Laboratory	**Micro, Small & Medium Enterprises Testing Centre, 111 & 112 B. T. Road, Kolkata, West Bengal**
Accreditation Standard	**ISO/IEC 17025:2005**
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CHEMICAL TESTING

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
I.	**METAL & ALLOYS**			
1.	**Steel (Plain Carbon Steel, Low Alloy)**	Carbon	IS 228 (Part 1)	0.05% to 2.5%
		Sulphur	IS 228 (Part 9)	0.01% to 0.25%
		Phosphorous	IS 228 (Part 3)	0.01% to 1%
		Silicon	IS 228 (Part 8)	0.1% to 2%
		Manganese	IS 228 (Part 2)	0.1% to 1.5%
		Carbon	IS 228 (Part 1)	0.05% to 1.0%
		Sulphur	IS 228 (Part 9)	0.01% to 0.25%
		Phosphorous	IS 228 (Part 3)	0.01% to 1%
		Silicon	IS 228 (Part 8)	0.1% to 2%
		Manganese	IS 228 (Part 2)	0.1% to 1.5%
		Copper	IS 228 (Part 15)	0.1% to 4%
		Molybdenum	IS 228 (Part 7)	0.1% to 5%
		Nickel	IS 228 (Part 5)	0.2% to 30%
		Chromium	IS 228 (Part 6)	0.10% to 30%
2.	**Copper & Copper Alloys**	Copper	IS 440	40% to 99.9%
		Zinc	IS 3685	0.01% to 40%
		Tin	IS 4027	0.1% to 20%
		Manganese	IS 3685	0.05% to 5%
		Nickel	IS 3685	0.01% to 2%
		Iron	IS 3685	0.01% to 2%
		Antimony	IS 4027	0.01% to 10%
		Phosphorous	IS 4027	0.01% to 1.0%
		Silicon	IS 3685	0.01% to 5.0%
		Lead	IS 3685	0.05% to 5%
3.	**Aluminium & Aluminium Alloys**	Copper	ASTM E34	0.01% to 10%
		Lead	ASTM E34	0.01% to 10%
		Zinc	ASTM E34	0.01% to 10%
		Iron	ASTM E34	0.01% to 5%
		Bismuth	ASTM E34	0.01% to 2%
		Nickel	IS 504 (Part 7)	0.01% to 2%

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Silicon	IS 504 (Part 1)	0.01% to 11%
		Chromium	IS 504 (Part 8)	0.01% to 2%
		Manganese	ASTM E34	0.01% to 5%
		Magnesium	IS 504 (Part 6)	0.02% to 15%
		Tin	IS 504 (Part 9)	0.01% to 2%
4.	**Tin & Tin Alloys**	Tin	IS 998 (Part 1)	40% to 99.99%
		Copper	IS 998 (Part 2)	0 .1% to 5%
		Lead	IS 1940	0.1% to 60%
		Antimony	IS 998 (Part 1)	0.01% to 5%
		Iron	IS 998 (Part 2)	0.01% to 5%
5.	**Zinc & Zinc Alloys**	Copper	IS 2600 (Part 2)	0.001% to 10%
		Iron	IS 2600 (Part 2)	0.004% to 5%
		Cadmium	IS 2600 (Part 2)	0.001% to 5%
		Lead	IS 2600 (Part 2)	0.01% to 15%
6.	**Antifriction bearing Alloys**	Tin	IS 1409	4.5% to 93%
		Antimony	IS 1409	7% to 16%
		Cadmium	IS1409	0.05% to 0.1%
II.	**METALLIC COATING & TREATMENT SOLUTION**			
1.	**Metallic coating**	Mass of Zinc Coatings	IS 6745	5 gm/mm^2 to 1000 gm/mm^2
		Thickness of Zinc Coating	IS 6745	5 microns to 200 microns
		Uniformity of Zinc Coating	IS 2633	Qualitative
		Thickness of Nickel Coatings	IS 3203	5 microns to 100 Microns
		Thickness of Copper Coatings	IS 3203	5 microns to 100 Microns
		Thickness of Anodised Coatings	IS 5523	5 microns to 100 Microns
		Thickness of Tin Coatings	IS 1327	5 microns to 100 Microns

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Thickness of Cadmium Coating	IS 6012	5 microns to 100 Microns
III.	**BUILDING MATERIALS**			
1.	**Cement (PPC, PPC, White Portland Cement)**	Silica	IS 4032	10% to 60%
		Calcium oxide	IS 4032	20% to 75%
		Magnesium oxide	IS 4032	0.5% to 10%
		Ferric oxide	IS 4032	0.01% to 10%
		Alumina	IS 4032	0.1% to 20%
		Insoluble Residue	IS 4032	0.1% to 10%
		Chloride	IS 12423	0.001% to 0.4%
		Sulphuric Anhydride	IS 4032	1% to 5%
IV.	**PAINTS & SURFACE COATING**			
1.	**Ready Mixed Paints, Synthetic (Enamel Exterior, Interior, under-coating), PU Paints, Primers**	Mass/10Litre	IS 101(Part 1,sec-7)	0.7 kg/10L to 20 kg/10L
		Consistency (Ford Cup)	IS 101(Part 1,sec-5)	60 sec to 150 sec
		Finish	IS 101(Part 3,sec-4)	Qualitative
		Drying Time	IS 101(Part 3,sec-1)	Qualitative
		Colour (By Colour matching method)	IS 5	Qualitative
		Water Content	IS 101(Part 2,sec-1)	0.1% to 10%
		Flash Point	IS 101(Part 1,sec-6	27 ^{o}C to 60^{o}C
		Wet Opacity (By Cryptometer)	IS 101(Part 4,sec-1)	1 sq.m/10L to 300 sq.m/10L
		Scratch Hardness	IS 101(Part 5,sec-1)	Qualitative
		Flexibility & Adhesion	IS 101(Part 5,sec-2	Qualitative
		Gloss (45^0 & 60^0)	IS 101(Part 4,sec-4)	1 to 100
		Resistance to Lubricating Oil (By Immersion method)	IS 101(Part 7/Sec 2)	Qualitative
		Resistance to Petroleum Hydro Carbon (By Immersion method)	IS 101(Part 7/Sec 2)	Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Resistance to Water	IS 101(Part 7/Sec 1)	Qualitative
		Calcium Compounds	IS 63	0.01% to 5 %
		Lead Restriction	IS 101(Part 8/Sec 5)	0.001% to 1 %
		Resistance to Humidity under condition of condensation	IS 101(Part 6/Sec 1)	Qualitative
		Pigments Content	IS 101(p-8)/Sec 2)	0.01% to 80 %
		Non Volatile matter	IS 101 (p-8/Sec 2)	0.5% to 60 %
		Resistance to Heat	IS 101(Part 7/Sec 3)	Qualitative
		Volatile Matter	IS 101 (Part 2)Sec 2)	0.5% to 55 %

ELECTRICAL TESTING

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
I.	**LAMPS, LUMINAIRES & ACCESSORIES**			
1.	**Tungsten Filament Lamps for domestic and Similar general Lighting Purpose Upto 200 W and upto 250V**	Marking	IS 418 ,Cl. 6.0	Qualitative
		Lamp Dimensions	IS 418, Cl. 7.0	0.01 mm to 200 mm
		Initial Readings i) Wattage ii) Luminous Flux Initial	IS 418 ,Cl. 8.1 IS 418 ,Cl. 8.2	 Upto 200 W Upto 10000 Lumen
		Lumen Maintenance	IS 418, Cl. 9.0	Upto 10000 Lumen
		Life Test Requirements Truncated Average Life Individual Lamp	 IS 418 ,Cl. 10.1 IS 418, Cl. 10.2	 Voltage upto 300V Hour Meter 2000 Hrs
2.	**Incandescent Lamps (Tungsten Filament Lamp for Domestic and Similar General Lighting Purposes Upto 300 W and upto 250V**	Marking	IS 15518 (Part 1), Cl. 4.2	Qualitative
		Protection Against Accidental contact (Edison Screw caps)	IS 15518 (Part 1), Cl. 4.3	0.01 mm to 200 mm
		Lamp Cap Temp. rise Test	IS 15518 (Part 1), Cl. 4.4 IS 8913	Upto 200 ºC
		Resistance to Torque test	IS 15518 (Part 1) ,Cl. 4.5	Upto 4 Nm
		Insulation Resistance	IS 15518 (Part 1), Cl. 4.6	0 to 2000 MΩ, 500V,DC
		Accidental Live Parts (On Lamp Caps)	IS 15518 (Part 1) ,Cl. 4.7	0.01 mm to 200 mm
		Creepage Distance	IS 15518 (Part 1) ,Cl. 4.8	0.01 mm to 200 mm
		Safety at End of Life	IS 15518 (Part 1),Cl. 4.9	Upto 3.1 kV 10 W to 300 W Upto 250 V
		Interchangeability	IS 15518 (Part 1),Cl. 4.10IS	Std gauges B-22d,E-27

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
3.	**Compact Fluorescent Lamps: Self Ballasted lamps for General Lighting Services (CFL) for 2700K/6500K Upto and including 25 Watt and upto 250V**	Marking	IS 15111 (Part 1), Cl. 6	Qualitative
		Interchangeability	IS 15111 (Part 1),Cl. 7	Qualitative
		Protection against electric shock	IS 15111 (Part 1), Cl. 8	1 MΩ to 2000 MΩ, 500V,DC
		Insulation Resistance Electric Strength (Before & After Humidity Treatment)	IS 15111 (Part 1),Cl. 9	2000 MΩ, 500V,DC and 0 to 7.5kV,rms, AC
		Mechanical Strength	IS 15111(Part 1),Cl. 10	Upto 4 Nm
		Cap Temp. Rise	IS 15111(Part 1) & IS 8913, Cl. 11	Upto 200ºC
		Resistance to Heat	IS 15111(Part 1),Cl. 12	0.01 mm to 200mm
		Resistance to Flame & Ignition	IS 15111(Part 1),Cl. 13	1 ºC to 650 ºC 1 sec to 60 sec
		Fault Conditions	IS 15111(Part 1),Cl. 14	1 MΩ to 1000 MΩ at 1000V
4.	**Compact Fluorescent Lamps: Self Ballasted lamps for General Lighting Services (CFL) for 2700K/6500K Upto and including 25 Watt and upto 250V**	Dimension	IS 15111(Part 2),Cl. 6	0.01 mm to 200 mm
		Starting & Run-up	IS 15111(Part 2),Cl. 8	1 sec to 60 sec
		Lamp wattage	IS 15111(Part 2),Cl. 9	Upto 25 W and Upto 250V
		Luminous Flux	IS 15111(Part 2), Cl. 10	Upto 10000 Lumen
		Color	IS 15111(Part 2), Cl. 11	X - Y Coordinates Upto 6500 K/2700K
		Lumen Maintenance	IS 15111(Part 2), Cl. 12	Upto 2000 Lumen
		Life	IS 15111(Part 2),Cl. 13	1 V to 300 V and 1 hrs to 9999 hrs
		Harmonics	IS 15111(Part 2),Cl. 14	1 to 45
		Lamp Efficacy	IS 15111(Part 2),Cl.15	Lamp Efficacy 42 to 60
		Power Factor	IS 15111(Part 2), Cl. 16	Upto 1
		Test for conducted Emission of Radio Frequency Disturbances	IS 15111(Part 2),Cl. 5.7& Annex C	Frequency range : 9kKz to 30MHzLimit dB (µV) : Quasi peak : 56 to 110 Average : 46 to 56

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Test for Radiated Emission of radio Frequency Disturbances	IS 15111(Part 2),Cl. 5.7& Annex C	9kKz to 30 MHz,Limits for Loop Diameter dB (μA) : 22 to 88
II.	**CELL & BATTERIES**			
1.	**Multipurpose Dry Batteries (R6, & R20 type)**	Checking of dimensions and terminal	IS 8144, Cl. 5 & 7	Qualitative
		Checking of Markings	IS 8144, Cl. 9	0.01 mm to 200mm
		Initial Life test	IS 8144, Cl.10.4	0.01 V to 10 V
		Delayed life test	IS 8144,Cl. 10.5	0.01 V to 10 V
		Materials and construction	IS 8144,Cl.6	Qualitative
		Delayed life test under dry heat conditions	IS 8144,Cl.10.6	Up-to 96% R.H. 0.01 to 10 V
		Leakage test for batteries marked leak proof or any other marking to similar effect	IS 8144,Cl. 10.7	0.01 V to 10 V
		Checking of dimensions and terminal	IS 9128, Cl. 5 & 7	Qualitative
		Checking of Markings	IS 9128, Cl. 9	0.01 mm to 200mm
		Initial Life test	IS 9128, Cl. 10.4	0.01 V to 10 V
		Delayed life Test	IS 9128, Cl. 10.5	0.01 V to 10 V
		Materials and construction	IS 9128,Cl. 6	Qualitative
		Delayed life test under dry heat conditions	IS 9128,Cl. 10.6	Up-to 96% R.H. 0.01 to 10 V
		Resistance to leakage of Electrolyte	IS 9128,Cl. 10.7	0.01 V to 10 V

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
III.	**WIRING ACCESSORIES**			
1.	**Electrical Ceiling Type Fans And Regulators**	Air Delivery	IS 374, Cl. 10.3	Upto 500m/minute
		Temperature rise	IS 374,Cl. 10.4	0.01 Ω to 1k ohms and 1 ºC to 135ºC
		Leakage current	IS 374,Cl. 10.5	1 µA to 5000 µA
		High Voltage	IS 374,Cl. 10.6	7.5 KV,AC
		Insulation Resistance	IS 374,Cl. 10.7	1 MΩ to 2000 MΩ, 500V,DC
		Starting	IS 374,Cl. 10.8	1 V to 300V
		1) Speed and input 2) Power factor	IS 374,Cl. 10.9	1 RPM to 30,000RPM 0.1 W to 300W Upto 1.0
		Earthing Continuity	IS 374,Cl. 10.10	1 A to 25A,
		Protection against electric shock (For Regulator)	IS 374,Cl. 10.11	Qualitative
		Moisture Resistance (for Regulators only)	IS 374,Cl. 10.12	Upto 98% R.H.
		Mechanical Strength (for Regulators only)	IS 374,Cl. 10.13	0.2 Nm to 1Nm
		Suspension system	IS 374,Cl. 10.14	1000Kgf & 500Kg cm
		Creepage distance and clearance	IS 374,Cl. 10.15	0.01mm to 200 mm
		Mechanical endurance (for Regulators only)	IS 374,Cl. 10.16	1 to 2500 Operations
		Size	IS 374,Cl. 3.0	0.1 m to 1 m & 0.01 mm to 200 mm
		Heat Resistance	IS 374,Cl. 6.4	0.01°C to 50°C
		Speed Regulators	IS 374,Cl. 7.9	1 RPM to 30,000 RPM
		Interchangeability	IS 374, Cl. 7.11	1 RPM to 30,000RPM 1 W to 300W
		Performance requirement	IS 374, Cl. 8	Upto 500 m/minute 1 Wto 300W

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
2.	**Propeller Type ac Ventilation Fans**	Starting	IS 2312, Cl. 10.1	1 V to 300V
		Air Delivery	IS 2312, Cl. 14.2	Upto 500m/minute
		Temperature rise	IS 2312, Cl. 14.3	upto 5k ohms and Upto 135ºC
		Moistureproofness (For Regulator only)	IS 2312,Cl. 14.4	Upto 98% R.H.
		Mechanical endurance (for regulators only	IS 2312, Cl. 14.5	1 to 2500 Operations
		Power Factor	IS 2312,Cl. 14.6	1.0
		Ac Leakage test	IS 2312, Cl. 14.7	1 µA to 5000 µA
		High Voltage	IS 2312, Cl. 14.8	7.5 KV,AC
		Insulation Resistance	IS 2312, Cl. 14.9	1 MΩ to 2000 MΩ, 500V,DC
		Earthing Continuity	IS 2312, Cl. 14.10	0 to 25 A,
		Electrical input	IS 2312, Cl. 14.11	0 to 300W/1500W 0 to 2A
		Fan Speed	IS 2312, Cl. 14.12	1 to 30,000RPM
IV.	**TRANSMISSION LINE EQUIPMENT & ACCESSORIES**			
1.	**Electrical Materials/Conductors(Conductors for Overhead Transmission purpose)**	Resistance test (Corrected to 20 deg. C) Above 2mΩ	IS 398(Part 1-4)	0.001 mΩ to 20 mΩ

MECHANICAL TESTING

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
I.	**BUILDING MATERIALS**			
1.	**Steel Doors, Windows and Ventilators**	Dimension	IS 1038,Table -1, Clause-5.3	0.01mm to 3000 mm
2.	**Steel sections**	Dimension	IS 7452,Cl. 6.1 and Fig – 2	0.001mm to 150 mm
3.	**Steel Door Frames**	Dimension	IS 4351, Cl. 6.0 and Fig -1	0.001mm to 3000 mm
4.	**Structural steel sections**	Dimension	IS 4923	0.01mm to 10000 mm
		Mass	IS 4923	upto 100 kg
5.	**Hot Rolled Structural Steel**	Dimension	IS 20621	0.01mm to 10000 mm
		Mass	IS 20621	20 gm to 300 gm
6.	**Concrete**	Crushing Strength	IS 456	Upto 1000 KN
		Tensile	IS 1734(Part 9) IS 2380(Part 5)	Upto 10 KN
7.	**Timber**	Static bending Modules of Rupture	IS 1734(Part 9) IS 2380(Part 5)	Upto 10 KN
		Screw Holding	IS 1734(Part 9) IS 2380(Part 5)	Qualitative
		Nail Holding	IS 1734(Part 9) IS 2380(Part 5)	Qualitative
8.	**Ply Board**	Glue Shear Strength	IS 1734(Part 4)	Upto 10 KN
		Water Resistance	IS 1734(Part 6)	Upto 10 KN
		Mycological	IS 1734(Part 7)	Qualitative
		Tensile	IS 1734(Part 9) IS 2380 (Part 5)	Qualitative
		Static Bending Strength	IS 1734(Part11) IS 2380(Part4)	Upto 10 KN
		Modulus of Rupture	IS 2380(Part4)	Upto 10 KN
		Screw Holding	IS 1734(Part 19)	Qualitative
		Nail Holding	IS 2380(Part 14)	Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
IIA.	**PERFORMANCE / DURABILITY / SAFETY TEST - Domestic Appliances**			
1.	**Non pressure stoves (Kerosene wick stove)**	Dimension	IS 2980,Cl 5.4	0.001mm to 1000 mm
		Thermal efficiency	IS 2980, Cl.6.2	Up to 65 % Qualitative
		Fuel temp.	IS 2980, Cl. 6.4	10°C to 65°C
		Stability	IS 2980, Cl. 6.9	Qualitative
		Surface Temp	IS 2980, Cl. 6.6, Annex – E	10°C to 65°C
		Ability withstand Heavy Load	IS 2980,Cl. 6.10	Qualitative
2.	**LPG Cylinders**	Capacity	IS 3196 (Part 1& Part 3), Cl. 14.0	Upto 35.0 L
		Pressure Hydraulic Pneumatic Hydro stretch Bursting	IS 3196 (Part 1& Part 3), Cl. 14,15,16.1,17.1,17.2	Upto 10 kg/cm² to Upto 25 kg/cm ² Qualitative Upto 150 kg/cm² Qualitative
		Valve protection	IS 3196 (Part 1& Part 3), Cl. 9	Qualitative
		Handle Pull	IS 3196 (Part 1& Part 3),Cl.10.1	10 kg to 100 kg
IIB.	**PERFORMANCE / DURABILITY / SAFETY TEST - Industrial Equipment / Instruments / Products**			
1.	**Delivery Coupling, Branch Pipe, Nozzle**	Dimension	IS 903,Cl 5.3 Fig -2, 3 & 4	Upto 300 mm
		Hydrostatic Pressure	IS 903, Cl. 5.4, Cl 6.3 and 7.3	Upto 25 kg / cm°, Qualitative
2.	**Fire Extinguisher, Carbon Dioxide Type (Portable & Trolley Mounted)**	Dimension	IS 2878,Cl. 6.4 (except fire test)	0.01mm to 3000 mm
		Leakage test	IS 2878, Cl 9.3	Qualitative
		Intermittent operation		Qualitative
3.	**Gas cartridges for use in fire extinguishers**	Capacity and content	IS 4947,Cl. 6	20 gm to 300 gm
		Performance requirement Hydraulic pressure Ultimate failure	IS 4947,Cl. 7.1 & Cl. 7.2	Upto 250 kg/cm ² Upto 700 kg/cm² Qualitative
		Dimension	IS 4947, Cl. 3.2,Fig -1	0.01mm to 1000 mm

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
4.	**Foot valves**	Pressure	IS 4038, Cl. 6.1.1 & 6.1.2	Upto 0.7 MPa Qualitative
		Dimension	IS 4038,Table-2, 3, 4 & 5	0.01 mm to 1000 mm
5.	**Swing Check Type Reflux / Non-Return Valves**	Pressure	IS 5312, (Part 1), Table 5	Upto 2.5 MPa Qualitative
		Dimension	IS 5312, (Part 1),Table 2 & 3	0.01 mm to 1000 mm
6.	**Butterfly valves for general purposes**	Pressure	IS 13095,Table 3	Upto 6.0 kg / cm ² Qualitative
		Dimension	IS 13095,Table -1	0.01 mm to 300 mm
7.	**Sluice Valve for Water Works Purposes**	Pressure	IS 14846,Table 5	Upto 2.5 MPa Qualitative
		Dimension	IS 14846,Table 2 & 3	0.01 mm to 1000 mm L.C. 0.01 mm
8.	**Landing valves**	Water tightness	IS 5290	Upto 15 kg/cm ² Qualitative
		Hyd. Pressure		Upto 22 kg/cm ² Qualitative
		Flow		Upto 2000 lpm
		Dimension		0.01mm to 300 mm
9.	**Cast iron fittings for pressure pipes (upto NB 300 mm)**	Dimension	IS 1538,Table 2 to 28	0.01mm to 3000 mm
		Pressure	IS 1538, Cl. 8	Upto 2.5 MPa, Qualitative
		Mass	IS 1538	0.2 kg to 300 kg
10.	**Centrifugally cast (spun) iron pressure pipes**	Dimension	IS 1536	0.01mm to 600 mm
		Pressure		0.5 mm to 1000 mm
		Mass		0.2 kg to 300 kg
		Straightness		Qualitative
11.	**Vertically cast iron pressure pipes**	Dimension	IS 1537	0.01mm to 5000 mm
		Pressure	IS 1537	Upto 25 kg/cm², Qualitative
		Mass	IS 1537	0.2 kg to 300 kg
12.	**Steel Tubes, Tubular & Wrought Steel fittings**	Dimension	IS 1239 (pt 1), Table 3,4 &5	0.01mm to 300 mm L.C. 0.01 mm
		Pressure,	IS 1239 (pt 1),Cl 13.1.1	Up to 2.5 MPa Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Mass	IS 1239 (pt 1)	0.2 kg to 100 kg
		Bend	IS 1239 (pt 1),Cl. 14.2	Upto 50 mm diameter Qualitative
13.	**Centrifugally cast(Spun)Iron spigot & socket soil pipe**	Dimension	IS 3989,Table 1 to 22	0.01mm to 3000 mm
		Pressure	IS 3989	Upto 0.8 MPa Qualitative
		Mass	IS 3989	0.2 kg to 100 kg
14.	**Horizontally cast iron double flanged pipes**	Dimension Straightness	IS 7181,Table 2 to 4 IS 7181,Cl 8.5	0.01mm to 3000 mm
		Pressure	IS 7181,Table 1	Upto 2.5 MPa Qualitative
		Mass	IS 7181	0.2 kg to 300 kg
15.	**Cast iron detachable joints Upto 300 mm**	Dimension	IS 8794	0.01mm to 300 mm
		Pressure		Upto 2.5 MPa, Qualitative
		Mass		0.2 kg to 50 kg
16.	**Ductile Iron Pressure Pipe**	Dimension Thickness Permissible deviation	IS 8329	0.01 mm to 300mm 0.5 mm to 1000mm 1.0 mm to 3000mm
		Pressure		Upto 5.0 MPa Qualitative
17.	**Ductile Iron Fittings**	Dimension	IS 9523	0.01mm to 1000 mm
		Pressure		Upto 2.5 MPa Qualitative
18.	**Washer**	Dimension	IS 937	0.01mm to 300 mm
19.	**Gland Packing-Jute & hemp**	Dimension	IS 5414	0.01mm to 300 mm
20.	**Washers for water fittings for fire Fighting purpose**	Dimension	IS 5382	0.01mm to 300 mm
21.	**Bitumen Drums**	Volume	IS 3575	Upto 220 L
		Dimension	IS 3575	0.001mm to 1000 mm
22.	**Drums, Large, Fixed Ends**	Volume	IS 1783 (Part 1)	Upto 220 L
		Pressure	IS 1783 (Part 1)	Upto 2.0 kg/cm ^{2} Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Drop	IS 1783 (Part 2)	Qualitative
		Dimension	IS 1783 (Part 2)	0.01mm to 1000 mm
23.	Drum Large Open Top	Dimension	IS 13997	0.001mm to 1000 mm
		Leakage	IS 13997	upto 2.0 kg/cm ² Qualitative
24.	Steel tube for Idlers for Belt conveyors	Dimension	IS 9295	0.01mm upto 300 mm
		Pressure	IS 9295	upto 25 kg/cm ² Qualitative
25.	C.I. Step for Manhole covers	Dimension	IS 5455	0.01mm to 1000 mm
26.	Cast Iron Manhole Covers	Dimension	IS1726	0.01mm to 1000 mm
		Mass	IS1726	0.2 kg to 100 kg
III.	SUB ASSEMBLY / ANCILLARIES / ACCESSORIES			
1.	Powrah	Dimension	IS 1759	0.01mm to 1000 mm
		Mass	IS 1759	0.2 kg to 100 kg
2.	Shallow Hand pump	Dimension	IS 8035	0.01mm to 1000 mm
		Pressure	IS 8035	upto 2.0 kg /cm ² Qualitative
		Discharge	IS 8035	Qualitative
3.	Hexagonal Head Bolts	Dimension	IS 1363 (Part 1)	0.01mm to 300 mm
4.	Hexagonal Head Nuts	Dimension	IS 1363 (Part 2)	0.01mm to 300 mm
IV.	MECHANICAL PROPERTIES OF METALS			
1.	Ferrous & Non-Ferrous Bars, Round, Angle, Channels, Sheets	Brinell Hardness	IS 1500	100 HBW to 350 HBW 2.5/187.5, 5/750, 10/3000,
		Rockwell Hardness (B & C Scales)	IS 1586	20 HRB to 100 HRB 20 HRC to 70 HRC
		Vickers Hardness	IS 1501	100HV to 900HV (HV5 / HV30)

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Tensile	IS 1608 IS 10810(Part37) IS 814 IS 12447 IS 4923	Up to 1000 KN
		Bend	IS 1599 IS 6240	Qualitatiive (Mandrel Dia Up to 200 mm)
		Reverse Bend	IS 1716	Qualitatiive (Mandrel Dia Up to 200 mm)
		Re bend	IS 1786	Qualitatiive (Mandrel Dia Up to 200 mm)
		Wrapping	IS 1755 IS 10810	Qualitatiive (Up to 5 mm Diameter)
		Torsion	IS 1717 IS 10810(Part38)	Quantitative (Up to 5 mm Diameter)
		Flattening	IS 2328	Qualitative (Diameter 2 mm to 200 mm)
		Breaking Load and Elongation	IS 398(Part1,2,3,4)	Upto 10 KN El: (5% to 45%)
		Erichesen Cupping Test of Sheet & Strip	IS 10175(Part1)	Upto 5 mm Thick
		Impact Charpy V-Notch Charpy U-Notch	IS 1757	Upto 300 J Upto - 40^0C
		Izod	IS 1598	Upto 168 J 15^0C to 38^0C
2.	**Fasteners**	Proof Load Wedge Load Bolt Size up to 32 mm	IS 1367(Part 6) IS 1367(Part3) IS 1363(Part-1) IS 1364(Part1)	Upto 1000 KN (Qualitative)
		Shear Strength	IS 1367(Part2) IS 12467	Upto 20 mm Dia

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
V.	**METALLOGRAPHY TEST**			
1.	**Welded & Joints**	Micro-structural Analysis	ASM Metals Handbook, Vol 7 Atlas of Microstructure, IS 7754 IS 3600(Part 9)	Upto 500 X magnification (Qualitative)
		Macro-Structural Analysis	IS 1038	10X magnification (Qualitative)
VI.	**RUBBER & LEATHER**			
1.	**Rubber, FRP, Phenolic Plastic, DMC, Leather**	Tensile & Elongation	IS 3400(Part 1) IS 10810(Part 7)	Upto 10 KN El: 20% to 600%
		Shore Hardness Type, A	IS 13360(Part 5/ Sec II & III) IS 5914,IS 3400(Part 4)	Upto 100^0A
		Flexural / Cross Breaking Strength	IS 10810(Part 11)	Upto 1000 KN
		Compression Set at Constant Strain for Rubber	IS 3400(Part 23) IS 867 IS 1998 IS 3400(Part 10)	Upto 500 Kg / cm^2 Cylindrical Disc, Size :29 mm dia/12.5 mm Thick & 13 mm dia./6.3 mm thick
		Accelerated Ageing in Oven	IS 3400(Part 4) IS 10810(Part11)	Qualitative
		Screw Holding	IS 1734(Part 19)	Qualitative
		Nail Holding	IS 2380(Part 14)	Qualitative

Laboratory	**Micro, Small & Medium Enterprises Testing Centre, 111 & 112 B. T. Road, Kolkata, West Bengal**		
Accreditation Standard	**ISO/IEC 17025:2005**		
Certificate Number	**TC-5390**	**Page 17 of 17**	
Validity	**27.03.2017 to 26.03.2019**	**Last Amended on --**	

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		NON-DESTRUCTIVE TESTING		
I.	**METAL & ALLOYS**			
1.	**Metals & Alloys**	Radiography (X-Ray)	IS 3196(Part 2) IS 2825 IS 1182 IS 12938 IS 4853	1 mm to 20mm
		Liquid Penetrant Test (Visible, solvent removal)	IS 3658	Open to surface

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