNm, 40 to 200cNm, 1/100sec to 24 hrs, 0.01 to 150.00mm, 0.1 to 1000 N 0.02
		Protection Against Electric Shock	IS 12640 (Part 2): 2008, Cl. 9.6/ Cl. 8.2	0.1 to 60V, 1/100sec to 24 hrs, 0.1 to 1000 N
		Dielectric properties	IS 12640 (Part 2): 2008 Cl. 9.7/ Cl. 8.3	to 20 to 60°C,RH 100%, 500V DC, 1 to 100 X 10 ⁶ MΩ , 0.1 to 10 kV,0.1 to 10kV DC
		Temperature Rise	IS 12640 (Part 2): 2008, Cl. 9.8/ Cl. 8.4	1 to 999°C
		Resistance to mechanical shock and impact,	IS 12640 (Part 2): 2008, Cl. 9.13/ Cl. 8.8	150 gm
		Resistance to heat,	IS 12640 (Part 2): 2008, Cl. 9.14/ Cl. 8.9	1 to 400°C, 0.01 to 150mm 0.1 to 1000 N,20 N
		Resistance to abnormal heat & fire,	IS 12640 (Part 2): 2008, Cl. 9.15/ Cl. 8.10	1 to 1200°C, 0.1 to 200A, 1 to 60Sec
3.	Low voltage Switchgear & control gear	Marking	Cl.5.2 IS/IEC 60947-1 :2004 Cl.5.2 IS/IEC 60947-2 :2003 Cl.5.2 IS/IEC 60947-3 :1999	Visual Examination Qualitative

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		Instruction for installation, operation and maintenance	CI.5.3 IS/IEC 60947-1 :2004 CI.5.3 IS/IEC 60947-2 :2003 CI.5.3 IS/IEC 60947-3 :1999	Visual Examination Qualitative
		Normal service, mounting and transport condition	CI.6 IS/IEC 60947-1 :2004 CI.6 IS/IEC 60947-2 :2003 CI.6 IS/IEC 60947-3 :1999	Visual Examination Qualitative
		Materials	CI.7.1.1 IS/IEC 60947-1 :2004 CI.7.1.1 IS/IEC 60947-3 :1999	Visual Examination Qualitative
		Constructional Requirements	CI.7.1 IS/IEC 60947-2 :2003	1 to 1200°C 0.1 to 200/5A 1 to 999 sec 0.5/1 to 150 mm 0.5/1 to 300 mm 1N
		Resistance to Fire	CI.7.1.1.1 IS/IEC 60947-1 :2004 CI.7.1.1.1 IS/IEC 60947-3 :1999	1 to 1200°C 0.1 to 200/5A 1 to 999 sec 0.5/1 to 150 mm 0.5/1 to 300 mm 1N
		Clearances and creep age distances	CI.7.1.3 IS/IEC 60947-1 :2004 CI.7.1.3 IS/IEC 60947-2 :2003 CI.7.1.3 IS/IEC 60947-3 :1999	0 to 150 mm
		Actuator	CI.7.1.4	Visual Examination

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			IS/IEC 60947-1 :2004 CI.7.1.4 IS/IEC 60947-3 :1999	Qualitative
		Indication of the contact position	CI.7.1.5 IS/IEC 60947-1 :2004	Visual Examination Qualitative
		Additional constructional requirements for equipment suitable for isolation	CI.7.1.6.1 IS/IEC 60947-1 :2004 CI.7.1.6.1 IS/IEC 60947-3 :1999	Visual Examination Qualitative
		Supplementary requirements for equipment provided with means for padlocking the open position	CI.7.1.6.2 IS/IEC 60947-1 :2004 CI.7.1.6.2 IS/IEC 60947-3 :1999	0 to 10KV 0.1 to 1000N 1000N
		Terminal	CI.7.1.7 IS/IEC 60947-1 :2004	40 to 200cN.m 10 to 50cN.m 1 to 5 Nm
		Dielectric test	CI.7.2.3 IS/IEC 60947-1 :2004 CI.7.2.3 IS/IEC 60947-2 :2003 CI.7.2.3 IS/IEC 60947-3 :1999	0.01kV to 10 kV 1 to 250mA 1 s to 9.59 min
		Dielectric test (Impulse test)	CI.7.2.3.1 IS/IEC 60947-1 :2004 CI.7.2.3.1 IS/IEC 60947-2 :2003 CI.7.2.3.1 IS/IEC 60947-3 :1999	1 kV to 10 kV Rise time to 1.2 μ s Fall time to 50 μ s

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<u>ELECTRONICS TESTING</u>				
I.	SAFETY TESTING FACILITY			
1.	Fixed General Purpose Luminaries & Luminaries for Road and Street Lighting	Verification of Marking	(Cl.6) IS10322-5-1:2012 (Cl 6) IS 10322-5-3: 2012 IS10322-1:2014	Qualitative Visual
		Creepage Distance & Clearance	(Cl.8) IS10322-5-1:2012 (Cl 8) IS 10322-5-3: 2012 IS10322-1:2014	0.01 to 150 mm,
		Terminals	(Cl.10) IS10322-5-1:2012 (Cl 10) IS 10322-5-3: 2012 IS10322-1:2014	0.01 to 15mm, 0.1 to 6 Nm Up to 250N
		External and Internal Wiring	(Cl.11) IS10322-5-1:2012 (Cl 11) IS 10322-5-3: 2012 IS10322-1:2014	Up to 250N 0.1 to 6Nm
		Insulation Resistance and Electric Strength Test	(Cl.15) IS10322-5-1:2012 (Cl 15) IS 10322-5-3: 2012 IS10322-1:2014	100kΩ to 20 GΩ Upto 5 kV ,
		Resistance to Heat,	(Cl.16) IS10322-5-1:2012 (Cl 16) IS 10322-5-3: 2012 IS10322-1:2014	Amb to150°C, 20N(Ball Pressure) Upto 960°C 0.001 to 5 mm

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		Construction	(Cl.7) IS10322-5-1:2012 (Cl 7) IS 10322-5-3: 2012 IS10322-1:2014	0.1 to 1000N, 0.1 to 12 Nm, 0.01 to 10 KV, 2 MΩ to 100 MΩ at 500V d.c 0.01to 10 KV
		Provision for Earthing	(Cl.9) IS10322-5-1:2012 (Cl 9) IS 10322-5-3: 2012 IS10322-1:2014	1 to 40 A, 0.1 to 19.9 V 0.01 Ω to 10 Ω
		Protection Against Electric Shock	(Cl.12) IS10322-5-1:2012 (Cl 12) IS 10322-5-3: 2012 IS10322-1:2014	0.1-80 V 0.1 – 10 N Upto 100μF 0.01-10Min
		Endurance Test and Thermal Test	(Cl.13) IS10322-5-1:2012 (Cl 13) IS 10322-5-3: 2012 IS10322-1:2014	Amb to 300°C, Amb to 600°C, 0.001-300V 0.01-24Hrs
		Resistance to Dust and Moisture	(Cl.14) IS10322-5-1:2012 (Cl 14) IS 10322-5-3: 2012 IS10322-1:2014	Visual Examination Qualitative Amb-98% Amb-55°C 5-100 L/min 1-15L/min
		Resistance to Fire and Tracking	(Cl.16) IS10322-5-1:2012 (Cl 16) IS 10322-5-3: 2012 IS10322-1:2014	Up to to (-) 960°C (Glow Wire) 100 to 700°C(Needle Flame) 0 to 600V AC(Tracking Index) 0.001 to 5 mm

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		Verification of Marking	IS 10322-5-2: 2012, Cl.6 (IS 10322-1: 2014 Section 3)	0 to 150mm 0 to 24 hrs
			IS 10322-5-4: 1987 Cl 5 (IS 10322-1: 2014 Section 3)	
			IS 10322-5-5: 1987 Cl 5 (IS 10322-1: 2014 Section 3)	
			IS 10322-5-6: 2013 Cl 6 (IS 10322-1: 2014 Section 3)	
			IS 10322-5-7: 2017 Cl 20.6 (IS 10322-1: 2014 Section 3)	
			IS 10322-5-8: 2013 Cl 6 (IS 10322-1: 2014 Section 3)	
		Replaceable Components	IS 10322-5-2: 2012 Cl 7 (IS 10322-1: 2014 Cl 4.2)	Qualitative Visual Examination
			IS 10322-5-4: 1987 Cl 6 (IS 10322-1: 2014 Cl 4.2)	
			IS 10322-5-5: 1987 Cl.6	

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			(IS 10322-1: 2014 Cl 4.2)	
			IS 10322-5-6: 2013 Cl 7 (IS 10322-1: 2014 Cl 4.2)	
			IS 10322-5-8: 2013 Cl. 7 (IS 10322-1: 2014 Cl 4.2)	
		Wire ways	IS 10322-5-2: 2012 Cl 7 (IS 10322-1: 2014 Cl 4.3)	Qualitative Visual Examination
			IS 10322-5-4: 1987 Cl 6 (IS 10322-1: 2014 Cl 4.3)	
			IS 10322-5-5: 1987 Cl.6 (IS 10322-1: 2014 Cl 4.3)	
			IS 10322-5-6: 2013 Cl 7 (IS 10322-1: 2014 Cl 4.3)	
			IS 10322-5-8: 2013 Cl. 7 (IS 10322-1: 2014 Cl 4.3)	
		Lamp holders	IS 10322-5-2: 2012 Cl 7 (IS 10322-1: 2014 Cl 4.4)	Qualitativ 15N & 30N 1.0Nm & 2.0Nm

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			IS 10322-5-4: 1987 Cl 6 (IS 10322-1: 2014 Cl 4.4)	
			IS 10322-5-5: 1987 Cl.6 (IS 10322-1: 2014 Cl 4.4)	
			IS 10322-5-6: 2013 Cl 7 (IS 10322-1: 2014 Cl 4.4)	
			IS 10322-5-8: 2013 Cl. 7 (IS 10322-1: 2014 Cl 4.4)	
		Starter Holders	IS 10322-5-2: 2012 Cl 7 (IS 10322-1: 2014 Cl 4.5) IS 10322-5-4: 1987 Cl 6 (IS 10322-1: 2014 Cl 4.5)	Qualitative Visual Examination
			IS 10322-5-5: 1987 Cl.6 (IS 10322-1: 2014 Cl 4.5)	
			IS 10322-5-6: 2013 Cl 7 (IS 10322-1: 2014 Cl 4.5)	
			IS 10322-5-8: 2013 Cl. 7	

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			(IS 10322-1: 2014 Cl 4.5)	
		Terminal Blocks	IS 10322-5-2: 2012 Cl 7 (IS 10322-1: 2014 Cl 4.6)	Qualitative Visual Examination
			IS 10322-5-4: 1987 Cl 6 (IS 10322-1: 2014 Cl 4.6)	
			IS 10322-5-5: 1987 Cl.6 (IS 10322-1: 2014 Cl 4.6)	
			IS 10322-5-6: 2013 Cl 7 (IS 10322-1: 2014 Cl 4.6)	
			IS 10322-5-7: 2017 Cl 20.7.3 (IS 10322-1: 2014 Cl 4.6)	
			IS 10322-5-8: 2013 Cl. 7 (IS 10322-1: 2014 Cl 4.6)	
		Terminals and supply connections	IS 10322-5-2: 2012 Cl 7 (IS 10322-1: 2014 Cl 4.7) IS 10322-5-4: 1987 Cl 6 (IS 10322-1: 2014 Cl 4.7) IS 10322-5-5: 1987	0 to 150mm, 1 to 5 Nm, 3 to 15 Nm, 10 to 50 cN.m, 40 to 200 cN.m, Pull Gauge: Upto 1000N, Up to 24 Hrs,

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			Cl.6 (IS 10322-1: 2014 Cl 4.7) IS 10322-5-6: 2013 Cl 7 (IS 10322-1: 2014 Cl 4.7) IS 10322-5-7: 2017 Cl 20.7.4 (IS 10322-1: 2014 Cl 4.7) IS 10322-5-8: 2013 Cl. 7 (IS 10322-1: 2014 Cl 4.7)	
		Switches	IS 10322-5-2: 2012 Cl 7 (IS 10322-1: 2014 Cl 4.8)	Qualitative Visual Examination
			IS 10322-5-4: 1987 Cl 6 (IS 10322-1: 2014 Cl 4.8)	
			IS 10322-5-5: 1987 Cl.6 (IS 10322-1: 2014 Cl 4.8)	
			IS 10322-5-6: 2013 Cl 7 (IS 10322-1: 2014 Cl 4.8)	
			IS 10322-5-8: 2013 Cl. 7 (IS 10322-1: 2014 Cl 4.8)	

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		Insulating Lining and Sleeves	IS 10322-5-2: 2012 Cl 7 (IS 10322-1: 2014 Cl 4.9)	Qualitative Visual Examination
			IS 10322-5-4: 1987 Cl 6 (IS 10322-1: 2014 Cl 4.9)	
			IS 10322-5-5: 1987 Cl.6 (IS 10322-1: 2014 Cl 4.9)	
			IS 10322-5-6: 2013 Cl 7 (IS 10322-1: 2014 Cl 4.9)	
			IS 10322-5-8: 2013 Cl. 7 (IS 10322-1: 2014 Cl 4.9)	
		Double and reinforced Insulation	IS 10322-5-2: 2012 Cl 7 (IS 10322-1: 2014 Cl 4.10)	Qualitative Visual Examination
			IS 10322-5-4: 1987 Cl 6 (IS 10322-1: 2014 Cl 4.10)	
			IS 10322-5-5: 1987 Cl.6 (IS 10322-1: 2014 Cl 4.10)	
			IS 10322-5-6: 2013 Cl 7	

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			(IS 10322-1: 2014 Cl 4.10)	
			IS 10322-5-8: 2013 Cl. 7 (IS 10322-1: 2014 Cl 4.10)	
		Electrical connections and current carrying parts	IS 10322-5-2: 2012 Cl 7 (IS 10322-1: 2014 Cl 4.11)	Qualitative Visual Examination
			IS 10322-5-4: 1987 Cl 6 (IS 10322-1: 2014 Cl 4.11)	
			IS 10322-5-5: 1987 Cl.6 (IS 10322-1: 2014 Cl 4.11)	
			IS 10322-5-6: 2013 Cl 7 (IS 10322-1: 2014 Cl 4.11)	
			IS 10322-5-8: 2013 Cl. 7 (IS 10322-1: 2014 Cl 4.11)	
		Screws and connections (Mechanical) and Glands	IS 10322-5-2: 2012 Cl 7 (IS 10322-1: 2014 Cl 4.12)	0 to 150mm, 1 to 5 Nm, 3 to 15 Nm, 10 to 50 cN.m, 40 to 200 cN.m,
			IS 10322-5-4: 1987 Cl 6 (IS 10322-1: 2014 Cl 4.12)	

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			IS 10322-5-5: 1987 Cl.6 (IS 10322-1: 2014 Cl 4.12)	
			IS 10322-5-6: 2013 Cl 7 (IS 10322-1: 2014 Cl 4.12)	
			IS 10322-5-8: 2013 Cl. 7 (IS 10322-1: 2014 Cl 4.12)	
		Mechanical Strength	IS 10322-5-2: 2012 Cl 7 (IS 10322-1: 2014 Cl 4.13)	0.2J, 0.35J, 0.5J & 0.7J
			IS 10322-5-4: 1987 Cl 6 (IS 10322-1: 2014 Cl 4.13)	
			IS 10322-5-5: 1987 Cl.6 (IS 10322-1: 2014 Cl 4.13)	
			IS 10322-5-6: 2013 Cl 7 (IS 10322-1: 2014 Cl 4.13)	
			IS 10322-5-8: 2013 Cl. 7 (IS 10322-1: 2014 Cl 4.13)	
		Suspensions and Adjusting Devices	IS 10322-5-2: 2012 Cl 7	Qualitative 1.0Nm to 2.5 Nm 10N to 40N

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			IS 10322-5-4: 1987 Cl 6 (IS 10322-1: 2014 Cl 4.14)	
			IS 10322-5-5: 1987 Cl.6 (IS 10322-1: 2014 Cl 4.14)	
			IS 10322-5-6: 2013 Cl 7 (IS 10322-1: 2014 Cl 4.14)	
			IS 10322-5-8: 2013 Cl. 7 (IS 10322-1: 2014 Cl 4.14)	
		Flammable Materials	IS 10322-5-2: 2012 Cl 7 (IS 10322-1: 2014 Cl 4.15)	Qualitative Visual Examination
			IS 10322-5-4: 1987 Cl 6 (IS 10322-1: 2014 Cl 4.15)	
			IS 10322-5-5: 1987 Cl.6 (IS 10322-1: 2014 Cl 4.15)	
			IS 10322-5-6: 2013 Cl 7 (IS 10322-1: 2014 Cl 4.15)	

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			IS 10322-5-8: 2013 Cl. 7 (IS 10322-1: 2014 Cl 4.15)	
		Identification of Luminaires marked with Symbol	IS 10322-5-2: 2012 Cl 7 (IS 10322-1: 2014 Cl 4.16)	Qualitative Visual Examination
			IS 10322-5-4: 1987 Cl 6 (IS 10322-1: 2014 Cl 4.16)	
			IS 10322-5-5: 1987 Cl.6 (IS 10322-1: 2014 Cl 4.16)	
			IS 10322-5-6: 2013 Cl 7 (IS 10322-1: 2014 Cl 4.16)	
			IS 10322-5-8: 2013 Cl. 7 (IS 10322-1: 2014 Cl 4.16)	
		Drain Holes	IS 10322-5-2: 2012 Cl 7 (IS 10322-1: 2014 Cl 4.17) IS 10322-5-4: 1987 Cl 6 (IS 10322-1: 2014 Cl 4.17) IS 10322-5-5: 1987 Cl.6	Qualitative IP1X,2X,3X,4X: Test Probe B, Test Probe C Test Probe D, Test Probe 11 Upto 100N IP 5X & IP 6X: 900 x 900 x 900mm IP X1: Flow Rate : 3mm/min

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			(IS 10322-1: 2014 Cl 4.17) IS 10322-5-6: 2013 Cl 7 (IS 10322-1: 2014 Cl 4.17) IS 10322-5-8: 2013 Cl. 7 (IS 10322-1: 2014 Cl 4.17)	Scale: 300 mm, 0.05 mm IP X3, IP X4, IP X5, IP X6, IP X7 & IP X8 : 10 to 110 LPH, 0.5 to 5 LPM, 15 to 125 LPM, 1.5 to 15 LPM 10 to 50cN.m, LC: 0.1cNm 40 to 200 cN.m, S to p Watch : up to 24 Hrs,
		Resistance to Corrosion	IS 10322-5-2: 2012 Cl 7 (IS 10322-1: 2014 Cl 4.18)	Qualitative 27°C to 100°C
			IS 10322-5-4: 1987 Cl 6 (IS 10322-1: 2014 Cl 4.18)	
			IS 10322-5-5: 1987 Cl.6 (IS 10322-1: 2014 Cl 4.18)	
			IS 10322-5-6: 2013 Cl 7 (IS 10322-1: 2014 Cl 4.18)	
			IS 10322-5-8: 2013 Cl. 7 (IS 10322-1: 2014 Cl 4.18)	
		Ignitor	IS 10322-5-2: 2012 Cl 7	Qualitative Visual Examination

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			(IS 10322-1: 2014 Cl 4.19)	
			IS 10322-5-4: 1987 Cl 6 (IS 10322-1: 2014 Cl 4.19)	
			IS 10322-5-5: 1987 Cl.6 (IS 10322-1: 2014 Cl 4.19)	
			IS 10322-5-6: 2013 Cl 7 (IS 10322-1: 2014 Cl 4.19)	
			IS 10322-5-8: 2013 Cl. 7 (IS 10322-1: 2014 Cl 4.19)	
		Rough Service Luminaires-Vibrant Requirements	IS 10322-5-2: 2012 Cl 7 (IS 10322-1: 2014 Cl 4.20)	Frequency: 10Hz to 55Hz to 10Hz Amplitude:0.35mm Duration: 30min
			IS 10322-5-4: 1987 Cl 6 (IS 10322-1: 2014 Cl 4.20)	
			IS 10322-5-5: 1987 Cl.6 (IS 10322-1: 2014 Cl 4.20)	
			IS 10322-5-6: 2013 Cl 7 (IS 10322-1: 2014 Cl 4.20)	

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			IS 10322-5-8: 2013 Cl. 7 (IS 10322-1: 2014 Cl 4.20)	
		Protective Shield(Tungsten Halogen Lamps)	IS 10322-5-2: 2012 Cl 7 (IS 10322-1: 2014 Cl 4.21)	Qualitative Visual Examination
			IS 10322-5-4: 1987 Cl 6 (IS 10322-1: 2014 Cl 4.21)	
			IS 10322-5-5: 1987 Cl.6 (IS 10322-1: 2014 Cl 4.21)	
			IS 10322-5-6: 2013 Cl 7 (IS 10322-1: 2014 Cl 4.21)	
			IS 10322-5-8: 2013 Cl. 7 (IS 10322-1: 2014 Cl 4.21)	
		Attachments to Lamps	S 10322-5-2: 2012 Cl 7 (IS 10322-1: 2014 Cl 4.22)	Qualitative 0.01gm to 500gm
			IS 10322-5-4: 1987 Cl 6 (IS 10322-1: 2014 Cl 4.22)	
			IS 10322-5-5: 1987 Cl.6	

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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
			(IS 10322-1: 2014 Cl 4.22)	
			IS 10322-5-6: 2013 Cl 7 (IS 10322-1: 2014 Cl 4.22)	
			IS 10322-5-8: 2013 Cl. 7 (IS 10322-1: 2014 Cl 4.22)	
		Semi-Luminaires	S 10322-5-2: 2012 Cl 7 (IS 10322-1: 2014 Cl 4.22)	Qualitative Visual Examination
			IS 10322-5-4: 1987 Cl 6 (IS 10322-1: 2014 Cl 4.22)	
			IS 10322-5-5: 1987 Cl.6 (IS 10322-1: 2014 Cl 4.22)	
			IS 10322-5-6: 2013 Cl 7 (IS 10322-1: 2014 Cl 4.22)	
			IS 10322-5-8: 2013 Cl. 7 (IS 10322-1: 2014 Cl 4.22)	
		Mechanical Hazard	S 10322-5-2: 2012 Cl 7 (IS 10322-1: 2014 Cl 4.25)	Qualitative Visual Examination

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			IS 10322-5-4: 1987 Cl 6 (IS 10322-1: 2014 Cl 4.25)	
			IS 10322-5-5: 1987 Cl.6 (IS 10322-1: 2014 Cl 4.25)	
			IS 10322-5-6: 2013 Cl 7 (IS 10322-1: 2014 Cl 4.25)	
			S 10322-5-8: 2013 Cl. 7 (IS 10322-1: 2014 Cl 4.25)	
		Creepage Distances & Clearances	IS 10322-5-2: 2012 Cl.8 (IS 10322-1: 2014 Section 11)	<i>Upto 150mm,</i>
			IS 10322-5-4: 1987 Cl.7 (IS 10322-1: 2014 Section 11)	
			IS 10322-5-5: 1987 Cl.7 (IS 10322-1: 2014 Section 11)	
			IS 10322-5-6: 2013 Cl.8 (IS 10322-1: 2014 Section 11)	
			IS 10322-5-7: 2017 Cl. 20.8	

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			(IS 10322-1: 2014 Section 11)	
			IS 10322-5-8: 2013 Cl. 8 (IS 10322-1: 2014 Section 11)	
		Provision for Earthing	IS 10322-5-2: 2012 Cl.9 (IS 10322-1: 2014 Section 7)	0 to 30 A, 0 to 19.999 V, S to p Watch : up to 24 Hrs,
			IS 10322-5-4: 1987 Cl.8 (IS 10322-1: 2014 Section 7)	
			IS 10322-5-5: 1987 Cl.8 (IS 10322-1: 2014 Section 7)	
			IS 10322-5-6: 2013 Cl.9 (IS 10322-1: 2014 Section 7)	
			IS 10322-5-7: 2017 Cl. 20.9 (IS 10322-1: 2014 Section 7)	
			IS 10322-5-8: 2013 Cl. 9 (IS 10322-1: 2014 Section 7)	
		Terminals	IS 10322-5-2: 2012 Cl.10 (IS 10322-1: 2014 Section 14)	0 to 150mm, 1 to 5 Nm 3 to 15 Nm, 10 to 50 cN.m,

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			IS 10322-5-4: 1987 Cl.9 (IS 10322-1: 2014 Section 14) IS 10322-5-5: 1987 Cl.9 (IS 10322-1: 2014 Section 14) IS 10322-5-6: 2013 Cl.10 (IS 10322-1: 2014 Section 14) IS 10322-5-7: 2017 Cl. 20.10 (IS 10322-1: 2014 Section 14) IS 10322-5-8: 2013 Cl. 10 (IS 10322-1: 2014 Section 14) IS 10322-5-2: 2012 Cl.10 (IS 10322-1: 2014 Section 15) IS 10322-5-4: 1987 Cl.9 (IS 10322-1: 2014 Section 15) IS 10322-5-5: 1987 Cl 9 (IS 10322-1: 2014 Section 15) IS 10322-5-6: 2013 Cl.10 (IS 10322-1: 2014	40 to 200 cN.m, S to p Watch up to 24 Hrs 0 to 150 mm, 0 to 100N, 0 to 30A, 0 to 19.999 V, Amb. to 300°C, S to p Watch : up to 24 Hrs,

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			Section 15) IS 10322-5-7: 2017 Cl. 20.10 (IS 10322-1: 2014 Section 15) IS 10322-5-8: 2013 Cl. 10 (IS 10322-1: 2014 Section 15)	
		External and Internal Wiring	IS 10322-5-2: 2012 Cl.11 (IS 10322-1: 2014 Section 5)	0 to 150 mm, 0 to 120N, 10 to 50cN.m, 40 to 200 cN.m, S to p Watch : up to 24 Hrs,
			IS 10322-5-4: 1987 Cl.10 (IS 10322-1: 2014 Section 5)	
			IS 10322-5-5: 1987 Cl.10 (IS 10322-1: 2014 Section 5)	
			IS 10322-5-6: 2013 Cl.11 (IS 10322-1: 2014 Section 5)	
			IS 10322-5-7: 2017 Cl. 20.11 (IS 10322-1: 2014 Section 5)	
			IS 10322-5-8: 2013 Cl. 11 (IS 10322-1: 2014 Section 5)	

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		Protection Against Electric Shock	IS 10322-5-2: 2012 Cl.12 (IS 10322-1: 2014 Section 8)	Test Probe B, Test Probe 11, 0 to 20N 0 to 80V
			IS 10322-5-4: 1987 Cl.11 (IS 10322-1: 2014 Section 8)	
			IS 10322-5-5: 1987 Cl.11 (IS 10322-1: 2014 Section 8)	
			IS 10322-5-6: 2013 Cl.12 (IS 10322-1: 2014 Section 8)	
			IS 10322-5-7: 2017 Cl. 20.12 (IS 10322-1: 2014 Section 8)	
			IS 10322-5-8: 2013 Cl. 12 (IS 10322-1: 2014 Section 8)	
		Endurance Test and Thermal Test	IS 10322-5-2: 2012 Cl.13 (IS 10322-1: 2014 Section 12)	Amb to 150°C, Cyclic operation: ON to 21hrs, OFF to 3hrs up to 10 days 13 to 580V, 0 to 600 °C,
			IS 10322-5-4: 1987 Cl.13.4 (IS 10322-1: 2014 Section 12)	
			IS 10322-5-5: 1987 Cl.13.4	

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			(IS 10322-1: 2014 Section 12)	
			IS 10322-5-6: 2013 Cl.13 (IS 10322-1: 2014 Section 12)	
			IS 10322-5-7: 2017 Cl. 20.13 (IS 10322-1: 2014 Section 12)	
			IS 10322-5-8 Cl. 13 (IS 10322-1: 2014 Section 12)	
		Resistance to Dust and Moisture	IS 10322-5-2: 2012 Cl.14 (IS 10322-1: 2014 Section 9) IS 10322-5-4: 1987 Cl.13.5 (IS 10322-1: 2014 Section 9) IS 10322-5-5: 1987 Cl.13.5 (IS 10322-1: 2014 Section 9) IS 10322-5-6: 2013 Cl.14 (IS 10322-1: 2014 Section 9) IS 10322-5-7: 2017 Cl. 20.14 (IS 10322-1: 2014 Section 9) IS 10322-5-8: 2013	Qualitative IP1X,2X,3X,4X: Test Probe B, Test Probe C Test Probe D, Test Probe 11 0 to 100N, IP 5X & IP 6X: 900 x 900 x 900mm IP X1: Flow Rate : 3mm/min Scale: 300 mm, 0.05 mm IP X3, IP X4, IP X5, IP X6, IP X7 & IP X8 : 10 to 110 LPH, 0.5 to 5 LPM, 15 to 125 LPM, 1.5 to 15 LPM, 10 to 50cN.m 40 to 200 cN.m, S to p Watch :

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			Cl. 14 (IS 10322-1: 2014 Section 9)	up to 24 Hrs,
		Insulation Resistance and Electric Strength	IS 10322-5-2: 2012 Cl.15 (IS 10322-1: 2014 Section 10) IS 10322-5-4: 1987 Cl.13.6 (IS 10322-1: 2014 Section 10) IS 10322-5-5: 1987 Cl.13.6 (IS 10322-1: 2014 Section 10) IS 10322-5-6: 2013 Cl.15 (IS 10322-1: 2014 Section 10) IS 10322-5-7: 2017 Cl. 20.15 (IS 10322-1: 2014 Section 10) IS 10322-5-8: 2013 Cl. 15 (IS 10322-1: 2014 Section 10)	to 20°C to 60°C, 0 to 95 %Rh, 2 MΩ to 100 MΩ at 500 V DC 0 to 10 KV , 0 to 250mA 0 to 9.59 min, 0 to 19.99 mA,

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		Resistance to Heat, Fire and Tracking	IS 10322-5-2: 2012 Cl.16 (IS 10322-1: 2014 Section 13) IS 10322-5-4: 1987 Cl.13.7 (IS 10322-1: 2014 Section 13) IS 10322-5-5: 1987 Cl.13.7 (IS 10322-1: 2014 Section 13) IS 10322-5-6: 2013 Cl.16 (IS 10322-1: 2014 Section 13) IS 10322-5-7: 2017 Cl. 20.16 (IS 10322-1: 2014 Section 13) IS 10322-5-8: 2013 Cl. 16 (IS 10322-1: 2014 Section 13)	(Ball Pressure Test) amb to to to 300°C, 20N on both side S to p Watch : up to 24 Hrs, 0 to 25mm, Magnifier: 10X

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		Resistance to Heat, Fire and Tracking	IS 10322-5-2: 2012 Cl.16 (IS 10322-1: 2014 Section 13) IS 10322-5-4: 1987 Cl.13.7 (IS 10322-1: 2014 Section 13) IS 10322-5-5: 1987 Cl.13.7 (IS 10322-1: 2014 Section 13) IS 10322-5-6: 2013 Cl.16 (IS 10322-1: 2014 Section 13) IS 10322-5-7: 2017 Cl. 20.16 (IS 10322-1: 2014 Section 13) IS 10322-5-8: 2013 Cl. 16 (IS 10322-1: 2014 Section 13)	(Glow Wire) amb to to 999°C, Timer : 0 to 60 sec, Digital Caliper : 0 to 150 mm, Scale : 0 to 300 mm , Mass : 1 N S to p Watch : up to 24 Hrs,

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		Resistance to Heat, Fire and Tracking	IS 10322-5-2: 2012 Cl.16 (IS 10322-1: 2014 Section 13) IS 10322-5-4: 1987 Cl.13.7 (IS 10322-1: 2014 Section 13) IS 10322-5-5: 1987 Cl.13.7 (IS 10322-1: 2014 Section 13) IS 10322-5-6: 2013 Cl.16 (IS 10322-1: 2014 Section 13) IS 10322-5-7: 2017 Cl. 20.16 (IS 10322-1: 2014 Section 13) IS 10322-5-8: 2013 Cl. 16 (IS 10322-1: 2014 Section 13)	(Needle Flame Test) 0 to 999.0°C, Digital Caliper : 0 to 150 mm, S to p Watch : up to 24 Hrs,

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		Resistance to Heat, Fire and Tracking	IS 10322-5-2: 2012 Cl.16 (IS 10322-1: 2014 Section 13) IS 10322-5-4: 1987 Cl.13.7 (IS 10322-1: 2014 Section 13) IS 10322-5-5: 1987 Cl.13.7 (IS 10322-1: 2014 Section 13) IS 10322-5-6: 2013 Cl.16 (IS 10322-1: 2014 Section 13) IS 10322-5-7: 2017 Cl. 20.16 (IS 10322-1: 2014 Section 13) IS 10322-5-8: 2013 Cl. 16 (IS 10322-1: 2014 Section 13)	(Tracking Index) 0 to 600 V, LC: 0.1/0.001/0.01V 0 to 5 Amp, 1N each on both side Digital Caliper : 0 to 150 mm,
2.	DC or AC Supplied Electronic Control Gear for LED Modules	Verification of Marking	(Cl. 7) IS 15885-2-13:2012	Qualitative Visual Examination
		Terminals	(Cl. 9) IS 15885-2-13:2012	Up to to 300 mm 0.1 to 6 Nm, 0.1 to 500 N Amb to 300°C,
		Moisture Resistance And Insulation	(Cl. 11) IS 15885-2-13:2012	Amb to 98% RH, Amb to 55 °C 2 MΩ to 100 MΩ at 500V d.c

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		Electric Strength	(Cl. 12) IS 15885-2-13:2012	0.1 to 5 kV
		Creepage Distance and Clearances	(Cl.17) IS 15885-2-13:2012	0.01 to 30 mm 0.1KV to 5KV
		Screw Current Carrying Parts and Connections	(Cl.18) IS 15885-2-13:2012	0.1 to 6 Nm, 0.01 to 30mm 0.1 to 50N
		Resistance to Heat	(Cl.19) IS 15885-2-13:2012	Amb to 150°C(Oven) 20N(Ball Pressure)
		Resistance to Corrosion	(Cl.20) IS 15885-2-13:2012	Amb to 150°C
		Protection Against Accidental Contact With Live Parts	(Cl.8) IS 15885-2-13:2012 IEC 61347-2-13	0.1 to 80 V, 0.1 to 1000N,
		Provision for Protecting Earthing	(Cl. 10) IS 15885-2-13:2012	1 to 40 Amp, 0.1 to 19.9 V 0 to 24 hrs 0.01 to 150mm 0.1 to 1000N
		Fault Condition	(Cl. 14) IS 15885-2-13:2012	0.1 to 300 V, Amb to 550 °C, 0.01 to 150mm Test Probe B 0.1 to 1000N 2 MΩ to 100 MΩ at 500V d.c
		Transformer Heating	(Cl. 15) IS 15885-2-13:2012	0.1 to 300 V Amb to 999°C 0.1 to 1000N 0.1-1250W
		Construction	(Cl. 16) IS 15885-2-13:2012	Qualitative Visual

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		Resistance to Fire and Tracking	(Cl.19) IS 15885-2-13:2012	Up to 999°C(Glow Wire) Up to 999°C (Needle Flame Test) 0.1 to 999V (Tracking)
3.	Self Ballasted LED Lamps	Verification of Marking	(Cl.5) IS16102-1:2012	Qualitative Visual Examination
		Interchangeability	(Cl.6) IS16102-1:2012	0.1 to 6 Nm
		Insulation Resistance and Electric Strength after Humidity Treatment	(Cl.8) IS16102-1:2012	0.1 to 10 kV, 2 MΩ to 100 MΩ at 500V d.c, Amb to 98%RH Amb to 55°C
		Mechanical Strength	(Cl.9) IS16102-1:2012	Up to 6 Nm
		Resistance to Heat	(Cl.11) IS16102-1:2012	20N(Ball Pressure) 0.1 to 500N 0.001 to 5 mm
		Creepage Distance and Clearance	(Cl.14) IS16102-1:2012	0.01 to 150mm
		Protection Against Electric Shock	(Cl.7) IS16102-1:2012	0.1 to 10kV, 2 MΩ to 100 MΩ at 500V d.c, Test Probe B 0.1 to 1000N 25°C to 35°C 0.01 to 24Hrs
		Cap Temperature Rise	(Cl.10) IS16102-1:2012	Amb to 600°C 0.01 to 580 V
		Resistance to Flame and Ignition	(Cl.12) IS16102-1:2012	Amb to 999°C(Glow wire) 0.01 to 150mm 0.01 to 24Hrs
		Fault Conditions	(Cl.13) IS16102-1:2012	0.1 to 580V, 0.1 to 10kV, 0.1 to 500N, Amb to 600°C 25°C to 35°C

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				2 MΩ to 100 MΩ at 1000V d.c
4.	Domestic Electronic Appliances & Accessories Electronic Games (Video), Electronic Musical System, Optical Disc Players, Plasma/LCD/LED TV, Power Amplifiers, Power Adaptors for Audio, Video & Electronics Apparatus etc	Verification of Marking and instructions	(Cl.5) IS616:2017 IEC60065:2014	Qualitative 0.1 to 2KW, 0.01 to 25A, 0.1 to 580V,
		Heating under normal operating Conditions	(Cl. 7.1 to 7.1.6) IS 616: 2017 IEC60065:2014	Amb to 600°C,
		Heat Resistance of Insulating Materials	(Cl. 7.2) IS 616: 2017 IEC60065:2014	0.1 to 300°C, 0.01 to 10 mm
		Construction Requirement With Regards to the protection against electric shock	(Cl.8) IS 616: 2017 IEC60065:2014	Amb to 98%RH, Amb to 55°C, 0.01 to 10KV, 0.1 to 500N, Amb to 300°C,
		Electric shock hazard under normal operating conditions	(Cl.9) IS 616: 2017 IEC60065:2014	0 to 600 V 0.001 to 3.5 mA, 0.01 to 150 mm, 0.1 to 500 N, 1μs to 10 sec Test Probe B, C, D, 11, 18, 13 & 19
		Insulation requirements Surge Test	(Cl.10.1-10.2) IS 616: 2017 IEC60065:2014	0.01 to 15KV 2 MΩ to 100 MΩ at 500V d.c 0.01 to 10 KV
		Humidity Test	(Cl.10.3) IS 616: 2017 IEC60065:2014	Amb to 98%RH, Amb to 55°C,
		Insulation Resistance and Dielectric Strength	(Cl.10.4) IS 616: 2017 IEC60065:2014	2 MΩ to 100 MΩ at 500V d.c 0.01 to 10 KV

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		Fault conditions	(Cl.11) IS 616: 2017 IEC60065:2014	0 to 600 V 0.001 to 3.5 mA Amb to 600°C, 0.1 to 580V, 0.01 to 150mm, 2 MΩ to 100 MΩ at 500V d.c 0.01 to 10 KV
		Mechanical Strength	(Cl. 12.1.1 to 12.1.6) (Cl. 12.2 to 12.7) IS 616: 2017 IEC60065:2014	0.01 to 150mm, 0.5 & 2 joule 0.1 to 500N, Steel ball of 500gm, dia 50mm 5 to 3200Hz, 0.1 to 34 mm, 0.1 to 38g (Acceleration) Amb to 150°C 10 to 120 cN.m 0.01 to 10 KV Test probe 11, Test hook
		Clearances and creepage distances	(Cl.13) IS 616: 2017 IEC60065:2014	0.01 to 150mm
		Terminals	(Cl. 15) IS 616: 2017 IEC60065:2014	0.1 to 30 A 0.1 to 19.9 V 0.01 to 150 mm 0 to 300mm, up to 0.25 Nm 0.1 to 100 N 0 to 1.5Nm
		External flexible cords	(Cl. 16) IS 616: 2017 IEC60065:2014	Up to 40N, 0.01 to 150 mm 0 to 1.5 Nm 0 to 10 kV
		Electrical connections and mechanical fixings	(Cl. 17) IS 616: 2017 IEC60065:2014	0.01 to 150 mm 10 to 120 cN.m 0.1 to 6 Nm 0.1 to 100N

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		Stability and mechanical hazards	(Cl. 19) IS 616: 2017 IEC60065:2014	Inclined Plane 10° and 15°, 0.1 to 200 N 0.01 to 150 mm, 10 to 120 cN.m
		Resistance to fire	(Cl. 20) IS 616: 2017 IEC60065:2014	Amb to 950°C(Glow Wire), Amb to 300 °C(Oven) 0.001 to 25 mm,
5.	IT EQUIPMENT Power Aadaptors for IT Equipment, Printer & Plotters, Laptop/Notebook/ Tablets, Mail Processing Machines/Postage Machines/Franking Machines, Mobile Phones, Scanners, Passport Reader, Copying Machines/Duplicators, Point of Sale terminals, Power Bank, Telephone Answering Machines, USB driven Barcode readers, barcode scanners, Iris scanners, Optical		IS13252-1:2010+A1:2013+A2:2015 IEC 60950-1:2005+A1:2009+A2:2013	
		Power interface	(Cl.1.6)	0.1 to 2000W, 0.1 to 580V, 0.01 to 25A
		Verification of Marking and instructions	(Cl.1.7)	Qualitative Visual
			IS13252-1:2010+A1:2013+A2:2015 IEC 60950-1:2005+A1:2009+A2:2013	
		Protection from electric shock and energy hazards SELV circuits	(Cl.2.1) (Cl.2.2)	0.1 to 99.9VDC, 0.1 to 20A DC, 0.1 to 580V AC, 0.001 to 5A AC, 0.1 to 100N, 0.1 to 80V AC, 0.1 to 150 VAC/DC

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	fingerprint scanners, Smart Card Readers, Wireless Key Board, Smart watches , Set Top Box, Cash Registers, Automatic Data Processing Machines, CCTV Cameras/CCTV Recorders, Visual Display Units,etc	Limited current circuits	(Cl.2.4)	0.005mA to 30mA 1khz 2000±10 Ω
		Limited power sources	(Cl.2.5)	Qualitative 0.1 to 200VDC, 0.01A to 30A DC, 0.1 to 350V AC, 0.1 to 20 A AC
		Provisions for Earthing and Bonding	(Cl.2.6)	0.1 to 40Amp, 0.1 to 19.9V,
		Over-current and earth fault protection in primary circuits	(Cl.2.7)	Qualitative Visual
		Safety Interlocks	(Cl.2.8)	1 to 999999 Counts
		Electrical insulation	(Cl.2.9)	Amb to 55°C , 85 to 98%RH, 2 MΩ - 100 MΩ at 500V d.c
			IS13252-1:2010+A1:2013+A2:2015 IEC 60950-1:2005+A1:2009+A2:2013	
		Clearances, creepage distances and distances through insulation	(Cl. 2.10.1 to 2.10.5.14)	0.01 to 150 mm,
		Abrasion test to Enclosure & Sealed par	(Cl.2.10.8 to 2.10.10)	Amb 50°C 0.01 k/v – 10 kV
		Wiring Connection and Supply	(Cl.3.0 (3.1.1 to 3.1.10))	0 to 600°C, 0.1 to 250 N, 0.01 mm to 150 mm

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				0.01 mm to 25 mm
		Connection to a mains supply	(Cl. 3.2)	Upto 10kg 0.01 mm to 150 mm 0.1 to 12 Nm
		Wiring terminals for connection of external conductors	(Cl. 3.3)	0.01 mm to 150 mm 0.01 mm to 25 mm
		Disconnection from the mains supply	(Cl. 3.4)	Qualitative Visual
		Interconnection of equipment	(Cl. 3.5)	0.1 V to 350 V 0.1 W to 5000 W Upto 1200 Ω 0.1 kV to 5kV
		Stability	(Cl. 4.1)	Inclined Plane 10° and 15°, 0.1 to 500 N, 0.01 kg to 100 kg
			IS13252-1:2010+A1:2013+A2:2015 IEC 60950-1:2005+A1:2009+A2:2013	
		Mechanical Strength	(Cl. 4.2)	0.01 N to 300 N 0.01 kg to 100 kg Amb to 400°C
		Verification of Design and Construction	(Cl. 4.3.1 to 4.3.11 & 4.13.1 & 4.13.2)	Upto 500 N Qualitative 0.1 to 15 Nm
		Protection against hazardous moving parts	(Cl. 4.4)	Upto 99 V Upto 250 N
		Thermal Requirements	(Cl. 4.5)	Amb - 300°C,
		Resistance to heat test	(Cl. 4.5.5)	Amb to 150°C,

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				0.001 mm to 25 mm
		Openings in enclosures	(Cl. 4.6)	Qualitative
		Touch Current and Protective Conductor Current	(Cl. 5.1)	0.01 mA to 5 mA 0.1 V to 350 V
		Electric strength	(Cl. 5.2)	0.01 kV to 10 kV 0.1 mA to 250 mA
		Abnormal operating and fault conditions	(Cl. 5.3)	Amb - 300°C,
		Protection of the telecommunication wiring system from overheating	(Cl. 6.3)	Qualitative Visual Examination
			IS13252-1:2010+A1:2013+A2:2015 IEC 60950-1:2005+A1:2009+A2:2013	
		TNV circuits	(Cl.2.3)	Upto 550V AC 0.01 to 0.5 kV AC
		Resistance to fire	(Cl. 4.7)	Amb - 999°C, Upto 150 mm
		Protection of telecommunication network service persons, and users of other equipment connected to the network, from hazards in the equipment	(Cl. 6.1)	0.01 to 10 kV,
		Protection of	(Cl. 6.2)	Upto 10 kV DC

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		equipment users from over voltages on telecommunication networks		0.01 to 10 kV AC 0.01 to 150 mm Upto 25 mm
		Connection to cable distribution systems	(Cl. 7)	0.01 – 10 kV AC Upto 10 kV DC
6.	Power Stabilisers and UPS UPS/ Invertors Oprating ≤5 kVA		IS 16242-1:2014 IS13252-1:2010+A1:2013+A2:2015 IEC 60950-1:2005+A1:2009+A2:2013	
		Power Interface	(Cl.4.6(RD1.6.2))	1 to 5000W, 0.1 to 580V, 0.01 to 25A
		Verification of Marking and Instructions	(Cl.4.7 (RD 1.7.11))	Visual Examination
		Protection against electric shock and energy hazards	(Cl.5.1.1.5.1.2.5.1.3,5.1.4)	Qualitative 1N to 50 N 1 kg to 100 kg 0.1 V to 300 V 0.1 mA to 20 mA 0.1 mm to 30 mm
		Requirement of auxiliary circuits	Cl.5.2.1,5.2.2,5.2.3 & 5.2.5(RD 2.2,2.3,2.4 & 2.5)	0.01 -5 kV 200 MHZ 1 – 5000 W 0.01 mA to 20 mA
		Protective earthing and bonding	(Cl.5.3 (RD 2.6)	1 A to 40 A 0.01 to 19.99 V 1 s to 120 s
		AC and D.C.power isolation	Cl.5.4	Visual Examination Qualitative
		Over current and earth fault protection	Cl.5.5	Qualitative Visual Examination

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			IS 16242-1:2014 IS13252-1:2010+A1:2013+A2:2015 IEC 60950-1:2005+A1:2009+A2:2013	
		Protection of personnel-Safety interlocks	(Cl.5.6.1/5.6.2/5.6.2.2/5.6.2.3/5.6.2.4 (RD2.8))	0.1 V to 99.9 V 0.1 N to 500 N
		Clearance,Creepage distances and distance through insulation	(Cl.5.7 (RD2.10))	0.01 to 150 mm,
		Wiring, connections and supply	(Cl.6 (RD3.0 (3.1.1 to 3.1.10))	Qualitative 1 N to 250 N 0.01 mm to 150 mm 0.01 k V to 5 kV
		Connection to power	(Cl.6.2(RD3.2.2 to 3.2.9))	0.01 mm to 15 mm 0.1 to 5 Nm
		Wiring terminal for external power conductor	(Cl.6.3(RD3.3))	0.01 to 150 mm
		Enclosure	(Cl.7.1 (RD2.1))	Qualitative 0.1 V to 99.9 V 0.01 min to 60 min 0.1 V to 350 V 1-500 N
		Stability	(Cl.7.2 (RD 4.1))	Inclined Plane 10° and 15°, 1 N to 250 N,
			IS 16242-1:2014 IS13252-1:2010+A1:2013+A2:2015	

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			IEC 60950-1:2005+A1:2009+A2:2013	
		Mechanical strength	(Cl.7.3 (RD 4.2))	Qualitative 1 N to 100 N Upto 100°C
		Constructions Details	(Cl.7.4 (RD 4.3 to 4.6))	Qualitative 0.1 to 280 V 0.01 – 10 A 1 – 500 N 0.01 mm – 12 mm
		Resistance to fire	(Cl.7.5)	Amb to 999.0°C Upto 150 mm
		Battery location	(Cl.7.6,7.6.7/M.2 (RD5.2))	0.01 to 5 kV, 0.1 to 30mm
		Temperature rise	(Cl.7.7(RD4.5))	Amb to 100°C 0.01 mm to 12 mm
		General Provision for Earth Leakage	(Cl.8.1 (RD5.1.1))	0.01 to 3.5 mA 1 to 350 V
		Electric strength	(Cl.8.2(RD5.2))	Qualitative 0.01 to 5kV 0.01 to 30 mm 0.01 – 60 Min
		Abnormal operation and fault conditions	(Cl.8.3.1/8.3.2(RD5.3.1,5.3.2,5.3.3,5.3.4,5.3.5,5.3.9))	Amb to 100°C 1 to 5000 W
			IS 16242-1:2014 IS13252-1:2010+A1:2013+A2:2015 IEC 60950-1:2005+A1:2009+A2:2013	
		Connection to telecommunication networks	(Cl.9(6/RD&3.5/RD))	Upto 10 kV DC 0.01 – 10 kV AC 0.01 to 150 mm Upto 25 mm

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7.	Microwave Oven	Verification of Marking and instructions	(Cl. 7) IS 302-2-25:2014 IS 302-1:2008	Qualitative Visual
		Protection against access to live parts	(Cl. 8) IS 302-2-25:2014 IS 302-1:2008	1 to 60V
		Power input and current	(Cl. 10) IS 302-2-25:2014 IS 302-1:2008	1 to 3000W
		Heating	(Cl. 11) IS 302-2-25:2014 IS 302-1:2008	Amb to 300°C
		Leakage current and electric strength at operating temperature	(Cl. 13) IS 302-2-25:2014 IS 302-1:2008	0.02 to 20mA,
		Transient over voltages	(Cl. 14) IS 302-2-25:2014 IS 302-1:2008	0.01 to 10 kV
		Moisture resistance	(Cl. 15) IS 302-2-25:2014 IS 302-1:2008	Amb to 98% Rh 15 to 35°C 2 MΩ to 100 MΩ at 500V d.c
		Leakage current and electric strength	(Cl. 16) IS 302-2-25:2014 IS 302-1:2008	0.1 to 5KV, 0.02 to 20mA
		Overload Protection of transformers and Associated Circuits	(Cl. 17) IS 302-2-25:2014 IS 302-1:2008	1 to 250 °C
		Endurance	(Cl. 18) IS 302-2-25:2014 IS 302-1:2008	1 to 50000 Cycles
		Abnormal operations	(Cl. 19) IS 302-2-25:2014 IS 302-1:2008	Amb to 300°C

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		Stability and mechanical hazards	(Cl. 20) IS 302-2-25:2014 IS 302-1:2008	1 to 30°
		Mechanical strength	(Cl. 21) IS 302-2-25:2014 IS 302-1:2008	0.5 joule, 1 to 50 N
		Construction	(Cl. 22) IS 302-2-25:2014 IS 302-1:2008	1 to 50N
		Internal wiring	(Cl. 23) IS 302-2-25:2014 IS 302-1:2008	0.1 kV to 5 kV
		Supply connection and external flexible cords	(Cl. 25) IS 302-2-25:2014 IS 302-1:2008	0 to 5 Mtr, 0 to 99999 flexing
		Terminals for external conductors	(Cl. 26) IS 302-2-25:2014 IS 302-1:2008	0.01 to 25 mm
		Provision for earthing	(Cl. 27) IS 302-2-25:2014 IS 302-1:2008	0.01 V to 19.9 V, 0.1 to 40 A
		Screws and connections	(Cl. 28) IS 302-2-25:2014 IS 302-1:2008	0.01 to 25 mm, 0.1 to 12 Nm
		Clearances, Creepage distances and solid insulation	(Cl. 29) IS 302-2-25:2014 IS 302-1:2008	0.01 to 150 mm
		Resistance to heat and fire	(Cl. 30) IS 302-2-25:2014 IS 302-1:2008	Amb to 300°C, 0.01 to 3mm, Amb to 950°C,
		Resistance to rusting	(Cl. 31) IS 302-2-25:2014 IS 302-1:2008	Amb to 100°C
		Radiation, toxicity and	(Cl. 32)	Qualitative

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		similar hazards	IS 302-2-25:2014 IS 302-1:2008	Visual
8.	Clock	Verification of Marking and instructions	(Cl. 7) IS 302-2-26:2014 IS 302-1:2008	Visual
		Protection against access to live parts	(Cl. 8) IS 302-2-26:2014 IS 302-1:2008	1 to 60V
		Input and current	(Cl. 10) IS 302-2-26:2014 IS 302-1:2008	1 to 2000W
		Heating	(Cl. 11) IS 302-2-26:2014 IS 302-1:2008	Amb to 300°C
		Leakage current and electric strength at operating temperature	(Cl. 13) IS 302-2-26:2014 IS 302-1:2008	0.1 to 5KV, 0.02 to 20mA
		Transient over voltages	(Cl. 14) IS 302-2-26:2014 IS 302-1:2008	0.01 to 10 kV
		Moisture resistance	(Cl. 15) IS 302-2-26:2014 IS 302-1:2008	Amb to 98%RH, 15 to 35°C 2 MΩ to 100 MΩ at 500V d.c
		Leakage current and electric strength	(Cl. 16) IS 302-2-26:2014 IS 302-1:2008	0.1 to 5KV, 0.02 to 20mA
		Overload protection of transformers and associated circuits	(Cl. 17) IS 302-2-26:2014 IS 302-1:2008	1 to 350V, 1 to 1000W
		Abnormal operations	(Cl. 19) IS 302-2-26:2014 IS 302-1:2008	Amb to 300°C
		Stability and	(Cl. 20)	1 to 30°

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		mechanical hazards	IS 302-2-26:2014 IS 302-1:2008	
		Mechanical strength	(Cl. 21) IS 302-2-26:2014 IS 302-1:2008	0.5 joule, 1 to 50 N
		Internal wiring	(Cl. 23) IS 302-2-26:2014 IS 302-1:2008	0.1 to 5KV
		Supply connection and external flexible cords	(Cl. 25) IS 302-2-26:2014 IS 302-1:2008	1 to 99999 flexing
		Terminals for external conductors	(Cl. 26) IS 302-2-26:2014 IS 302-1:2008	Visual
		Provision for earthing	(Cl. 27)IS 302-2-26:2014 IS 302-1:2008	0.01 to 19.9 V, 0.1 to 40 A
		Screws and connections	(Cl. 28) IS 302-2-26:2014 IS 302-1:2008	0.01 to 25 mm, 0.1 to 12 Nm
		Clearances, Creepage distances and solid insulation	(Cl. 29)IS 302-2-26:2014 IS 302-1:2008	0.01 to 150 mm
		Resistance to heat and fire	(Cl. 30) IS 302-2-26:2014 IS 302-1:2008	Amb to 300°C , 0.01 mm, Amb to 950°C
		Resistance to rusting	(Cl. 31) IS 302-2-26:2014 IS 302-1:2008	Amb to 100°C
9.	Electrical Products	Ingress Of Protection (IP Degrees)	IS 13947:1993 IEC 60529:2001 IS 12063:1987 IEC 60947:2004	IP 1x, 2x, 3x,4x, 5x, 6x IP x1, x2, x3, x4, x5, x6,x7& x8
10.	Mobile Phone Handsets Part 3	Inputting of text & Message Readability	Cl 5.1 & Cl 5.2 IS 16333 (Part 3) : 2017	Qualitative

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	Indian Language Support for Mobile Phone Handsets – Specific Requirements	Test		
		Marking	CI 6 IS 16333 (Part 3) : 2017	Visual
11.	Solid-state Lighting (LED) Products	Electrical Parameters	IS 16106:2012/ IES LM79-2008	0 to 300V AC 0.1W to 2000W Up to 5Amp
		Total Luminous Flux	IS 16106:2012/ IES LM79-2008	0.1lm to 99999lm (380nm to 780nm)
		Luminous Efficacy	IS 16106:2012/ IES LM79-2008	0.1lm to 99999lm 0.1W to 2000W
		Colour Characteristics	IS 16106:2012/ IES LM79-2008	(2000 to 25000)K Up to 100% CRI (380nm to 780nm)

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<u>MECHANICAL TESTING</u>				
I.	RUBBER AND RUBBER PRODUCTS			
1.	General Purpose Rubber Water Hose	Construction	Cl.5.0 of IS 444:2017	Qualitative
		Dimension & Tolerances	Cl.4.2.1.2 of IS 443:1995, RA 1996	0.01 to 150 mm
		Tensile Strength & Elongation at break of lining & cover	IS 3400 (P-1) - 2012	1 to 100 MPa. 1% to 1000 %.
		Accelerated Ageing Test	IS 3400 (P-4) - 2012	1 to 100 MPa. 20 to 300 %.
		Swelling Test	Cl 5.4.3 of IS 9573:2012	0.1% to 300%
		Adhesion	Method A of IS 3400(P-5)	1 to 100 KN/m
		Hydrostatic Test	Cl.8 of IS 443:1975, RA 2001	Upto 700 kg/cm ²
		Brusting Test	Cl. 8.3 of IS 443:1975, RA 2001	Upto 700 kg/cm ²
		Increase Diameter at Working Pressure.	Cl. 8.2 of IS 443:1995, RA 1996	Upto 700 kg/cm ²
		Change in Length.	Cl. 8.4 IS 443:1975, RA 2001	0.1 to 100 %
		Adhesion between Components.	Cl.8.4 of IS 443:1975, RA 2001 IS 3400(P-5): 1986.	1 to 100 kN/m
2.	Rubber Air Hose	Construction	Cl.5.0 of IS 446:2017	Qualitative

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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
		Dimension & Tolerances	Cl.4.2.1.2 of IS 443:1975, RA 2001	0.01 to 150 mm
		Tensile Strength & Elongation at break of lining & cover of the Hose.	IS 3400 (Part--1): 2012	1 to 100 MPa. 20 to 300%.
		Accelerated Ageing Test	IS 3400 (Part--4): 2012	1 to 100 MPa. 20 to 300%.
		Oil Absorption Test	Cl. 4.3.3 of IS 446:1987, RA 2003	1 to 100%
		Adhesion	Cl.7 of IS 3400(Part--5): 1986, RA2003	1 to 100 KN/m
		Pressure Requirements	Cl. 8 of IS 443:1995, RA 1996	Upto 700 kg/cm ²
3.	Rubber Hose for Welding	Construction	Cl. 3.1 of IS 447:1988, RA2003	Qualitative
		Bore Size	Cl.4.2.1.2 of IS 443:1975, RA 2001	0.01 to 150 mm
		Tensile Strength & Elongation at break of lining & cover of the Hose.	IS 3400 (Part--1): 2012	1 to 100 MPa. 1% to 1000%.
		Accelerated Ageing Test	IS 3400 (Part--4): 2012	1 to 100 MPa. 20 to 300%.
		Hydrostatic Test	Cl. 8.3 of IS 443:1975, RA 2001	Upto 700 kg/cm ²
		Busting Test	Cl. 8.2 of IS 443:1975, RA 2001	Upto 700 kg/cm ²
		Increase Diameter at working pressure	Cl. 8.2 of IS 443:1975, RA 2001	Upto 700 kg/cm ²
		Change in Length	Cl. 8.4 of IS 443:1975, RA 2001	0.1 to 100%
		Adhesion between	IS 3400(Part--5): 1986,	1 to 100 KN/m

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		components	RA 2003	
4.	Rubber Hose for Fuel Dispensing	Construction	Cl. 3.1 of IS 2396:1988, RA 2003	Qualitative
		Dimension & Tolerances	Cl.4.2.1.1& Cl.4.2.1.2 of IS 443:1975, RA 2001	0.01 to 150 mm
		Tensile Strength & Elongation at break of lining & cover of the Hose.	Cl. 5 of IS 443:1975, RA 2001	1 to 100 MPa. 1% to 1000%.
		Accelerated Ageing Test	IS 3400 (Part--4): 2012	1 to 100 MPa. 20 to 300%.
		Volume Change	Cl. 9 of IS 443:1975, RA 2001	0.1 to 100%
		Fuel soluble matter of lining	Appendix- A of IS 2396:1988, RA 2003	0.1 to 100%
		Hydraulic Proof Test	Cl. 8.3 of IS 443:1975, RA 2001	Upto 700 kg/cm ²
		Increase Diameter at proof pressure	Cl. 8.5 of IS 443:1975, RA 2001	Upto 700 kg/cm ²
		Twist at proof pressure	App. B of IS 2396:1988, RA 2003	Qualitative
		Busting Test	Cl. 8.3 of IS 443:1975, RA 2001	Upto 700 kg/cm ²
		Adhesion between components	IS 3400 (Part--5):1986, RA 2003	1 to 25 KN/m width
		Electrical Continuity	Table-3 of IS 2396:1988, RA 2003	Qualitative
5.	Rubber Hose for L.P.G.	Material	Cl.4.2 of IS 9573:2017 Part-2	Qualitative
		Dimension & Tolerances	4.2.1.2 of IS 443:1975, RA 2001	0.01 to 150 mm
		Tensile Strength & Elongation at break of	IS 3400 (Part-1) - 2012	1 to 100 MPa. 1% to 1000%.

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		lining & cover of the Hose.		
		Accelerated Ageing Test	IS 3400 (Part-4) - 2012	1 to 100 MPa. 20 to 300%.
		Resistance of Lining to n-Pentane.	Cl 5.4.3 of IS 9573:2012	Qualitative
		Adhesion	Cl.6 of IS : 3400(Part-24): 2001	1 to 100 KN/m
		Low temp. Flexibility.	Cl.5.5.2 of IS 9573:2012	Qualitative
		Flexibility of Hose.	Cl.5.5.3 of IS 9573:2012	Qualitative
		Proof Pressure Test	Cl. 8.3 of IS 443:1975, RA 2001	Upto 700 kg/cm ²
		Bursting pressure.	Cl. 8.2 of IS 443:1975, RA 2001	Upto 700 kg/cm ²
		Electrical Continuity Test.	Cl.5.5.6 of IS 9573:2012	Qualitative
		Grip Strength Test.	Cl.5.5.7 of IS 9573:2012	Qualitative
		Burning Behavior.	Cl.5.5.8.2 of IS 9573:2012	Qualitative
6.	Flexible Rubber Tube for L.P.G.	General	Cl. 4.1 of IS10908:1991, RA 1996	Qualitative
		Workmanship & Finish	Cl. 4.2 of IS10908:1991, RA 1996	Qualitative
		Dimension (Diameter)	Cl.4.3.1 of IS10908:1991, RA 1996	0.01 to 150 mm
		Dimension (Wall Thickness)	Cl.4.3.2 of IS10908:1991, RA 1996	0.01 to 10 mm
		Grip Strength Test	Cl.4.4 of IS10908:1991, RA 1996	Qualitative
		Pressure Test	Cl.4.5 of IS10908:1991, RA 1996	Upto 700 kg/cm ²
		Shore Hardness Test	Cl.4.6 of IS10908:1991, RA 1996	Upto 100° A

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		Accelerated Ageing Test	Cl.4.7 of IS10908:1991, RA 1996	Upto 100°A
		Flexibility Test	Cl.4.8 of IS10908:1991, RA 1996	Qualitative
		Crushing Test	Cl.4.9 of IS10908:1991, RA 1996	Qualitative
		Resistance to L.P.G. Test	Cl.4.10 of IS10908:1991, RA 1996	Qualitative
		Resistance to Ozone	Cl. 4.11 of IS10908:1991, RA 1996	Qualitative
		Burning Behavior Test	Cl.4.12 of IS10908:1991, RA 1996	Qualitative
7.	Rubber Gasket for Pressure Cooker	Material Test	Cl.3.1 of IS 7466: 1994, RA 2003	Qualitative
		Workmanship & Finish	Cl.3.2 of IS 7466: 1994, RA 2003	Qualitative
		Dimensions	Cl. 3.3 of IS 7466: 1994, RA 2003	0.01 to 150 mm
		Requirements	Cl. 3.4	
		Hardness Test	IS:3400 (Part-2): 2003	30 to 100 IRHD
		Tensile Strength Test	IS:3400 (Part-1): 2012	1 to 100 MPa.
		Elongation Test	IS:3400 (Part-1): 2012	1% to 1000%.
		After Ageing for 3 days – Hardness, Tensile Strength & Elongation at break test.	IS:3400 (Part-4): 2012	30 to 100IRHD, 1 to 100 MN/m ² , 20 to 300%
		After Ageing for 8 hrs.- Hardness, Tensile Strength, Elongation & Volume Test.	IS:3400 (Part-4): 2012	30 to 100IRHD, 1 to 100 MN/m ² , 20 to 300%, 0.1 to 100%

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		Compression Set Test	IS:3400 (Part-10): 1977, RA 2012	1 to 50%
		Total Zinc Oxide Test	Annexure-A of IS 7466: 1994, RA 2003	Qualitative
		Heavy Metal	Annexure-B of IS 7466: 1994, RA 2003	Qualitative
II.	BUILDINGS MATERIALS			
1.	Concrete Floor Tile	Straightness	IS 1237-2012	0.1 to 2.0%
		Perpendicularity	IS 1237-2012	0.1 to 5.0%
		Flatness	IS 1237-2012	0.1 to 5.0 mm
		Water Absorption	IS 1237-2012	0.5 to 20%
		Wet Transverse Strength	IS 1237-2012	0.5 to 5 N/mm ²
		Resistance to Water	IS 1237-2012 (ANNEX-G)	0.1 to 10mm
2.	Pressed Ceramic Tiles	Water Absorption	IS 13630(Pt.-2)-2006	0.01 to 20%
		Breaking Strength	IS 13630(Pt.-6)-2006	10 to 1000 N
		Modulus of Rupture	IS 13630(Pt.-6)-2006	3 to 50 N/mm ²
		Scratch hardness of surface	IS 13630(Pt.-13)-2006	1 to 9
		Bulk density	IS13630(Pt.-2)-2006	1.5 to 3.5 g/cc
		Moisture expansion using boiling water	IS13630(Pt.-3)-2006	Qualitative
		Resistance to thermal shock	IS13630(Pt.-5)-2006	Qualitative
		Crazing resistance	IS13630(Pt.-9)-2006	Qualitative
3.	Concrete Cube	Compressive Strength	IS 516-1959	5 to 80N/ mm ³
4.	Coarse Aggregate	Grading (Sieve Analysis)	IS 2386(Part- 1):1963	10 mm to 0.075 mm

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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
		Deleterious Material:		
		a. Clay Lumps	IS 2386(Part- 2):1963	0.5 to 20%
		b. Materials Finer than 75 μ	IS 2386(Part- 1):1963	0.05 to 20%
		Unit Weight (Bulk density)	IS 2386(Part- 3):1963	1kg/l to 2.5kg/l
		Water Absorption	IS 2386(Part- 3):1963	0.1 to 10%
		Specific Gravity	IS 2386(Part- 3):1963	2.0 to 3.0
		Impact Value	IS 2386(Part- 4):1963	5 to 50%
		Crushing value	IS 2386(Part- 4):1963	5 to 50%
		Los Angeles Abrasion value	IS 2386(Part- 4):1963	5 to 50%
		10% Fines Value	IS 2386(Part- 4):1963	2 to 40 T
		Flakiness Index	IS 2386(Part- 1):1963	1 to 50%
		Elongation Index	IS 2386(Part- 1):1963	1 to 50%
5.	Fine Aggregate	Grading (Sieve Analysis)	IS 2386 (Part- 1)	10mm to 0.075mm
		Deleterious material:		
		a. Clay Lumps	IS 2386(Part- 2)	0.5 to 20%
		b. Materials Finer Than 75 μ	IS 2386(Part- 1)	0.1 to 20%
		Unit Weight (Bulk density)	IS 2386(Part- 3)	1 Kg/l to 2.5 Kg/l
		Water Absorption	IS 2386(Part- 3)	0.1 to 5%
		Specific Gravity	IS 2386(Part- 3)	2.0 to 3.0
6.	Cement	Density	IS 4031 (Part- 2): 1988	2 to 3.5 gm/cc
		Specific gravity	IS 4031(Part- 2):1988	2.70 to 3.20
		Fineness by blain air permeability	IS 4031(Part- 2):1988	150 m ² /kg to 550 m ² /kg
		consistency	IS 4031(Part- A):1988	20 % to 40 %
		Setting Time:		

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		a. Initial	IS 4031(Part- 5):1988	30min to 300 min
		b. Final	IS 4031(Part- 5):1988	100min to 600min
		Soundness:		
		a. Le Chatalier	IS 4031(Part- 3):1988	0.1 to 2.5mm
		b. Autoclave	IS 4031(Part- 3):1988	0.01 to 2.0%
		Compressive Strength	IS 4031(Part- 6):1988	5 N/mm ² to 80 N/mm ²
7.	Bricks	Compressive Strength	IS 3495(Part- 1):1992	5 N/mm ² to 50 N/mm ²
		Water Absorption	IS 3495(Part- 2):1992	1 to 50%
		Efflorescence	IS 3495(Part- 3):1992	Qualitative
		Dimensions:		
		Length	IS 1077-1992	4520 mm to 4680mm
		Width		2160 mm to 2240 mm
		Height		1360 mm to 1440 mm
8.	Precast Concrete Blocks For Paving	Dimension:		
		Length	IS 15658 (ANNEX-B)	50 to 1000mm
		Width	IS 15658 (ANNEX-B)	
		Height	IS 15658 (ANNEX-B)	
		Water Absorption	IS 15658 (ANNEX-C)	0.5 to 20 %
		Compressive Strength	IS 15658 (ANNEX-D)	2 to 65 N/mm ²
		Abrasion Resistance	IS 15658 (ANNEX-E)	1000 to 5000mm ³ / 5000mm ²
9.	Bitumen	Specific Gravity	IS 1202-1978	1.00 to 1.10
		Penetration	IS 1203-1978	30 to 80 Div. (1/10 th of mm)
		Softening Point	IS 1205-1978	20 to 200°C
		Flash Point	IS 1448(PART--69)	200 to 360°C
10.	Fly Ash Bricks	Dimensions :		
		Length(20 Bricks)	IS 12894-2002	4520 mm to 4680mm
		Width		2160 mm to 2240 mm
		Height		1360 mm to 1440 mm

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		Compressive Strength	IS 3495(PART--1)-1992	5 N/mm ² to 50 N/mm ²
		Efflorescence Test	IS 3495(Part--3)-1992	Qualitative
		Water Absorption	IS 3495(Part--2)-1992	1 to 50%
III.	SOIL AND ROCK			
1.	Soil	Maximum Dry Density	IS 2720 (Pt.-7)-1980 IS 2720 (Pt.-8)-1983	1.20 to 2.8gm/cm ³
		Optimum moisture content	IS 2720 (Pt.-7)-1980 IS 2720 (Pt.-8)-1983	2 to 20%
		Liquid Limit	IS 2720 (Pt.-5)-1985	10 to 50%
		Plastic Limit	IS 2720 (Pt.-5)-1985	10 to 30%
		CBR	IS 2720 (Pt.-6)-1987	1 to 100%
IV.	MECHANICAL PROPERTIES OF METALS			
1.	Ferrous & Non Ferrous Metals &Alloys Beams, Columns, Channels, Angle Sections, Tee Bars, Plates, Strips, Flats, Round and Square Bars, TMT Bars, Mild Steel Wires, Stranded Wires, MS Galvanized Sheets, Galvanized Pipes, Plates, Rounds, Square,	Tensile Test:		
		Tensile Strength	IS 1608-2005 (RA 2011)	50 to 1500 kN
		Yield Stress		50 to 1200 kN
		%age Elongation		20 to 70%
		%age Reduction Area		20 to 70%
		Hardness:		
		HRB	IS 1586-2000 (RA 2010)	20 to 91.4 HRB
		Hardness:		
		HRC	IS 1586-2000 (RA 2010)	20 to 60.2 HRC
		Hardness HV	IS 1501-2002 (RA 2007)	107 to 728 HV 5, 10, 30 Kg
	Mass Per Meter	IS 1786:2008 Amdt-3:2013	0.35Kg/mtr to 10Kg/Mtr	

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	Rectangular Pipes. Galvanized Steel Sheets and Galvanized steel barbed wire.	Determination of Mass Of Zinc Coating	IS 6745-1972 Amdt-5:2016	1 to 500 g/m ²
2.	Metal-Reinforcement steel	Bend test	IS 1599-2012	Qualitative 8 to 36mm dia.
		Re band	Cl. 9.4 of IS 1786 : 2008	Qualitative 8 to 36mm dia.