Laboratory	**National Test House (N.R.), Kamla Nehru Nagar, Ghaziabad, Uttar Pradesh**		
Accreditation Standard	**ISO/IEC 17025: 2017**		
Certificate Number	**TC-6870**	**Page 1 of 73**	
Validity	**30.07.2019 to 06.02.2020**	**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

BIOLOGICAL TESTING

I.	**WATER**			
1.	**Drinking Water**	E. coli	IS 1622-1981 (MPN Method)	Present/Absent per 100ml
		Total Coliform Bacteria	IS 1622-1981 (MFT)	Present/Absent per 100ml
2.	**Packaged Natural Mineral Water & Packaged Drinking Water (Other than Packaged Natural Mineral Water)**	E. coli	IS 15185:2002	Present/Absent per 250 ml
		Coliform Bacteria	IS 5401 (Part 1):2002 IS 15185:2002	Present/Absent per 250ml
		Faecal streptococci	IS 5887 (Part 2)-1976 (RA 2009) IS 15186:2002 (RA 2007)	Present/Absent per 250ml
		Staphylococcus aureus	IS 5887 (Part 2):1976 (RA 2009)	Present/Absent per 250ml
		Sulphite Reducing anaerobes	IS 13428:2005	Present/Absent per 50ml
		Pseudomonas aeruginosa	IS 13428:2005	Present/Absent per 250ml
		Yeast and Mould	IS 5403:1999 (RA 2005)	Present/Absent per 250ml
		Salmonella	IS 15187:2002 (RA 2007)	Present/Absent per 250ml
		Shigella	IS 5887 (Part 7):1999 (RA 2005)	Present/Absent per 250ml
		Vibrio cholerae	IS 5887(Part 5):1976 (RA 2005)	Present/Absent per 250ml
		Vibrio parahaemolyticus	IS 5887(Part 5):1976 (RA 2005)	Present/Absent per 250ml

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Aerobic Microbial Count i) At 20 to 22^0 C in 72 h ii) At 37^0 C in 24 h	IS 14543:2004	≥ 1 CFU/per ml

NOTE:The Laboratory has demonstrated competence for the stated scope for **WATER**. This however **does not fully cover** the specification requirements of **BIS for the Packaged Drinking Water as per IS:14543 and the Packaged Natural Mineral Water IS:13428.**

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection

CHEMICAL TESTING

I.	**BUILDING MATERIALS**			
1.	**Cement:** **33-grade OPC** **43-grade OPC** **53-grade OPC** **SRC-Cement** **PPC-Cement** **Slag Cement** **White Cement**	Lime content	IS 4032-1985 (RA 2009) Amend. No.2 March 2010	30% to 70%
		Iron oxide		0.3% to 15%
		Alumina		0.3% to 30%
		Sulphuric anhydride		0.5% to 4%
		Magnesium oxide		0.10% to 10%
		Chloride content		0.01% to 1%
		Insoluble residue		0.1% to 35%
		Loss on ignition		0.1% to 10%
		Sulphide sulphur		0.1% to 3%
		Silica content		15% to 30%
2.	**Fly Ash**	Lime content	IS 1727	0.5% to 20%
		Iron Oxide		0.3% to 10%
		Alumina		15% to 35%
		Sulphuric anhydride		0.5% to 6%
		Magnesium oxide		0.1% to 10%
		Silica Content		25% to 65%
		Loss on Ignition		0.1% to 10%
		Chloride Ion Content		0.01% to 1%
3.	**Ad Mixture**	Dry Material Content	Annex E of IS 9103-1999	30% to 60 %
		Ash Content		0.01% to 10.0 %
		Relative density		1.0% to 1.5 %
		pH		5 to 10
		Chloride Ion Content	IS 6925	0.01% to 2.0 %
4.	**Marine Plywood & Plywood for Shuttering**	Retention of Preservative as CCA & CCB	IS 2753-(Part-I)-1991	1 Kg/m^3 to 15 Kg/m^3

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
II.	**METALS & ALLOYS**			
1.	**Alloy Steel**	Carbon	IS 228 Pt.1-1987 (RA 2012) & IS8811-1998 (RA 2012)	0.01% to 2.5%
		Manganese	IS 228 Pt.2-1987 (RA 2012) & IS8811-1998 (RA 2012)	0.01% to 1.0%
		Silicon	IS 228Pt.8-1989 (RA 2014) & IS8811-1998 (RA 2012)	0.05% to 2.0%
		Sulphur	IS 228Pt.9-1989 (RA 2014) & IS8811-1998 (RA 2012)	0.005% to 0.25%
		Phospourus	IS 228Pt.3-1987 (RA 2012) & IS8811-1998 (RA 2012)	0.005% to 0.25%
		Chromium	IS 228Pt.6-1987 (RA 2014) & IS8811-1998 (RA 2012)	0.005% to 2.0%
		Nickel	IS 228Pt.5-1987 (RA 2009) & IS8811-1998 (RA 2012)	0.05% to 5.0%
		Molybdenum	IS 8811-1988 (RA2012)	0.0005% to 3.0%
		Tungsten	IS 8811-1988 (RA2012)	0.0001% to 2.0%
		Vanadium	IS 8811-1988 (RA2012)	0.0004% to 1.0%
		Copper	IS 8811-1988 (RA2012)	0.001% to 1.0%
		Nitrogen	IS 8811-1988 (RA2012)	0.001% to 0.1%
		Titanium	IS 8811-1988 (RA2012)	0.001% to 0.2 %
		Niobium	IS 8811-1988 (RA2012)	0.001% to 0.2 %
2.	**Stainless Steel**	Carbon	IS 228 Pt.1-1987 (RA 2012) & IS 9879-1998(RA 2015)	0.05% to 1.0%

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Manganese	IS 228Pt.2-1987 (RA 2012) & IS 9879-1998(RA 2015)	0.5% to 3.0%
		Silicon	IS 228Pt.8-1989& (RA 2014)& IS 9879-1998(RA 2015)	0.1% to 5.0%
		Sulphur	IS 228Pt.9-1989(RA 2014)& IS 9879-1998(RA 2015)	0.001% to 0 .25%
		Phosphorus	IS 228Pt.3-1987(RA 2012) & IS 9879-1998(RA 2015)	0.001% to 1.0%
		Chromium	IS 228Pt.6-1987RA2014& IS 9879-1998(RA 2015)	8.0% to 22.0%
		Nickel	IS 228(Pt.5)-87 (RA 2014)&IS9879-1998 (RA 2015)	5.0% to 12.0%
		Molybdenum	IS 9879-1998(RA 2015)	0.002% to 2.0%
		Aluminium	IS 9879-1998(RA 2015)	0.002% to 1.0%
		Vanadium	IS 9879-1998(RA 2015)	0.001% to 1.0%
		Copper	IS 9879-1998(RA 2015)	0.001% to 1.0%
		Nitrogen	IS 9879-1998(RA 2015)	0.001% to 0.1%
		Titanium	IS 9879-1998(RA 2015)	0.001% to 0.2 %
		Niobium	IS 9879-1998(RA 2015)	0.001% to 0.2 %
3.	**Aluminium Alloys**	Copper	ASTM E 1251-2011	0.01% to 0.30%
		Silicon	ASTM E 1251-2011	0.03% to 1.3%
		Manganese	ASTM E 1251-2011	0.03% to 1.5%
		Iron	ASTM E 1251-2011	0.35% to 1.0%
		Zinc	ASTM E 1251-2011	0.0005% to 0.25%
		Chromium	ASTM E 1251-2011	0.01% to 0.25%
		Titanium	ASTM E 1251-2011	0.008% to 0.20%
		Magnesium	ASTM E 1251-2011	0.10% to 1.8%
4.	**Copper & its alloys**	Tin	BS EN 15079-2015	0.004% to 8.0%
		Zinc	BS EN 15079-2015	0.1% to 37.0%
		Lead	BS EN 15079-2015	0.01% to 10.0%
		Nickel	BS EN 15079-2015	0.1% to 3.0%

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Silicon	BS EN 15079-2015	0.01% to 5.0%
		Antimony	BS EN 15079-2015	0.01% to 5.0%
		Iron	BS EN 15079-2015	0.01% to 8.0%
		Copper	BS EN 15079-2015	60.0% to 85.0%
		phosphorus	BS EN 15079-2015	0.01% to 3.0%
		Aluminium	BS EN 15079-2015	0.001% to 0.50%
5.	**GI Metal**	Mass of zinc coating.	IS 6745-1972 (RA 2016)	50 gm/m^2 to 800 gm/m^2
		Uniformity of zinc coating.	IS 2633-1986 (RA 2016)	Qualitative
6.	**Aluminium & its alloys**	Thickness of anodic coating.	IS 5523-1983 (RA 2016)	2.0 micron to 35.0 micron
III.	**PAINTS & SURFACE COATINGS**			
1.	**Enamel Paint (Finishing/ Under Coating)**	Drying Time	IS 101(Part 3/Sec-1)-1986 (RA 2007)	2 to 24 hrs
		Colour	IS 101(Part 4/Sec-2)-1989 IS 5-2007 (RA 2009)	Qualitative
		Consistency	IS 101(Part 1/Sec-5)-1989 (RA 2009)	Qualitative
		Fineness of grind	IS 101(Part 3/Sec-9)-1987 (RA 2009)	10µ to 100µ
		Finish	IS 101(Part 3/Sec-4)-1987 (RA 2009)	Qualitative
		Gloss 60º	IS 101(Part 4/Sec-4)-1988 (RA 2012)	0 to 90
		Mass in kg/10L	IS 101(Part 1/Sec-7)-1987 (RA 2009)	5 to 20 kg/10 ltr
		Fastness to Light	IS 101(Part 4/Sec-3)-1988 (RA 2004)	Qualitative
		Scratch hardness test	IS 101(Part 3/Sec-5)-1987 (RA 2009)	Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Flexibility & adhesion test	IS 101(Part 5/Sec-2)-1988 (RA 2004)	Qualitative
		Resistance to water	IS 101(Part 7/Sec-1)-1989 (RA 2009)	Qualitative
		Flash point	IS 101(Part 1/Sec-6)-1987 (RA 2009)	20^0 to 70^0 C
		Wet opacity	IS 101(Part 4/Sec-1)-1988 (RA 2009)	80 to 300 m^2/10 ltr
		Volume solids	IS 101(Part 8/Sec-6)-1993 (RA 2004)	10% to 50%
		Accelerated storage stability test	IS 133 Annex E, IS 2932 Annex G, IS 8662 Annex F	Qualitative
		Freedom from yellowing	IS 133-2013 Clause 5.7	Qualitative
		Application properties	IS 2932 Cl.6.6, IS 8662 Cl.6.2.6	Qualitative
		Lead-restricted material(Lead Content)	IS 101(Part 8/Sec-5)-1993 (RA 2004)	0.1% to 1.0%
		Phthalic anhydride	IS 101(Part 8/Sec-4)-1993 (RA 2004)	8.0% to 30.0 %
		Viscosity by ford cup	IS 101(Part 1/Sec-5)-1989 (RA 2009)	40 sec to 150 sec
		Non Volatile Matter	IS 101(Part 2/Sec-2)-1986 (RA 2012)	10% to 50 %
		Resistance to Acid	IS 2932(Part-1)-2013 Annex E IS 8662-2004 Cl. 6.4	Qualitative
		Resistance to Alkali	IS 2932(Part-1)-2013 Annex F IS 8662-2004 Cl. 6.5	Qualitative
2.	**Ready mixed red oxide zinc chrome priming/ready mixed paint brushing, finishing**	Lead Content (Lead restriction test)	IS 101(Part 8/Sec-5)-1993 Cl. 3 (RA 2004)	0.1% to 1.0%
		Consistency	IS 101(Part 1/Sec-5)-1989 (RA 2009)	10 sec to 180 sec
		Resistance to salt spray	IS 2074-2015	Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	semi-gloss.	Water content	IS 101(Part 2/Sec-1)-1988 (RA 2009)	0.1% to 1.0%
		Drying time	IS 101(Part 3/Sec-1)-1986 (RA 2007)	1 to 24 hrs
		Finish	IS 101(Part 3/Sec-4)-1987 (RA 2009)	Qualitative
		Fineness of grind	IS 101(Part 3/Sec-5)-1987 (RA 2009)	10 µ to100 µ
		Gloss 45^0 & 60^0	IS 101(Part 4/Sec-4)-1988 (RA 2012)	0 to 20
		Colour	IS 101(Part 4/Sec-2)-1989 (RA 2009)IS 5-2007	Qualitative
		Mass in kg/10L	IS 101(Part 1/Sec-7)-1987 (RA 2009)	5 to 20 kg/10 ltr
		Scratch hardness test	IS 101(Part 3/Sec-5)-1987 (RA 2009)	Qualitative
		Volume solids	IS 101(Part 8/Sec-6)-1993 (RA 2004)	10% to 50%
		Flexibility & adhesion test	IS 101(Part 5/Sec-2)-1988 (RA 2004)	Qualitative
		Protection Against Corrosion under conditions of Condensation	IS 101(Part 6/Sec-1)-1988 (RA 2005)	Qualitative
		Flash point	IS 101(Part 1/Sec-6)-1987 (RA 2009)	30 ^{0}C to 70 ^{0}C
		Accelerated storage stability test	IS 2074-2015, Annex E, IS 13607-1992, (RA 2009) Annex C	Qualitative
		Pigment Content	IS 101(Part 8/Sec-2)-1990 (RA 2007)	10% to 60%
		Pigment Composition a) Zinc Oxide b)Chromic Anhydride c) Iron Oxide	 IS 2074-2015, Annex B IS 2074-2015, Annex B IS 44-1991, RA 2002	 2% to 15% 2% to 25% 5% to 80%

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
3.	**Aluminium paint**	Form & Condition	IS 289-1963	Qualitative
		Consistency	IS 101(Part1/Sec-5)-1989 (RA 2009)	50 sec to 150 sec
		Residue on Sieve	IS 101(Part 8/Sec-1)-1989 (RA 2008)	0.2% to 3.0%
		Drying time	IS 101(Part 3/Sec-1)-1986 (RA 2007)	2 to 20 hrs.
		Finish	IS 101(Part 3/Sec-4)-1987 (RA 2009)	Qualitative
		Grease content	IS 289-1963 (RA 2009) App. B	0.1% to 4.0 %
		Protection against corrosion under conditions of condensation.	IS 101(Part 6/Sec-1)-1988 (RA 2008)	Qualitative
		Flash point	IS 101(Part 1/Sec-6)-1987 (RA 2009)	20 ^{0}C to 70 ^{0}C
		Volatile matter	IS 101(Part 2/Sec-2)-1987 (RA 2012)	10% to 60%
		Mass in kg/10L	IS 101(Part 1/Sec-7)-1987 (RA 2009)	2 to 15 kg/10 ltr
		Leafing Value	IS 289-1963 (RA 2009) App. A	10% to 80%
		Flexibility & adhesion test	IS 101(Part 5/Sec-2)-1988 (RA 2004)	Qualitative
		Wet opacity	IS 101(Part 4/Sec-1)-1988 (RA 2009)	50 to 350 m^2/10 ltr
4.	**Varnish**	Resistance to water	IS 101(Part 7/Sec-1)-1989 (RA 2009)	Qualitative
		Acid value	IS 101(Part 9/Sec-1)-1993 (RA 2004)	2 to 10
		Scratch hardness test	IS 101(Part 3/Sec-5)-1987 (RA 2009)	Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Flash point	IS 101(Part 1/Sec-6)-1987 (RA 2009)	10 ^{0}C to 40 ^{0}C
		Drying time	IS 101(Part 3/Sec-1)-1986 R (RA 2007)	30 min-8 hrs.
		Finish	IS 101(Part 3/Sec-4)-1987 (RA 2009)	Qualitative
		Volatile matter	IS 101(Part 2/Sec-2)-1987 (RA 2012)	20% to 70%
		Flexibility & adhesion test	IS 101(Part 5/Sec-2)-1988 (RA 2004)	Qualitative
		Viscosity	IS 101(Part15/Sec-5)-1989 (RA 2009)	0.2 to 2.0 stokes
		Freedom from Lead	IS 101(Part8/Sec-5) 1993 (RA 2004)	0.01% to 0.04 %
5.	**Ready mixed paint Bituminous, Brushing, Black Japan.**	Resistance to heat	IS 158-2015	Qualitative
		Volatile matter	IS 101(Part 2/Sec-2)-1987 (RA 2012)	10% to 60%
		Consistency	IS 101(Part 1/Sec-5)-1989 (RA 2009)	50 sec to 150 sec
		Resistance to Acid	IS 158-2015 IS 9862-1981	Qualitative
		Water content	IS 101(Part 2/Sec-1)-1988 (RA 2009)	0.2% to 1.0%
		Drying time	IS 101(Part 3/Sec-1)-1986 (RA 2007)	2 to 18 hrs.
		Wet opacity	IS 101(Part 4/Sec-1)-1988 (RA 2009)	80 to 350 m^2/10 ltr
		Finish	IS 101(Part 3/Sec-4)-1987 (RA 2009)	Qualitative
		Resistance to Alkali	IS 158-2015 IS 9862-1981	Qualitative
		Resistance to Chlorine	IS 9862-1981	Qualitative
		Colour	IS 101(Part 4/Sec-2)-1989 (RA 2009)	Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Mass in kg/10L	IS 101(Part 1/Sec-7)-1987 (RA 2009)	8 to 20 kg/10 ltr
		Resistance to Water	IS 101(Part 7/Sec-1)-1989 (RA 2009)	Qualitative
		Flexibility & adhesion test	IS 101(Part 5/Sec-2)-1988 (RA 2004)	Qualitative
		Protection against corrosion under conditions of condensation.	IS 101(Part 6/Sec-1)-1988 (RA 2005)	Qualitative
		Flash point	IS 101(Part 1/Sec-6)-1987 (RA 2009)	20 ^{0}C to 70 ^{0}C
		Stripping Test	IS 101-1964	Qualitative
		Lead Content	IS 101(Part 8/Sec-5)-1993 (RA 2004)	0.05% to 0.10%
		Resistance to Kerosene	IS 341-1973 (RA 2002)	Qualitative
		Ash Content	IS 341-1973 (RA 2002)	0.1% to 5.0 %
		Reaction with White Paint	IS 341-1973 (RA 2002)	Qualitative
		Reaction with Varnish	IS 341-1973 (RA 2002)	Qualitative
IV.	**WATER**			
1.	**Drinking Water** **Packaged Drinking water** **Packaged Natural Mineral Water**	Colour	IS 3025 Pt.4-1983 (RA 2017)Plt. Cobalt method	1.0 Hazen to 100 Hazen
		Odour	IS 3025 Pt.5-1983 (RA 2017)	Qualitative
		Turbidity, NTU	IS 3025 Pt.10-1984 (RA 2017)	0.1 NTU to 1000 NTU
		pH	IS 3025 Pt.11-1984 (RA 2017)	0.1 to 13.9
		Total Hardness	IS 3025 Pt.21-1983 (RA 2014) EDTA Method	2 mg/l to 1000 mg/l

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Iron	IS 3025 Pt.2-2004 (RA 2014) By ICP-OES	0.005 mg/l to 10 mg/l
		Chlorides	IS 3025 Pt.32-1988 (RA 2014), Argentometric Method	2 mg/l to 1500mg/l
		Total Dissolved solids	IS 3025 Pt.16-1984 (RA 2017)	5 mg/l to1500mg/l
		Calcium (as Ca)	IS 3025 Pt.2-2004 (RA 2014) By ICP-OES	0.02 mg/l to 100mg/l
		Magnesium (as Mg)	IS 3025 Pt.2-2004 (RA 2014)	0.02 mg/l to 100 mg/l
		Copper (as Cu)	IS 3025 Pt.2-2004 (RA 2014)	0.005 mg/l to 10mg/l
		Sulfates	IS 3025 pt.24-1986 (RA 2014), Gravimetric	10 mg/l to 500 mg/l
		Fluoride	APHA 22nd Ed 4500-FC	0.1mg/l to 100 mg/l
		Chromium	IS 3025 Pt.2-2004 (RA 2014)	0.005 mg/l to 10 mg/l
		Manganese (as Mn)	IS 3025 Pt.2-2004 (RA 2014)	0.005 mg/l to 10 mg/l
		Selenium (as Se)	IS 3025 Pt.2-2004 (RA 2014)	0.01 mg/l to 10 mg/l
		Arsenic (as As)	IS 3025 Pt.2-2004 (RA 2014)	0.01 mg/l to 10 mg/l
		Lead (as Pb)	IS 3025 Pt.2-2004 (RA 2014)	0.01 mg/l to 10 mg/l
		Cadmium (as Cd)	IS 3025 Pt.2-2004 (RA 2014)	0.01 mg/l to 10 mg/l
		Zinc (as Zn)	IS 3025 Pt.2-2004 (RA 2014)	0.005 mg/l to 10 mg/l
		Borates (as B)	IS 3025 Pt.2-2004 (RA 2014)	0.005 mg/l to 10 mg/l

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Nitrate	IS 3025, Pt .34-1988 (RA 2014)	0.5 mg/l to 60 mg/l
		Nitrite	IS 3025, Pt .34-1988 (RA 2014)	0.01 mg/l to 0.5 mg/l
2.	**Water for Construction Purpose, as per IS:456-2000; Amd-1 Reaffirmed 2005**	Alkalinity 0.02 N H_2SO_4 required to neutralize 100 ml	IS 3025 pt.23-1986 (RA 2009), Titrimetric	0.1 ml to 100 ml
		Acidity 0.02 N NaOH required to neutralize 100 ml	IS 3025 pt.22-1986 (RA 2009), Titrimetric	0.1 ml to 100 ml
		Inorganic solids	IS 3025pt.18-1984 (RA 2006),gravimetric	10 mg/l to 4000 mg/l
		Organic solids	IS 3025 pt 18-1984 (RA 2006)	5 mg/l to 500mg/l
		Suspended matter	IS 3025 pt 18-1984 (RA 2006)	5 mg/l to 2500 mg/l
		Sulfate (as SO_3)	IS 3025 pt.24-1986 (RA 2003), Gravimetric	5 mg/l to 1000 mg/l
		Chloride (as Cl)	IS 3025 Pt.32-1988 (RA 2009), Argentometric Method	2 mg/l to 4000mg/l
		pH	IS 3025 Pt.11-1984 (RA 2006)	4.0 to 10.0
V.	**FOOD & AGRICULTURAL PRODUCTS**			
1.	**Wheat Atta**	Moisture	IS 1155-1968 (RA 2015)	1.0% to 25.0%
		Total Ash	IS 1155-1968 (RA 2015)	0.5% to 5.0%
		Acid Insoluble Ash	IS 1155-1968 (RA 2015)	0.01% to 2.0%
		Gluten (dry basis)	IS 1155-1968 (RA 2015)	1.0% to 20.0%
		Alcoholic Acidity	IS 1155-1968 (RA 2015)	0.01% to 5.0%
		Granularity	IS 1155-1968 (RA 2015)	0.05% to 2.0%
2.	**Suji or Rawa (Samolina)**	Moisture	IS 1010-1968 (RA 2015)	1.0% to 25.0%
		Total Ash	IS 1010-1968 (RA 2015)	0.5% to 5.0%

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Acid Insoluble Ash	IS 1010-1968 (RA 2015)	0.02% to 2.0%
		Gluten	IS 1010-1968 (RA 2015)	1.0% to 20.0%
		Alcoholic Acidity	IS 1155-1968 (RA 2015)	0.01% to 5.0%

NOTE:The Laboratory has demonstrated competence for the stated scope for **WATER**. This however **does not fully cover** the specification requirements of **BIS for the Packaged Drinking Water as per IS:14543 and the Packaged Natural Mineral Water IS:13428.**

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection

ELECTRICAL TESTING

I.	**CAPACITOR**			
1.	**AC Motor Capacitor**	a) Visual Examination	Cl. No. 2.6 of IS 2993-1998, (RA 2013)	Qualitative
		b) Checking marking	Cl. No. 5.1 of IS 2993-1998, (RA 2013)	Qualitative
		c) Check of dimension	Cl. No. 2.10 of IS 2993-1998, (RA 2013)	1 mm to 250 mm
		d) Mechanical Test.	Cl. No. 2.11 of IS 2993-1998, (RA 2013)	1 N to 20 N
		e) Sealing test	Cl. No. 2.12 of IS 2993-1998, (RA 2013)	20 °C to 100 °C
		f) Endurance Test	Cl. No. 2.13 of IS 2993-1998, (RA 2013)	1 µfd to 20 µfd
		g) Soldering Test	Cl. No. 2.11.2 of IS 2993-1998, (RA 2013)	Qualitative
		h) Damp Heat test	Cl. No. 2.14 of IS 2993-1998, (RA 2013)	60 % to 95 % Humidity At 40 °C
		j) Voltage test between terminals	Cl. No. 2.7 of IS 2993-1998, (RA 2013)	1V to 1000 V
		k) Voltage test between terminals & case	Cl. No. 2.8 of IS 2993-1998, (RA 2013)	1 kV to 6 kV
		m) Self Healing test	Cl. No. 2.15 of IS 2993-1998, (RA 2013)	10 V to 1500 V
		n) Measurement of Capacitance	Cl. No. 2.9 of IS 2993-1998, (RA 2013)	1 µfd to 80 µfd
		o) Tangent of loss angle	Cl. No. 2.5 of IS 2993-1998, (RA 2013)	Upto 0.01

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
2.	**Capacitor for Electric Fan Motors**	a) Visual Examination	Cl. No. 7.2 of IS 1709-1984 Amdts 1&2, (RA 2016)	Qualitative
		b) Checking marking	Cl. No. 6 of IS 1709-1984 Amdts 1&2, (RA 2016)	Qualitative
		c) Check of dimension	Cl. No. 1.2 of IS 1709-1984 Amdts 1&2, (RA 2016)	1 mm to 250 mm
		d) Mechanical Test.	Cl. No.7.7-7.11 of IS 1709-1984 Amdts 1&2, (RA 2016)	1 N to 20 N
		e) Sealing test	Cl. No. 7.12 of IS 1709-1984 Amdts 1&2, (RA 2016)	20 ºC to 100 ºC
		f) Endurance Test	Cl. No. 7.16 of IS 1709-1984 Amdts 1&2, (RA 2016)	1 µfd to 20 µfd
		h) Damp Heat test	Cl. No. 7.15 of IS 1709-1984 Amdts 1&2, (RA 2016)	65 % to 95 % Humidity 5 °C to 60 °C
		i)Insulation Resistance (terminals & container)	Cl. No. 7.3.1 of IS 1709-1984 Amdts 1&2, (RA 2016)	1M Ω to 1 T Ω at 500V
		j) Insulation Resistance between terminals	Cl. No. 7.3.2 of IS 1709-1984 Amdts 1&2, (RA 2016)	1M Ω to 1 T Ω at 500V
		j) Voltage test between terminals	Cl. No. 7.4.1 of IS 1709-1984 Amdts 1&2, (RA 2016)	1 V to 1000 V
		k) Voltage test between terminals &case	Cl. No. 7.4.2 of IS 1709-1984 Amdts 1&2, (RA 2016)	1 kV to 6 kV
		m) Self Healing test	Cl. No. 7.14 of IS 1709-1984 Amdts 1&2, (RA 2016)	Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		n) Measurement of Capacitance & Tan δ	Cl. No 7.13 of IS 1709-1984 Amdts 1&2, (RA 2016)	1 µfd to 80 µFd min 0.00001 10^{-5} to 1
3.	**Capacitor for Flourescent High pressure Mercury & HPSV Lamp Circuits**	a) Visual Examination	Cl. No. 5.4 of IS 1569-1976 (RA 2016).Amd 1	Qualitative
		b) Sealing & heating test	Cl. No5.5 of IS 1569-1976 (RA 2016).Amd 1	27 to 100ºC ±.5ºC
		c) Voltage proof test	Cl. No5.6 of IS 1569-1976 (RA 2016).Amd 1	Upto 1000V ±5% 0to 6 KV ±5%
		d) Voltage test between case	Cl. No. 5.7 of IS 1569-1976 (RA 2016).Amd 1	Upto 1000V ±5% 0to 6 kV ±5%
		e) Capacitance measurement test	Cl. No. 5.8 of IS 1569-1976 (RA 2016) .Amd 1	Upto 1000V 1 µfd to 80µFd
		f) Discharge resister test	Cl. No.5.9 of IS 1569-1976 (RA 2016).Amd 1	Qualitative
		g) Thermal Stability test	Cl. No.5.10 of IS 1569-1976 (RA 2016).Amd 1	27 ºC to 300 ºC
		h) Self Healing test	Cl. No. 5.11 of IS 1569-1976 (RA 2016).Amd 1	Upto 1500 V
		j) Damp Heat test	Cl. No. 5.12 of IS 1569-1976 (RA 2016).Amd 1	60 % to 98 % Humidity At 40 °C
		k) Endurance	Cl.No. 5.13 of IS 1569-1976 (RA 2016).Amd 1	100ºC,1000V,50Hz
		l) Destruction test	Cl. No. 5.14 of IS 1569-1976 (RA 2016).Amd 1	Qualitative
II.	**LAMPS LUMINAIRES AND ACCESSORIES**			
1.	**Luminaires Particular Requirements General Purpose**	a) General Requirements	Cl. 4 of IS 10322 (part 5/sec 1)-2012 (RA 2017).Amd 1	Qualitative
		b) Protection against electric Shock	Cl. 12 of IS 10322 (part 5/sec 1)-2012 (RA 2017).Amd 1	Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		c) Endurance & thermal Test	Cl. 13 of IS 10322 (part 5/sec 1)-2012 (RA 2017).Amd 1	10 °C to 300 °C
		d) Resistance to dust &moisture	Cl. 14 of IS 10322 (part 5/sec 1)-2012 (RA 2017).Amd 1	Qualitative
		e) Insulation resistance test & Electric strength	Cl. 15 of IS 10322 (part 5/sec 1)-2012 (RA 2017).Amd 1	1 MΩ to 100 GΩ At 500 V 1 to 4 KV
		f) Resistance to heat fire &tracking	Cl. 16 of IS 10322 (part 5/sec 1)-2012 (RA 2017).Amd 1	1mm to 150 mm (Ball Pressure Test)
		g) Photometric Test	Cl.17 of IS 10322 (part 5/sec 1)-2012 (RA 2017).Amd 1	1 lux to 20000 lux
		h) Construction	Cl.7 of IS 10322 (part 5/sec 1)-2012	Qualitative
		i) Creepage distance and clearance	Cl.8 of IS 10322 (part 5/sec 1)-2012 (RA 2017).Amd 1	1mm to 150 mm
		j) Provision for earthing	Cl.9 of IS 10322 (part 5/sec 1)-2012 (RA 2017).Amd 1	Upto 15V Upto 25A
		k) Terminals	Cl.10 of IS 10322 (part 5/sec 1)-2012 (RA 2017).Amd 1	Qualitative
		l) External and internal wiring	Cl.11 of IS 10322 (part 5/sec 1)-2012 (RA 2017).Amd 1	1 mm to 150 mm
2.	**Luminaires particular requirement Recessed**	a) General Requirements	Cl. 4 of IS 10322 (part 5/sec 2)-2012 (RA 2017).Amd 1	Qualitative
		b) Protection against electric Shock	Cl. 12 of IS 10322 (part 5/sec 2)-2012 (RA 2017).Amd 1	Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		c) Endurance, test & thermal Test	Cl.13 of IS 10322 (part 5/sec 2)-2012 (RA 2017).Amd 1	10 °C to 300 °C
		d) Resistance to dust &moisture	Cl. 15 of IS 10322 (part 5/sec 2)-2012 (RA 2017).Amd 1	Qualitative
		e) Insulation resistancetest & Electric strength	Cl.16 of IS 10322 (part 5/sec 2)-2012 (RA 2017).Amd 1	1 MΩ to 100 GΩ At 500 V Upto 4 KV
		f) Resistance to heat, fire &tacking	Cl. 17 of IS 10322 (part 5/sec 2)-2012 (RA 2017).Amd 1	Upto 150 mm (Ball Pressure Test)
		g) Photometric Test	Cl. 12.8 of IS 10322 (part 5/sec 2)-2012 (RA 2017).Amd 1	1 lux to 20000 lux
		h) Construction	Cl.7 of IS 10322 (part 5/sec 2)-2012 (RA 2017).Amd 1	Qualitative
		i) Creepage distance and clearance	Cl.8 of IS 10322 (part 5/sec 2)-2012 (RA 2017).Amd 1	1 mm to 150 mm
		j) Provision for earthing	Cl.9 of IS 10322 (part 5/sec 2)-2012 (RA 2017).Amd 1	Upto 15V Upto 25A
		k) Terminals	Cl.10 of IS 10322 (part 5/sec 2)-2012 (RA 2017).Amd 1	Qualitative
		l) External and internal wiring	Cl.11 of IS 10322 (part 5/sec 2)-2012	1 mm to 150 mm
3.	**Luminaires Particular requirements Luminaires for Road and street Lightings**	a) Visual examination	Cl. 4 of IS 10322 (part 5/sec3)-2012 (RA 2017).Amd 1	Qualitative
		b) Protection against electric Shock	Cl 12 of IS 10322 (part 5/sec3)-2012 (RA 2017).Amd 1	Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		c) Endurance, test & thermal Test	Cl .13 of IS 10322 (part 5/sec3)-2012 (RA 2017).Amd 1	10 °C to 300 °C
		d) Resistance to dust &moisture	Cl 14 of IS 10322 (part 5/sec3)-2012 (RA 2017).Amd 1	Qualitative
		e) Insulation resistance test & Electric strength	Cl 15 of IS 10322 (part 5/sec3)-2012 (RA 2017).Amd 1	1 MΩ to 100 GΩ At 500 V Upto 4 KV
		f) Resistance to heat, fire & tracking	Cl 16 of IS 10322 (part 5/sec3)-2012 (RA 2017).Amd 1	1 to 150 mm (Ball Pressure Test)
		g) Photometric Test	Cl 17 ofIS 10322 (part 5/sec3)-2012 (RA 2017).Amd 1	1 lux to 20000 lux
		h) Construction	Cl.7 of IS 10322 (part 5/sec 3)-2012 (RA 2017).Amd 1	Qualitative
		i) Creepage distance and clearance	Cl.8 of IS 10322 (part 5/sec 3)-2012 (RA 2017).Amd 1	1 mm to 150 mm
		j) Provision for earthing	Cl.9 of IS 10322 (part 5/sec 3)-2012 (RA 2017).Amd 1	Upto 15V Upto 25A
		k) Terminals	Cl.10 of f IS 10322 (part 5/sec 3)-2012 (RA 2017).Amd 1	Qualitative
		l) External and internal wiring	Cl.11 of IS 10322 (part 5/sec 3)-2012 (RA 2017).Amd 1	1 mm to 150 mm
4.	**Luminaires Particular Requirements Portable general-purpose**	a) Visual examination	Cl. 13.2 of IS 10322 (part 5/sec4)-1987 (RA 2015).Amd 1	Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	luminaire	b) Protection against electric Shock	Cl. 11.1 of IS 10322 (part 5/sec4)-1987 (RA 2015).Amd 1	Qualitative
		c) Mechanical strength Test	Cl. 13.3 of IS 10322 (part 5/sec4)-1987 (RA 2015).Amd 1	Qualitative
		d) Endurance, test & thermal Test	Cl.13.4 of IS 10322 (part 5/sec4)-2012 (RA 2015).Amd 1	10 °C to 300 °C
		e) Resistance to dust &moisture	Cl. 13.5 of IS 10322 (part 5/sec4)-1987 (RA 2015).Amd 1	Qualitative
		f) Insulation resistance test & Electric strength	Cl.13.6 of IS 10322 (part 5/sec4)-1987 (RA 2015).Amd 1	1 MΩ to 100 GΩ At 500 V 1 to 4 KV
		g) Resistance to heat, fire & tracking	Cl. 13.7 of IS 10322 (part 5/sec4)-1987 (RA 2015).Amd 1	1 to 150 mm (Ball Pressure Test)
		h) Photometric Test	Cl. 13.8 of IS 10322 (part 5/sec4)-1987 (RA 2015).Amd 1	1 lux to 20000 lux
5.	**Luminaires Particular requirements Flood lights**	a) Visual examination	Cl. 4 of IS 10322 (part 5/sec 5)-2013 (RA 2018)	Qualitative
		b) Protection against electric Shock	Cl. 11.1 of IS 10322 (part 5/sec 5)-2013 (RA 2018)	Qualitative
		c) Endurance, test & thermal Test	Cl.13 of IS 10322 (part 5/sec 5)-2013 (RA 2018)	10 °C to 300 °C
		d) Resistance to dust &moisture	Cl. 14 of IS 10322 (part 5/sec 5)-2013 (RA 2018)	Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		e) Insulation resistance test & Electric strength	Cl. 15 of IS 10322 (part 5/sec 5)-2013 (RA 2018)	1 MΩ to 100 GΩ At 500 V 1 to 4 KV
		f) Resistance to heat, fire & tracking	Cl. 16 of IS 10322 (part 5/sec 5)-2013 (RA 2018)	1 mm to 150 mm (Ball Pressure Test)
		g) Photometric Test	Cl. 17 of IS 10322 (part 5/sec 5)-2013 (RA 2018)	1 lux to 20000 lux
		h) Construction	Cl.7 of IS 10322 (part 5/sec 5)-2013 (RA 2018)	Qualitative
		i) Creepage distance and clearance	Cl.8 of IS 10322 (part 5/sec 5)-2013 (RA 2018)	1 mm to 150 mm
		j) Provision for earthing	Cl.9 of IS 10322 (part 5/sec 5)-2013 (RA 2018)	Upto 15V Upto 25A
		k) Terminals	Cl.10 of IS 10322(part 5/sec 5)-2013 (RA 2018)	Qualitative
		l) External and internal wiring	Cl.11 of IS 10322 (part 5/sec 5)-2013 (RA 2018)	1 mm to 150 mm
6.	**Ballasts for Fluorescent Lamps**	a) Visual examination	Cl. No. 9.4 of IS 1534 (pt-1)-1977 Amend 5, (RA 2011)	Qualitative
		b) Test for terminals for external wiring.	Cl. No. 4 of IS 1534(pt-1)-1977 Amend 5 (RA 2011)	Qualitative
		c) Test for screws, current carrying parts and connections	Cl. No. 5 of IS 1534(pt-1)-1977 Amend 5 (RA 2011)	Qualitative
		d) Test for creepage distance & clearance	Cl. No. 7 of IS 1534(pt-1)-1977 Amend 5 (RA 2011)	1mm to 150 mm

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		e) Protection against accidental contacts with live parts	Cl. No. 9.5 of IS 1534 (pt-1)-1977 Amend 5 (RA 2011)	Qualitative
		f) Test for moisture Resistance and insulation.	Cl. No. 9.7 of IS 1534 (pt-1)-1977 Amend 5 (RA 2011)	2 M Ω to 10 GΩ 1 V to 500 V 10 °C to 60 °C 60 % to 95 % RH
		g) Test for limitation of Ballast heating.	Cl. No. 9.9 of IS 1534 (pt-1)-1977 Amend 5 (RA 2011)	70 °C to 195 °C
		h) Test for resistance to heat	Cl. No. 9.11 of IS 1534 (pt-1)-1977 Amend 5 (RA 2011)	Upto 150 mm
		j) Test for resistance to corrosion	Clause No. 9.12 of IS 1534(pt-1)-1977 Amend 5 (RA 2011)	Qualitative
		k) Pre heating conditions	Cl. No. 9.13.3 of IS 1534 (pt-1)-1977 Amend 5 (RA 2011)	Upto 1000mA
		l) Power & current output	Cl. No. 9.13.4 of IS 1534 (pt-1)-1977 Amend 5 (RA 2011)	1 W to 1000 W 1 V to 500 V, 0.1 A to 20 A
		m) Overall P.F.	Cl. No. 9.13.5 of IS 1534 (pt-1)-1977 Amend 5 (RA 2011)	0.1 to unity P.f
		n) Current delivered lamp.	Cl. No. 9.13.6 of IS 1534 (pt-1)-1977 Amend 5 (RA 2011)	1 Amp to 10 Amp
		o) Current Waveform	Cl. No. 9.13.7 of IS 1534 (pt-1)-1977 Amend 5 (RA 2011)	1 Amp to 10 Amp
		p) Test for mechanical strength	Cl. 9.10 of IS 1534(pt-1)-1977 Amend 5 (RA 2011)	Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		q) Voltage across Capacitor	Cl. 9.6 of IS 1534(pt-1)-1977 Amend 5 (RA 2011)	240V, AC, 50Hz
7.	**Ballasts for High Pressure Mercury Vapour Lamps**	a) Visual examination	Cl. No. 9.4 of IS 6616 (pt-1)-1982 Amend 1 (RA 2011)	Qualitative
		b) Test for creepage distance & clearance	Cl. 6 of IS 6616(pt-1)-1982 Amend 1 (RA 2011)	1 mm to 150 mm
		c) Protection against accidental contacts with live parts	Cl. 7 of IS 6616(pt-1)-1982 Amend 1 (RA 2011)	Qualitative
		d) Test of terminals	Cl. 9.5 of IS 6616(pt-1)-1982 Amend 1 (RA 2011)	Qualitative
		e) Moisture resistance and insulation	Cl. 9.6 of IS 6616(pt-1)-1982 Amend 1 (RA 2011)	1 M Ω to 10 GΩ 1 V to 500 V 35 ˚C to 40 ˚C 60 % to 95 %
		f) Test of power and output current	Cl. 9.7 of IS 6616(pt-1)-1982 Amend 1 (RA 2011)	1 W to 1000 W, 20A
		g) Test of short circuit current	Cl. No. 9.8 of IS 6616 (pt-1)-1982 Amend 1 (RA 2011)	1 A to 25 A
		h) Test for open circuit Voltage	Cl. No. 9.9 of IS 6616 (pt-1)-1982 Amend 1 (RA 2011)	1 V to 300 V
		j) Test for current wave shape	Cl. No. 9.10 of IS 6616 (pt-1)-1982 Amend 1 (RA 2011)	Less than 1.9 Peak/RMS of 92 % & 106 % of 240V
		k) Test for protection against magnetic influence	Cl. No. 9.11 of IS 6616 (pt-1)-1982 Amend 1 (RA 2011)	Qualitative
		l) Limitation of ballast heating	Cl. 9.12 of IS 6616(pt-1)-1982 Amend 1 (RA 2011)	1 °C to 150 °C
		m) Test for resistance to corrosion and brittleness	Cl. No. 9.13 of IS 6616 (pt-1)-1982 Amend 1 (RA 2011)	Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		n) Test for mechanical strength	Cl. No. 9.14 of IS 6616 (pt-1)-1982 Amend 1 (RA 2011)	Qualitative
III.	**DOMESTIC ELECTRICAL APPLIANCES**			
1.	**Self contained drinking water cooler (up to 200 liters**)	a) Insulation resistance test	Cl. No. 7.7.1of IS 1475(Part-1) 2001 (RA 2017)	1 M Ω to 1 TΩ at 500V
		b) High voltage test	Cl. No. 7.7.2 of IS 1475(Part-1) 2001 (RA 2017)	0.5 kV to 4 kV
		c) Cooling capacity rating test	Cl. No. 7.7.3 of IS 1475(Part-1) 2001 (RA 2017)	1 °C to 100 °C
		d) Maximum operating condition test	Cl. No. 7.7.4 of IS 1475(Part-1) 2001 (RA 2017)	1 °C to 100 °C
		e) Storage capacity test	Cl. No. 5.6.2 of IS 1475(Part-1) 2001 (RA 2017)	0.1 L to 150 L
		f) Input Current	Cl. No. 7.7.3 (h) of IS 1475(Part-1) 2001 (RA 2017)	0.1 A to 20 A
		g) Power Consumption	Cl. No. 7.7.3 (g) of IS 1475(Part-1) 2001 (RA 2017)	0.5 W to 2000 W
2.	**Instantaneous water heater**	a) Protection against electric shock	Cl 8 0f IS 302-2-35:1992	Qualitative
		b) Input	Cl 10 of IS 302-2-35:1992	0.1 kW to 4 kW
		c) Temperature rise	Cl 11 of IS 302-2-35:1992	Ambient-150 ºC
		d) Electrical Insulation and leakage current	Cl 13 of IS 302-2-35:1992	1M Ω to 1 T Ω Upto 1000mA

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		e) Moisture resistance test	Cl 15 of 302-2-35:1992	1 MΩ to 10 GΩ
		f) Endurance test	Cl 12.1 of IS 8978-1992 Amdt-2, (RA 2014)	Qualitative
		g) Abnormal operation test	Cl 19.2 of IS 302-2-35:1992	Qualitative
		h) Stability and mechanical Hazard	Cl 20 IS302-2-35:1992	Qualitative
		j) Mechanical test	Cl 21 of IS 302-2-35:1992	Qualitative
		k) Construction	Cl 22 of IS 302-2-35:1992	Qualitative
		l) Internal wiring	Cl 23 of IS 302-2-35:1992	Qualitative
		m) Components	Cl 24 of IS 302-2-35:1992	Qualitative
		n) Supply connection and flexible cord	Cl 25 of IS 302-2-35:1992	Upto 25mm
		p) External conductor	Cl 26 of IS 302-2-35:1992	Qualitative
		q) Earthling Connection	Cl 27 IS 302-2-35:1992	Upto 15V Upto 25A
		r) Screw & connection	Cl 28 of IS 302-2-35:1992	Qualitative
		s) Creepage distance and clearance	Cl 29 of IS 302-2-35:1992	0.1 mm to 150 mm
		t) Test for resistance to heat and fire	Cl 30 of IS 302-2-35:1992	0.1 mm to 150 mm (Ball pressure test)
		u) Resistance to rusting	Cl 31 of IS 302-2-35:1992	Qualitative
		v) Finish	Cl 10.1 of IS 8978-1992 Amdt-2, (RA 2014)	Qualitative
		w) Operation of Flow switch	Cl 11 of IS 8978-1992 Amdt-2, (RA 2014)	Qualitative
		x) Supply connection and flexible cord	Cl 25 of IS 302-2-35:1992	Upto 25mm
3.	**Electric immersion Water Heater**	1)Protection against electric shock	Cl 8 0f IS 302-2-35:1992	Qualitative
		2)Input	Cl 10 of IS 302-2-35:1992	0.1 kW to 4 kW
		3)Temperature rise	Cl 11 of IS 302-2-35:1992	Ambient to 150 ºC

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		4)Operation under over load condition	Cl 12 of IS 302-2-201:1992	0.5 kW to 5 kW
		5)Electrical Insulation and leakage current	Cl 13 of IS 302-2-201:1992	1M Ω to 1 T Ω at 500V Upto 1000mA
		6)Moisture resistance test	Cl 15 of IS 302-2-201:1992	1 M Ω to 10 GΩ
		7)Insulation resistance and electric strength	Cl 16 of IS 302-2-201:1992	1M Ω to 1 T Ω at 500V
		9)Abnormal operation test	Cl 19.2 of IS 302-2-201:1992	0.5 kV to 5 kV
		10)Stability and mechanical Hazard	Cl 20 IS 302-2-201:1992	Qualitative
		11)Mechanical strength	Cl 21 of IS 302-2-201:1992	Qualitative
		12) Construction	Cl 22 of IS 302-2-201:1992	Qualitative
		13)Internal wiring	Cl 23 of IS 302-2-201:1992	Qualitative
		14) Components	Cl 24 of IS 302-2-201:1992	Qualitative
		15) Supply connection and flexible cord	Cl 25 of IS 302-2-201:1992	Upto 150 mm
		16)Terminal for External conductor	Cl 26 of IS 302-2-201:1992	0.1 mm to 150 mm
		17)Earthling Connection	Cl 27 of IS 302-2-201:1992	Upto 15V Upto 25A
		18)Screw and connection,	Cl 28,29,30 of IS 302-2-201:1992	Upto 150 mm
		19)Creepage distance and clearance	Cl 30 of IS 302-2-201:1992	Upto 150 mm
		20)Test for resistance to heat and fire	Cl 31 of IS 302-2-201:1992	0.1 mm to 150 mm (Ball Pressure Test)
		21)Resistance to rusting	Cl 31 Of IS 302-2-201:1992	Qualitative
		22)Endurance test	Cl-10 of IS 368:2014	Qualitative
		23)Finish	Cl-11 of IS 368:2014	Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
4.	**Electric Ceiling fan**	a) Air Delivery	Cl. No. 10.3 of IS 374-1979 (Amds 1 to 8), (RA 2016)	0.1 m/s to 40 m/s
		b) Temperature rise	Cl. No. 10.4 of IS 374-1979 (Amds 1 to 8), (RA 2016)	Upto 150 ºC
		c) Leakage Current	Cl. No. 10.5 of IS 374-1979 (Amds 1 to 8), (RA 2016)	Upto 1000 mA
		d) High Voltage	Cl. No. 10.6 of IS 374-1979 (Amds 1 to 8), (RA 2016)	0.5 kV to 4 kV
		e) Insulation Resistance	Cl. No. 10.7 of IS 374-1979 (Amds 1 to 8), (RA 2016)	1M Ω to 1 T Ω at 500V
		f) Starting	Cl. No. 10.8 of IS 374-1979 (Amds 1 to 8), (RA 2016)	Qualitative
		g) Fan Speed & input	Cl. No. 10.9 of IS 374-1979 (Amds 1 to 8), (RA 2016)	0.5 watts to 1000 watts 0.1 rpm to 2000 rpm
		h) Earthing Connection	Cl. No. 10.10 of IS 374-1979 (Amds 1 to 8), (RA 2016)	Upto 15 V Upto 25 A
		j) Protective against Electric shock	Cl. No. 10.11 of IS 374-1979 (Amds 1 to 8), (RA 2016)	Qualitative
		k) Moisture Resistance (for regulators only)	Cl. No. 10.12 of IS 374-1979 (Amds 1 to 8), (RA 2016)	1 M Ω to 10 GΩ
		l) Mechanical Strength (for regulators only)	Cl. No. 10.13 of IS 374-1979 (Amds 1 to 8), (RA 2016)	Qualitative
		m) Suspension System	Cl. No. 10.14 of IS 374-1979 (Amds 1 to 8), (RA 2016)	Upto 1000KN
		n) Creepage Distance &clearances	Cl. No. 10.15 of IS 374-1979 (Amds 1 to 8), (RA 2016)	Upto 150 mm
		p) Mechanical Endurance (for regulators only)	Cl. No. 10.16 of IS 374-1979 (Amds 1 to 8), (RA 2016)	Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
5.	**Propeller type AC ventilating fans (upto 600 mm sweep)**	a) Starting test	Cl. No. 10.1 of IS 2312-1967 Amend-8 (RA 2015)	Qualitative
		b) Air delivery test	Cl. No. 14.2 of IS 2312-1967 Amend-8 (RA 2015)	Upto 10 m/s
		c)Temperature rise	Cl. No. 14.3 of IS 2312-1967 Amend-8 (RA 2015)	1°C to 150 °C
		d)Power factor	Cl. No. 14.6 of IS 2312-1967 Amend-8 (RA 2015)	0.1 to 1
		e) AC Leakage	Cl. No. 14.7 of IS 2312-1967 Amend-8 (RA 2015)	Upto 1000 mA
		f) High voltage	Cl. No. 14.8 of IS 2312-1967 Amend-8 (RA 2015)	0.5 kV to 4 kV
		g) Insulation resistance	Cl. No. 14.9 of IS 2312-1967 Amend-8 (RA 2015)	1 M Ω to 1 TΩ at 500V
		h) Earth continuity	Cl. No. 14.10 of IS 2312-1967 Amend-8 (RA 2015)	Upto 15V Upto 25A
		j) Electrical input	Cl. No. 14.11 of IS 2312-1967 Amend-8 (RA 2015)	0.5 watts to 1000 watts
		k) Fan speed	Cl. No. 14.12 of IS 2312-1967 Amend-8 (RA 2015)	1 rpm to 2000 rpm
		l) Moisture proof test (for regulators only	Cl. No. 14.4 of IS 2312-1967 Amend-8 (RA 2015)	Upto 4 kV 1 M Ω to 10 GΩ, RH:90 % to 95 % 40 ˚C to 45 ˚C
IV.	**WIRING ACCESORIES**			
1.	**Plugs & Socket Outlets 6A, 16A**	a) Rating	Cl. No. 6 of IS 1293-2005 Amdt-6 (RA 2016)	Qualitative
		b) Classification	Cl. No. 7 of IS 1293-2005 Amdt-6 (RA 2016)	Qualitative
		c) Marking	Cl. No. 8 of IS 1293-2005	Qualitative
		d) Checking of Dimensions	Cl. No. 9 of IS 1293-2005 Amdt-6 (RA 2016)	1 mm to 150 mm GO Gauge

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		e) Protection Against Electric shock	Cl. No .10 of IS 1293-2005 Amdt-6 (RA 2016)	Qualitative
		f) Provision of earthling	Cl. No. 11 of IS 1293-2005 Amdt-6 (RA 2016)	Qualitative
		g) Terminals	Cl. No. 12 of IS 1293-2005 Amdt-6 (RA 2016)	Qualitative
		h) Constructional requirements of fixed socket out let	Cl. No. 13 of IS 1293-2005 Amdt-6 (RA 2016)	Qualitative
		j) Constructional Requirements of portable socket out let	Cl. No. 14 of IS 1293-2005 Amdt-6 (RA 2016)	Qualitative
		k) Interlocked Socket outlet	Cl. No.15 of IS 1293-2005 Amdt-6 (RA 2016)	Qualitative
		l) Resistance to Aging	Cl. No. 16.1 of IS 1293-2005	Qualitative
		m) Resistance to harmful ingress of water	Cl. No.16.2 of IS 1293-2005 Amdt-6 (RA 2016)	Qualitative
		n) Resistance to Humidity	Cl. No.16.3 of IS 1293-2005 Amdt-6 (RA 2016)	Qualitative 30 °C to 40 °C 60 % to 98 %
		p) Insulation resistance & Electric Strength	Cl. No.17 of IS 1293-2005 Amdt-6 (RA 2016)	1 M Ω to 10 GΩ at 500V Upto 4 kV
		q) Operation of Earthing Contact	Cl. No18 of IS 1293-2005 Amdt-6 (RA 2016)	Qualitative
		r) Temperature rise	Cl. No19 of IS 1293-2005 Amdt-6 (RA 2016)	Ambient to 200 ºC
		s) Making & braking capacity	Cl. No20 of IS 1293-2005 Amdt-6 (RA 2016)	Qualitative
		t) Normal operation	Cl. No21 of IS 1293-2005 Amdt-6 (RA 2016)	Qualitative
		u) Force Necessary to withdraw the plug	Cl. No.22 of IS 1293-2005 Amdt-6 (RA 2016)	Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		v) Flexible cable & their connection	Cl. No. 23of IS 1293-2005 Amdt-6 (RA 2016)	Qualitative
		w) Mechanical strength	Cl. No.24 of IS 1293-2005 Amdt-6 (RA 2016)	Qualitative
		x) Resistance to heat	Cl. No 25 of IS 1293-2005 Amdt-6 (RA 2016)	Upto 10 mm
		y) Screws, current carrying parts connection	Cl. No.26 of IS 1293-2005 Amdt-6 (RA 2016)	Qualitative
		z) Creepage distance, Clearance & distance through sealing compound	Cl. No.27 of IS 1293-2005 Amdt-6 (RA 2016)	1 mm to 150 mm
		aa) Resistance of insulation material to abnormal heat, fire & tracking	Cl. No.28 of IS 1293-2005 Amdt-6 (RA 2016)	650 ºC & 850 ºC Glow wire Test apparatus
		ab) Resistance to rusting	Cl. No 29 of IS 1293-2005 Amdt-6 (RA 2016)	Qualitative
		ac) Additional tests on pins provided with insulating sleeves	Cl. No.30 of IS 1293-2005 Amdt-6 (RA 2016)	Qualitative
2.	**Domestic Switches Upto 32 A**	a) Checking of dimension.	Cl. 9 of IS 3854-1997, Amd-7 (RA 2012)	1 mm to 150 mm
		b) Protection against electric shock	Cl. No.10 of IS 3854-1997,Amd-7 (RA 2012)	Qualitative
		c) Terminals	Cl. No. 12 of IS 3854-1997,Amd-7 (RA 2012)	Qualitative
		d) Constructional Requirements	Cl. No. 13 of IS 3854-1997,Amd-7 (RA 2012)	Qualitative
		e) Mechanism	Cl. No. 14 of IS 3854-1997,Amd-7 (RA 2012)	Qualitative
		f) Resistance to Ageing.	Cl. No. 15.1 of IS 3854-1997,Amd-7 (RA 2012)	Qualitative
		g) Resistance to Harmful	Cl. No. 15.2 of IS 3854-	Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Ingress of water.	1997,Amd-7 (RA 2012)	
		h) Resistance to Humidity	Cl. No. 15.3 of IS 3854-1997,Amd-7 (RA 2012)	Qualitative 30 °C to 40 °C 60 % to 98 %
		j) Insulation Resistance & Electric Strength	Cl. No. 16 of IS 3854-1997,Amd-7 (RA 2012)	0.5 kV to 4 kV 1 M Ω to 1 TΩ at 500V
		k) Temperature Rise	Cl. No. 17 of IS 3854-1997,Amd-7 (RA 2012)	1 ºC to 100 ºC
		l) Making & Breaking Capacity	Cl. No. 18 of IS 3854-1997,Amd-7 (RA 2012)	Qualitative
		m) Normal Operation	Cl. No. 19 of IS 3854-1997,Amd-7 (RA 2012)	Qualitative
		n) Mechanical Strength	Cl. No. 20 of IS 3854-1997,Amd-7 (RA 2012)	Qualitative
		p) Resistance to Heat	Cl. No. 21 of IS 3854-1997,Amd-7 (RA 2012)	Upto 10mm
		q) Screws, Current carrying parts & Connections.	Cl. No. 22 of IS 3854-1997,Amd-7 (RA 2012)	Qualitative
		r) Creepage distance, clearances & Distance through sealing compound.	Cl. No. 23 of IS 3854-1997,Amd-7 (RA 2012)	1 mm to 150 mm
		s) Normal Operation for Fluorescent Lamp Circuit.	Cl. No. 19.2 of IS 3854-1997,Amd-7 (RA 2012)	Qualitative
		t) Resistance to Abnormal Heat & Fire	Cl. No.24.1 of IS 3854-1997,Amd-7 (RA 2012)	Glow Wire Test Apparatus 850 °C & 650 °C
		u) Resistance to rusting	Cl. 25 of IS 3854-1997, Amd-7 (RA 2012)	Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
V.	**ELECRICAL CABLE**			
1.	**(PVC Insulated cable and shethed LT cable, XLPE cable) IS 694-2010 IS 1554-(Part-1)-1988 IS 7098 (Part-1)-1988**	a) Annealing test (copper)	IS 10810 (Pt-1) 84 (RA 2016)	Upto 500N Upto 150mm
		b) Tensile test (aluminum)	IS 10810 (Pt-2) 84 (RA 2016)	Upto 500N
		c) Wrapping test (aluminum)	IS 10810 (Pt-3) 84 (RA 2016)	Qualitative
		d) Conductor resistance test	IS 10810 (Pt-5) 84 (RA 2016)	1$\mu\Omega$ to 100Ω
		e) Resistivity test of Armour wire and strip	IS 10810 (Pt 42) 84 (RA 2016)	0.1Ω/Km to 10Ω/Km
		f) Tensile test for Armour A	IS 10810 (Pt 37) 84 (RA 2016)	Upto 500N
		g) Elongation test for Armour	IS 10810 (Pt 37) 84 (RA 2016)	Upto 500N Upto 150 mm
		h) Winding test on galvanized steel strip on Armouring	IS 10810 (Pt 39) 84 (RA 2016)	Qualitative
		j) Torsion test on Armour wire	IS 10810 (Pt 38) 84 (RA 2016)	Qualitative
		k) Thickness of insulation and sheath	IS 10810 (Pt-6) 84 (RA 2016)	0.001mm to 50mm
		l) Tensile strength and percentage elongation of insulation sheath	IS 10810 (Pt-7) 84 (RA 2016)	Upto 500N Upto 150 mm
		m) Aging in air oven	IS 10810 (Pt-11) 84 (RA 2016)	27 °C to 200°C
		n) Hot deformation test	IS 10810 (Pt-15) 84 (RA 2016)	0.01mm to 150 mm
		p) Loss of mass in air oven	IS 10810 (Pt 10) 84 (RA 2016)	0.1mg to 200g
		q) Heat Shock Test	IS 10810 (Pt 10) 84	Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
			(RA 2016)	
		r) Insulation resistance test	IS 10810 (Pt 43) 84 (RA 2016)	1Mohm to 1 T ohm at 500V
		s) High voltage A .C. test (water immersion test)	IS 10810 (Pt 45) 84 (RA 2016)	Upto 6 kV
		t) High voltage D.C. test (water immersion test)	IS 10810 (Pt-45) 84 (RA 2016)	Upto 2kV
		u) Flammability test	IS 10810 (Pt-53) 84 (RA 2016)	Upto 150 mm
		v) Overall diameter	IS 10810 (Pt-6) 84 (RA 2016)	Upto 150 mm
		w) Shrinkage test	IS 10810 (Pt-12) 84 (RA 2016)	Upto 300 mm
		x) Hot set test	IS 10810 (Pt-30) 84 (RA 2016)	Upto 150 mm
		y) Water absorption (gravimetric)	IS 10810 (Pt-33)84 (RA 2016)	0.1mg to 200 gm
		z) Thermal stability test	IS 10810 (Pt-60)84 (RA 2016)	Qualitative
VI.	**SWITCH GEAR EQUIPMENT**			
1.	**Circuit Breakers for Over Current Protection for House Hold & Similar Insatallation**	a) Clearances & Creepage Distances (internal/External) parts	Cl 8.1.3 of IS/IEC60898-1:2015	1mm to 150mm & 1mm to 300mm
		b) Inedibility of Marking	Cl 9.3 of IS/IEC60898-1:2015	Qualitative
		c) Reliability of screws, current carrying parts & connections	Cl 9.4 of IS/IEC60898-1:2015	Torque test 0.1 Nm to 2.0 Nm
		d) Reliability of screws type terminal for external conductor	Cl 9.4 of IS/IEC60898-1:2015	Torque test 0.1 Nm to 10.0 Nm
		e) Protection against	Cl 9.6 of IS/IEC60898-	Indicating lamp voltage

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		electric shock	1:2015	60, 75 N force
		f) Resistance to heat	Cl 9 .14 of IS/IEC60898-1:2015	Upto 10 mm
		g) Resistance to abnormal heat and to fire	Cl 9.15 of IS/IEC60898-1:2015	650± 10˚ C, 960 ±15˚ C
		h) Resistance to rusting	Cl 9.16 of IS/IEC60898-1:2015	Qualitative
		j) Dielectric Properties	Cl 9.7 of IS/IEC60898-1:2015	Upto 5kV ac
		k) Resistance to humidity	Cl 9.7.1 of IS/IEC60898-1:2015	30 °C to 40 °C 60 % to 98 %
		l) Insulation resistance of the main circuit	Cl 9.7.2 of IS/IEC60898-1:2015	1 MΩ to 10 TΩ at 500/1000V
		m) Dielectric strength of main circuit	Cl 9.7.3 of IS/IEC60898-1:2015	Upto 5 kV A.C
		n) Dielectric strength of the auxiliary and control circuit	Cl 9.7.4 of IS/IEC60898-1:2015	Upto 5 kVa.c
		o) Short circuit test	Cl 9.12 of IS/IEC60898-1:2015	500 A to 12.5 kA
		p) Verifications of impulse withstand voltage across the open contacts	Cl 9.7.6.1 of IS/IEC60898-1:2015	1.5 kV to 10 kV
		q) Verifications of impulse withstand voltage for the parts in the close contacts	Cl 9.7.6.2 of IS/IEC60898-1:2015	1.5 kV to 10 kV
		r) Verifications of leakage currents across open contacts	Cl 9.7.6.3 of IS/IEC60898-1:2015	Upto 10 mA,
		s) Temperature rise	Cl 9.8 of IS/IEC60898-1:2015	1 ˚C to 300 ˚C
		t) 28 Day test	Cl 9.9 of IS/IEC60898-	5 A to 125 A

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
			1:2015	
		u) Mechanical & Electrical Endurance	Cl 9.11 of IS/IEC60898-1:2015	Upto 125 A
		v) Tripping Characteristics	Cl 9.10 of IS/IEC60898-1:2015	Upto to 9999Sec.
		w) Resistance to Mechanical shock & Impact	Cl 9.13 of IS/IEC60898-1:2015	150 gm± 1 gm
VII.	**INSULATING MATS FOR ELECTRICAL PURPOSES**			
1.	**Insulating Mats for Electrical Purposes**	Insulation Resistance with Water	Cl 3.1Of IS 15652:2006 Amdt 2, (RA 2016) & IS 2584, Amdt 1, (RA 2016)	1 MΩ to 1TΩ At 500V
		Leakage Current	Cl 3.2Of IS 15652:2006 Amdt 2, (RA 2016) & IS 2584, Amdt 1, (RA 2016)	Upto 1000µA, 300 V
		AC Dielectric Strength	Cl 3.3Of IS 15652:2006 Amdt 2, (RA 2016) & IS 2584, Amdt 1, (RA 2016)	500 V to 125kV, 50 Hz
		AC Proof Voltage	Cl 3.4Of IS 15652:2006 Amdt 2, (RA 2016) & IS 2584, Amdt 1, (RA 2016)	500V to 125 kV, 50 Hz
VIII.	**ENVIRONMENTAL TESTING**			
1.	**Cold Test (Chamber size: 95 cm H x 80 cm L x 80 cm W)**	Cold Test for non-heating dissipating items with sudden change of temperature	IS 9000, Part II/Sec 2-1977 (RA 2016) IS 9000, Part II/Sec 3-1977 (RA 2016) IS 9000, Part II/Sec 4-1977 (RA 2016)	Upto to 40ºC Range of detection ±1ºC 3ºC/Min
2.	**Damp Heat Test (Cyclic)**	Damp (Cyclic) Test Section 1:16+8 Hrs Cycle	IS 9000, Part V/Sec 1& Sec 2:1981 (RA 2016)	10°C to 80ºC Range of detection ±1ºC

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	(Chamber size: 120 cm H x 142 cm L x 92 cm W)	Section 2:12+12 Hrs Cycle		3%/Min RH upto 95%
3.	**Dry Heat Test (Chamber size: 120 cm H x 142 cm L x 92 cm W)**	Dry Heat Test	As per IS 9000 (Part-3/Sec-1 to 5) 1977 (RA 2016)	Upto 300ºC
4.	**Degrees of Protection (IP) provided by enclosures**	Object protection	IS 12063-1987 IS 13947-1993 IEC 60529-2004 (RA 2014) IS/IEC 60947-1:2007 (RA 2017), Amdt 1 Degree of protection against ingress of dust & water	IP IX-Upto 50 mm
		Object protection		IP2X-Upto 12.5 mm
		Object protection		IP3X-Upto 2.5 mm
		Object protection		IP4X-Upto 1.0 mm
		Dust protection		IP5X-Upto 0.1 μm
		Dust Tight protection		IP6X-Upto 0.1 μm
		Drip water protection		IPX1-Upto 0.4 mm
		Drip water protection		IPX2-Upto 0.4 mm
		Spray water protection		IPX3-Upto 0.5 mm
		Splash water protection		IPX4-Upto 0.4 mm
		Water jet protection		IPX5-Upto 6.3 mm
		Water jet protection		IPX6-Upto 12.5 mm
		Immersion in water		IPX7-Upto 1 meter
		Immersion in water		IPX8-Upto 1 meter
5.	**Post IP Test**	Insulation Resistance		1 to 5000 MΩ at 500/1000V
		High Voltage Test		0.05 KV to 6 KV (AC) 0.05 KV to 10 KV (DC)
XI.	**TRANSMISSION LINE EQUIPMENT & ACCESSORIES**			
1.	**Current Transformers Potential Transformers upto 220 KV**	Lighting Impulse Voltage Test	Cl 9.8 of IS 3156 (Part-1):1992 (RA 2012) Cl 9.1.1 (c) and Cl. 9.8 of IS 2705 (Part-1):1992 (RA 2017), Amdt.2 Cl. 9.10 of IS 2705	20 kV to 1400 kV Peak T1-1.2 μsec T2-50 μsec CT & PT upto 220 KV

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
			(Pt-1):1992 (RA 2017), Amdt.2 Cl 7.2.3 of IEC 61869-1:2007 Cl 7.4.1 and 7.4.2 of IEC 61869-1:2007 Cl 9.1.1 (b) and Cl. 9.6 of IS 3156 (Part1):1992, (RA 2012), Amdt.1	
2.	**Distribution & Power Transformers Upto 2.5 MVA**	Lighting Impulse Voltage Test	Cl. 13 & 14 of IS 2026 (Part-3):2009, (RA 2016) IS 1180 (Part-1):2014	20 kV to 1400 kV Peak T1-1.2 µsec T2-50 µsec Distribution and Power transformer upto 20 MVA
		Winding Resistance	IS 2026 (Part-1)-2011 Cl. No.10.1.1.a, (RA 2016) IS 1180 (Part 1)-2014,Cl.no.21.2.a IS 11171:1985 Cl.no.13.2.a, (RA 2016), Amdt.1 IEC:60076:2011 (Part 1) Cl.no.11.1.2.1.a IEC:60076 (Part 11) Cl.no.15	1 mΩ to 2kΩ
		Voltage ratio & voltage vector group test	IS 2026 (Part-1) Cl.no.10.1.1.b (RA 2016) IS 1180 (Part 1)-2014, Cl.no.21.2.b IS 11171 Cl.no.13.2.b, (RA 2016), Amdt.1 IEC:60076 (Part 1) Cl.no.11.1.2.1.b	2 to 200 turns All vector group as per Annex D of IEC 60076-1:2001

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
			IEC:60076 (Part 11) Cl.no.16	
		No Load & Current	IS 2026 (Part-1):2011, (RA 2016) Cl.no.10.1.1.d IS 1180:2014 IEC 60076:2011 IS 11171:1985, (RA 2016), Amdt.1	1 kVA to 2.5 MVA, HV-1 V to 33 kV LV-1 V to 3.3kV 1 W to 100 kW 1 mA to 100 A
		Short Ckt Impedance & Load Loss	IS 2026 (Part-1) Cl.no.10.1.1.c, (RA 2016) IS 1180 (Part 1)-2014Cl.no.21.2.c IS 11171 Cl.no.13.2.c, (RA 2016), Amdt.1, IEC:60076 (Part 1) Cl.no.11.1.2.1.c IEC:60076 (Part 11) Cl.no.17IS 11171	1 kVA to 2.5 MVA, HV-1 V to 33 kV LV-1 V to 3.3kV 10W to 100 KW Impedance upto10%
		Insulation Resistance	IS 2026 (Part-1):2011 Cl.no.10.1.3.j, (RA 2016) IS 1180(Part 1): 2014Cl.no.21.2.e IEC:60076 (Part 1) Cl.no.11.1.4.h IS 11171:1985, (RA 2016), Amdt.1,	0 to 10 T Ohm, Test Voltage 500 V, 1000V, 2500V and 5000V
		Temperature Rise	IS 1180:2014 IEC 60076:2011 IS 11171:1985, (RA 2016), Amdt.1,	Current-1A to 300A Loss 10W to 100 KW Temp. 1 to 100 °C
		Induced AC voltage test	IS 2026 (Part-1):2011 Cl.no.10.1.1.e, (RA 2016) IS 1180(Part 1):2014 Cl.no.21.2.f	300 V to 900 V

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
			IS 11171:1985 Cl.no.13.2.f, (RA 2016), Amdt.1, IEC:60076 (Part 1) Cl.no.11.1.2.1.e IEC:60076 (Part 11) Cl.no.20	
		Separate source AC withstand voltage test	IS 2026 (Part-1), .no.10.1.1.e, (RA 2016) IS 1180(Part 1)-2014,Cl.no.21.2.g IS 11171 Cl.no.13.2.e, (RA 2016), Amdt.1, IEC:60076 (Part 1) Cl.no.11.1.2.1.e IEC:60076 (Part 11) Cl.no.19	1-125kVrmsAC 50 Ma 1-80 kVrms AC, 1000 mA
		Zero sequence impedance for 3Ø transformer	IS 2026 (Part-1), Cl.no.10.1.3.d (RA 2016) IEC:60076 (Part 1) Cl.no.11.1.4.f	HV-1 V to 33 kV LV-1 V to 3.3kV
		Vacuum/Air Pressure (Type test)	IS 1180(Part 1)-2014,Cl.no.21.3.d CBIP publication no.:317	Pressure Gauge Range-Kg/cm2 0 to 2.1, psi Upto 30, Vacuum Gauge Range-mmHg 0 to 700 to-760, Hg 0 to 25 to-30 Dial Gauge-Inner Dial-0 to 25 mm, Outer Dial 1 to 100
		Pressure test (routine)	IS 1180(Part 1) Cl.no.21.2.h CBIP publication no.:317	Pressure Gauge Range-Kg/cm2 0 to 2.1, Psi 0 to 30
		Oil leakage	IS 1180(Part 1) Cl.no.21.2.j CBIP publication no.:317	Pressure Gauge Range-Kg/cm2 0 to 2.1, Psi 0 to 30

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Unbalanced current	CBIP publication no.:317	1 kVA to 2.5 MVA, HV-1 V to 33 kV LV-1 V to 3.3kV 1 mA to 100 A
		Magnetic balance	CBIP publication no.:317	1 kVA to 2.5 MVA, HV-1 V to 33 kV LV-1 V to 3.3kV
		Pressure test (routine)	IS 1180(Part 1) Cl.no.21.2.h CBIP publication no.:317	Pressure Gauge Range-Kg/cm2 0 to 2.1, Psi 0 to 30
		Permissible flux density and over fluxing	IS 1180(Part 1) Cl.no.6.9,7.9,8.9	1 kVA to 2.5 MVA, HV-1 V to 33 kV LV-1 V to 3.3kV 1 mA to 100 A
		No load current at 112.5 percent voltage	IS 1180(Part 1) Cl.no.21.4.c	1 kVA to 2.5 MVA, HV-1 V to 33 kV LV-1 V to 3.3kV 1 mA to 100 A
		Paint adhesion test	IS 1180-1:2014 Cl No 21.4 (d)	Qualitative
		Determination of sound levels	IS 2026-1:2011, (RA 2016) IEC 60076-10:2016 IEEE Std C57.12.90™-2010	30 dB to 100dB
		Harmonic Test	IS 2026 (Part-1):2011, (RA 2016) Cl No 10.6	1 to 50th order of Harmonics
3.	**Insulating Oil Electrical Material-Liquid Dielectric material**	Break down Voltage	IS 335:2018 IS 1866:2017 IS 6792:2017	1 to 66kV (AC)

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection

ELECTRICAL TESTING

AT SITE				
I.	**TRANSFORMER & REACTORS**			
1.	**Distribution & Power Transformers Upto 10 MVA**	Winding Resistance	IS 2026 (Part-1)-2011 Cl. No.10.1.1.a, (RA 2016) IS 1180(Part 1)-2014,Cl.no.21.2.a IS 11171:1985 Cl.no.13.2.a, (RA 2016), Amdt.1 IEC:60076:2011 (Part 1) Cl.no.11.1.2.1.a IEC:60076 (Part 11) Cl.no.15	1 mΩ to 2K Ω
		Voltage ratio & voltage vector group test	IS 2026 (Part-1) Cl.no.10.1.1.b (RA 2016) IS 1180 (Part 1)-2014, Cl.no.21.2.b IS 11171 Cl.no.13.2.b, (RA 2016), Amdt.1 IEC:60076 (Part 1) Cl.no.11.1.2.1.b IEC:60076 (Part 11) Cl.no.16	2 to 200 turns All vector group as per Annex D of IEC 60076-1:2001
		No Load & Current	IS 2026 (Part-1):2011, (RA 2016) Cl.no.10.1.1.d IS 1180:2014 IEC 60076:2011 IS 11171:1985, (RA 2016), Amdt.1	1 kVA to 5 MVA, HV-1 V to 33 kV LV-1 V to 11kV 1 W to 100 kW 1 mA to 100 A

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Short Ckt Impedance & Load Loss	IS 2026 (Part-1) Cl.no.10.1.1.c, (RA 2016) IS 1180 (Part 1)-2014Cl.no.21.2.c IS 11171 Cl.no.13.2.c, (RA 2016), Amdt.1, IEC:60076 (Part 1) Cl.no.11.1.2.1.c IEC:60076 (Part 11) Cl.no.17IS 11171:	1 kVA to 5 MVA, HV-1 V to 33kV LV-1 V to 11kV 10W to 100 KW Impedance upto10%
		Insulation Resistance	IS 2026 (Part-1):2011 Cl.no.10.1.3.j, (RA 2016) IS 1180(Part 1): 2014Cl.no.21.2.e IEC:60076 (Part 1) Cl.no.11.1.4.h IS 11171:1985, (RA 2016), Amdt.1,	0 to 10 T Ohm, Test Voltage 500 V, 1000V, 2500V and 5000V
		Pressure test (routine)	IS 1180(Part 1)-2014, Cl.no.21.2.h CBIP publication no.:317	Pressure Gauge Range-Kg/cm2 0 to 2.1, Psi 0 to 30
		Zero sequence impedance for 3Ø transformer	IS 2026 (Part-1)-2011,Cl.no.10.1.3.d, (RA 2016) IEC:60076 (Part 1) Cl.no.11.1.4.f	1 kVA to 5 MVA, LV-200V to 11 kV
		Oil leakage	IS 1180(Part 1)-2014, Cl.no.21.2.j CBIP publication no.:317	Pressure Gauge Range-Kg/cm2 0 to 2.1, Psi 0 to 30
		Unbalanced current	CBIP publication no.:317	1 kVA to 5 MVA, HV-200 V to 33 kV LV-200 V to 11kV 1 mA to 100 A

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Magnetic balance	CBIP publication no.:317	1 kVA to 5 MVA, HV-200 V to 33 kV LV-200 V to 11kV
		Permissible flux density and over fluxing	IS 1180(Part 1)-2014Cl.no.6.9,7.9,8.9	1 kVA to 5 MVA, HV-200 V to 33 kV LV-200 V to 11kV 1 mA to 100 A
		Determination of sound levels	IS 2026-1:2011, (RA 2016) IEC 60076-10:2016 IEEE Std C57.12.90™-2010	30 dB to 100dB
		Harmonic Test	IS 2026 (Part-1):2011, Cl No 10.6, (RA 2016)	1 to 50th order of Harmonics
		No load current at 112.5 percent voltage	IS 1180 (Part 1)-2014,Cl.no.21.4.c	1 kVA to 5 MVA, HV-200 V to 33 kV LV-200 V to 3.3kV 1 mA to 100 A
		Paint adhesion test	IS 1180-1:2014 Cl No 21.4 (d)	As per ASTM D3359 Qualitative
		Temperature Rise	IS 1180:2014 IEC 60076:2011 IS 11171:1985, (RA 2016), Amdt.1	Current-1A-300A Loss 10W to 100 KW Temp. 1 to 100 °C
		Vacuum/Air Pressure (Type test)	IS 1180(Part 1) Cl.no.21.3.d CBIP publication no.:317	Pressure Gauge Range- 0 to 2.1 kg/cm^2, 0 to 30 psi, Vacuum Gauge Range -760 to 700 mmHg, -30 to 25 Hg Dial Gauge- Inner Dial-0 to 25 mm, Outer Dial 1 to 100 div.

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
2.	**Insulating Oil Electrical Material-Liquid dielectric material**	Break down Voltage	IS 335:1993 IS 1866:2000 IS 6792:2008	1 to 66kV (AC)
3.	**Household and similar fixed electrical installations (Meter Box and Cover, SMC Board and Metallic Terminal Board)**	a) Marking	Cl. 7 of IS 14772-2000, (RA 2015), Amdt.1	Qualitative
		b) Dimension	Cl.8 of IS 14772-2000, (RA 2015), Amdt.1	1mm to 1000mm
		c) Protection against electric shock	Cl. 9 of IS 14772-2000, (RA 2015), Amdt.1	Qualitative
		d) Provision for earthing	Cl.10 of IS 14772-2000, (RA 2015), Amdt.1	Qualitative
		d) Construction	Cl.11 of IS 14772-2000, (RA 2015), Amdt.1	Qualitative
		e) Resistance to ageing, to humid conditions, ingress of solid objects and to harmful ingress of water	Cl.12 of IS 14772-2000, (RA 2015), Amdt.1	Ambient to 150°C
		f) Mechanical Strength	Cl.13 of IS 14772-2000, (RA 2015), Amdt.1	Qualitative
		g) Resistance to heat	Cl.14 of IS 14772-2000, (RA 2015), Amdt.1	Upto 150mm
		h) Resistance of insulating material to abnormal heat and fire	Cl.15 of IS 14772-2000, (RA 2015), Amdt.1	Glow wire test apparatus (650°C & 850°C)
		i) Resistance to rusting	Cl.16 of IS 14772-2000, (RA 2015), Amdt.1	Qualitative
		k) Resistance of tracking	Cl.17 of IS 14772-2000, (RA 2015), Amdt.1	Upto 300V Upto 1A
4.	**Low-voltage switchgear and control gear assemblies**	a) Temperature rise limits	Cl.8.2.1 of IS 8623(Part-1): 1993, (RA 2013)	Upto 2000A Upto 200°C
		b) Dielectric Properties	Cl.8.2.2 of IS 8623(Part-1): 1993, (RA 2013)	Upto 20KV, AC, 50Hz

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		c) Clearances and creepage distances	Cl.8.2.5 of IS 8623(Part-1):1993, (RA 2013)	0-150mm
		d) Mechanical operation	Cl.8.2.6 of IS 8623(Part-1): 1993, (RA 2013)	Qualitative
		e) Degree of protection	Cl.8.2.7 of IS 8623(Part-1): 1993, (RA 2013)	IP1X to IP6X (0.1µm to 50mm) IPX1 to IPX8 (0.4mm to 1m)
		f) Wiring electrical operation	Cl.8.3.1 of IS 8623(Part-1): 1993, (RA 2013)	Qualitative
		g) Insulation resistance	Cl.8.3.2& Cl.8.3.4 of IS 8623(Part-1):1993, (RA 2013)	1 to 5000MΩ 500/1000V
		h) Protective measures	Cl.8.3.3 of IS 8623(Part-1): 1993, (RA 2013)	Qualitative
5.	**Low-voltage switchgear and control gear assemblies**	a) Temperature-rise limits	Cl. 8.2.1 of IS 8623 (Part-2):1993, (RA 2013), Amdt.1	Upto 2000A 0°C to 200°C
		b) Dielectric Properties	Cl. 8.2.2 of IS 8623 (Part-2):1993, (RA 2013), Amdt.1	Upto 20KV
		c) Continuity of the protective circuit	Cl.8.2.4 of IS 8623 (Part-2):1993, (RA 2013), Amdt.1	Qualitative
		d) Clearances and creepage distances	Cl.8.2.5 of IS 8623 (Part-2):1993, (RA 2013), Amdt.1	Upto 150mm
		e) Mechanical operation	Cl.8.2.6 of IS 8623 (Part-2):1993, (RA 2013), Amdt.1	Qualitative
		f) Degree of protection	Cl.8.2.7 of IS 8623 (Part-2):1993, (RA 2013), Amdt.1	IP1X to IP6X (0.1µm to 50mm) IPX1 to IPX8 (0.4mm to 1m)

Laboratory	**National Test House (N.R.), Kamla Nehru Nagar, Ghaziabad, Uttar Pradesh**	
Accreditation Standard	**ISO/IEC 17025: 2017**	
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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

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection

ELECTRONICS TESTING

I.	**SAFETY TESTING FACILITY**			
1.	**Electronic Office Eqpt.**	(i)Dry Heat Test	As per IS 9000 (Part-3/Sec 5) 1977 (RA 2007)	0 to 300 ºC
		ii) Cold Test	As per IS 9000 (Part-2/Sec-4) 1977 (RA 2007)	0 to to 40 °C
		iii) Damp Heat Test	As per IS 9000 (Part-5/Sec-1 to 5) 1981 (RA 2007)	0 to 100 °C Humidity Ambient to 98% RH
2.	**Information Technology Equipment-Safety IS 13252 (Part 1):2010**	Input Current	Clause 1.6.2	AC/DC-1000V 1 to 20 A
		Protection in operator access area	Cl 2.1.1	Qualitative
		Durability	Clause no. 1.7.11	Qualitative
		Access to ELV wiring (Electric strength Test)	Clause 2.1.1.3	Qualitative
		Access to hazardous voltage	Clause 2.1.1.4	Range-0 to 4 KV
		Energy Hazard	Clause 2.1.1.5	AC/DC-1000V 1 to 20 A
		Manual Controls (Electric strength Test)	Clause 2.1.1.6	Range-0-4 KV
		Discharge of Capacitor	Clause 2.1.1.7	0 to 50 MHz
		Energy Hazard (DC Mains supply)	Clause 2.1.1.8	Qualitative
		Protection in service area	Clause 2.1.2	Same as clause 2.1.1.7
		Protection in restricted access location	Clause 2.1.3	Same as clause 2.1.1.7
		Voltage in normal condition	Clause 2.2.2	AC/DC-1000V

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Voltage under fault condition	Clause 2.2.3	0 to 100V
		Condition to SELV circuit to other circuit	Clause 2.2.4	0 to 100V
		Protection by basic insulation	Clause 2.3.2.2	Range-0-4 KV
		Protection by earthing	Clause 2.3.2.3	1MΩ to 1 TΩ
		Protection by construction	Clause 2.3.2.4	1MΩ to 1 TΩ
		Sepration from hazardous voltage	Clause 2.3.3	Qualitative
		Limits of TNV circuit	Clause 2.3.1	5mA to 20A
		Connection of TNV circuit to other circuit	Clause 2.1.1.9 & Clause 4.5.1	5mA to 20A AC/DC-1000V Current-10A Joint/rigid 30 N
		Test for operating voltages generated externally	Clause 2.3.5	AC/DC-1000V Current-10A
		Limited current circuits, limit values	Clause 2.4.2	AC/DC-1000V
		Limited power source	Clause 2.5	AC/DC-1000V
		Provision for earthing and bonding	Clause 2.6	0-150mm & 0-300 mm LC 0.02 mm Acc-0.01 mm Range-0-25mm LC-= 0.001mm
		Short circuit back up protection	Clause 2.7.3	Qualitative
		Number & location of protective device	Clause 2.7.4	Qualitative
		Protection requirements	Clause 2.8.2	Qualitative
		Inadvertent reactivations	Clause 2.8.3	Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Fail Safe operation	Clause 2.8.4	Qualitative
		Over riding	Clause 2.8.6	Qualitative
		Humidity Conditioning	Clause 2.9.2	-40 to +180ºC, Ambient to 98 % RH LC-0.1 ºC/RH & Acc ±2ºC,±2%RH Range-0-4 KV
		Creepage distance/clearance/distance through insulation (determination of requirements:working voltage measurements)	Clause 2.10	0-150mm & 0-300 mm LC 0.02 mm Acc-0.01 mm Range-0-25mm
		RMS Working voltage	Clause 2.10.2.2	AC/DC-1000V
		Determination of Peak working voltage	Clause 2.10.2.3	AC/DC-1000V
		Clearances	Clause 2.10.3.1, 2.10.3.2, 2.10.3.3, 2.10.3.4, 2.10.3.6, 2.10.3.7, 2.10.3.8, 2.10.3.9(A)	0-150mm & 0-300 mm LC 0.02 mm Acc-0.01 mm Range-0-25mm LC-= 0.001mm
		Creepage distances	Clause 2.10.4	0-150mm & 0-300 mm LC 0.02 mm Acc-0.01 mm
		Solid Insulation	Clause 2.10.5.1, 2.10.5.2 to 2.10.5.14	0-150mm & 0-300 mm LC 0.02 mm Acc-0.01 mm
		Distance through insulation	Clause 2.10.5.2	Range-0-4 KV
		Insulating compound at solid insulation	Clause 2.10.5.3	Range-0-4 KV
		Uncoated printed board	Clause 2.10.6.1	0-150mm & 0-300 mm LC 0.02 mm Acc-0.01 mm

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Abrasion resistance test	Clause 2.10.8.4	Qualitative
		Current rating & over current protection	Clause 3.1.1	1°C to 300°C
		Insulation of conductors	Clause 3.1.4	Range-0-4 KV
		Wiring connection and supply 10 N steady force test	Clause 3.1.5, 3.1.9 & 4.2.2	10 N force
		Screw for electrical contact pressure	Clause 3.1.6	Joint/Rigid 30 N
		Insulating materials in electrical connections	Clause 3.1.7	Qualitative
		Multiple supply connections	Clause 3.2.2	Joint/Rigid 30 N
		Permanently connected eqpt	Clause 3.2.3	0-150mm & 0-300 mm LC 0.02 mm Acc-0.01 mm
		Appliance inlet	Clause 3.2.4	Joint/Rigid 30 N
		AC power supply cords	Clause 3.2.5.1	60,90,180,270ºC ±1ºC
		Cord anchorage and strain relief	Clause 3.2.6	0.25 to 50 N
		Protection against mechanical damage	Clause 3.2.7	0-150mm & 0-300 mm LC 0.02 mm Acc-0.01 mm
		Cord guards	Clause 3.2.8	0.25 to 50 N
		Supply wiring spaces	Clause 3.2.9	0-150mm & 0-300 mm LC 0.02 mm Acc-0.01 mm
		Wiring terminals for connection of external conductors	Clause 3.3	0-150mm & 0-300 mm LC 0.02 mm Acc-0.01 mm 1 °C to 300 °C
		Impact Test	Clause 4.2.5	50 mm weight 500 gms with string

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Drop Test	Clause 4.2.6	50 mm weight 500 gms with string
		Stress Relief	Clause 4.2.7	-40 to +180ºC, Ambient to 98 % RH LC-0.1 ºC/RH & Acc ±2ºC, ±2%RH
		Protection against hazardous moving parts	Clause 4.4	Joint/Rigid 30 N
		Thermal requirements	Clause 4.5.2 & 4.5.3	-40 to +180ºC, ambient to 98 % RH LC-0.1 ºC/RH & Acc ±2ºC,±2%RH
		Resistance to abnormal heat	Clause no. 4.5.5	-40 to +180ºC, ambient to 98 % RH LC-0.1 ºC/RH & Acc ±2ºC,±2%RH
		Evaluation of larger openings	(Clause no. 4.6.4.2)	Qualitative
		Touch current and protective conductor current	(Clause no.5.1)	AC:1-999µA
		Electric strength	(Clause no. 5.2)	0.5 kV to 5 kV AC 0.5 to 2 KV DC
		Protection against overload and abnormal operation	Clause 5.3	Qualitative test
3.	**Information Technology Equipment-Safety** **IS 616 (Part 1):2010**	Marking & Instruction requirements	Clause 5	Qualitative
		Heating under normal operating condition	Clause 7	Ambient to 250°C LC 1°C
		Protection against electric shock	Clause 8.2	0.5 kV to 5 kV AC

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Insulation of hazardous live parts	Clause 8.3	-40 to +180ºC, ambient to 98 % RH LC-0.1 ºC/RH & Acc ±2ºC,±2%RH
		Electrical shock hazard under normal operating condition	Clause 9.1.1 to 9.1.2	Joint/Rigid 30 N
		Moisture resistance	Clause 10.2 to 10.2.2	-40 to +180ºC, ambient to 98 % RH LC-0.1 ºC/RH & Acc ±2ºC,±2%RH
		Insulation resistance and dielectric strength	Clause 10.3	1-50KV
		Fault Condition Electric shock hazard	Clause 11.1	AC:1-999µA
		Fault Condition heating	Clause 11.2	Ambient to 250°C LC 1°C
		Impact Test	Clause 12.1.3	50 mm weight 500 gms with string
		Drop Test	Clause 12.1.4	50 mm weight 500 gms with string
		Stress relief test	Clause 12.1.5	-40 to +180ºC, ambient to 98 % RH LC-0.1 ºC/RH & Acc ±2ºC,±2%RH
		Drawers	Clause 12.4	Qualitative
		Clearance and creepage distance	Clause 13.1, 13.2, 13.3.1, 13.3.2, 13.3.3, 13.4 and 13.5	Joint/Rigid 30 N -40 to +180ºC, ambient to 98 % RH LC-0.1 ºC/RH & Acc ±2ºC,±2%RH
		Provision for protective earthing	Clause 15.2	1MΩ to 1 TΩ

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		External flexible cords	Clause 16	0.5 to 250 N
		Electrical connection and Mechanical fixing	Clause 17.1 to 17.6	0.5 to 250 N
4.	**Degrees of Protection (IP) provided by enclosures**	IS 12063-1987 Reframed 1999, IS 13947, Pt-1:1993 (Low voltage switch gear and control gear) And IEC 60529:2004	IS 12063 IS 13947 IEC 60529 Degree of protection against ingress of dust & water	IP IX-0-50 mm IP2X-0-12 mm IP3X-0-2.5 mm IP4X-0-1.0 mm IP5X-0-0.1 μm IP6X-0-0.1 μm IPX1-0-0.4 mm IPX2-0-0.4 mm IPX3-0-0.5 mm IPX4-0-0.4 mm IPX5-0-6.3 mm IPX6-0-12.5 mm IPX7-0-1 meter IPX8-0-1 meter
		Insulation Resistance		1 to 5000 MΩ at 500/1000V
		High Voltage Test		0.05 KV to 6 KV (AC) 0.05 KV to 10 KV (DC)

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection

MECHANICAL TESTING

I.	**BUILDING MATERIALS**			
1.	**Ordinary Portland Cement- 33 grade 43 grade 53 grade 43S grade 53 S grade Portland Slag Cement Portland Pozzolana Cement (Fly Ash & Calcined Clay Based) White Portland Cement**	Initial Setting Time	IS 4031 Part (5):1988 (RA 2014) Amds 2	05 to 600 minutes
		Final Setting Time	IS 4031 Part (5):1988 (RA 2014) Amds 2	05 to 600 minutes
		Standard Consistency	IS 4031 Part (4):1988 (RA 2014) Amds 2	10% to 50%
		Fineness by Specific Surface	IS 4031 Part (2):1999 (RA 2013) Amds. 2	200 m^2/kg to 500 m^2/kg
		Soundness by Le-Chatelier Method	IS 4031 Part (3):1988 (RA 2014) Amds 2	0.5 mm to 15 mm
		Soundness by Autoclave	IS 4031 Part (3):1988 (RA 2014) Amds 2	± 0.001 to 2%
		Compressive Strength	IS 4031 Part (6):1988 (RA 2014) Amds 4	0.5 N/mm^2 to 80 N/mm^2
		Density	IS 4031 Pt.(11):1988 (RA 2014)	2.0 g/cc to 3.5 g/cc
		Drying Shrinkage	IS 4031 Pt.(10):1988 Reaffirmed 2 014 Amds 1	0.001% to 2%
2.	**Pulverized Fuel Ash-For use as Pozzolana in Cement,**	Fineness-Specific Surface by Blaine's permeability method	IS 1727:1967 (RA 2013), Amds. 2	200 m^2/kg to 800 m^2/kg

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Cement Mortar and Concrete	Lime reactivity-Average Compressive Strength	IS 1727:1967 (RA 2013), Amds. 2	0.5 N/mm^2 to 15 N/mm^2
	Pulverized Fuel Ash For use as Admixture in Cement Mortar and Concrete. **For Lime Pozzolana Mixture Applications**	Compressive Strength 28 days	IS 1727:1967 (RA 2013), Amds. 2	0.5 N/mm^2 to 60 N/mm^2
		Particles retained on 45 micron IS Sieve(wet sieving)	IS 1727:1967 (RA 2013), Amds. 2	0.1% to 100%
		Soundness by autoclave test	IS 1727:1967 (RA 2013), Amds. 2	± 0.001 to 2 %
3.	**Cement Concrete Flooring Tiles,** **Chequered Cement concrete Tiles**	Water Absorption	IS 1237:2012 (RA 2017), amds 3	1% to 20%
		Water Absorption	IS 13801:2013 (RA 2017), amds 6	1% to 20 %
		Wet Transverse Strength	IS 1237:2012 (RA 2017), amds 3	0.1 N/mm^2 to 8 N/mm^2
		Wet Transverse Strength	IS13801:2013 (RA 2017), amds 6	0.1 N/mm^2 to 8 N/mm^2
		Resistance to Wear	IS 1237:2012 (RA 2017), amds 3	0.1 mm to 10 mm
		Resistance to Wear	IS 13801:2013 (RA 2017), amds 6	0.1 mm to 10 mm
		Dimensions	IS 1237:2012 (RA 2017), amds 3	1 mm to 405 mm
		Dimensions	IS 13801:2013 (RA 2017), amds 6	1 mm to 405 mm
4.	**Precast Concrete Blocks for Paving**	Water Absorption	IS 15658-2006 (RA 2016)	1% to 15%
		Compressive Strength	IS 15658-2006 (RA 2016)	1 N/mm^2 to 80 N/mm^2
		Resistance to Wear	IS 15658-2006	1000 to 50000 mm^3 per

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
			(RA 2016)	5000 mm^2
		Dimensions	IS 15658-2006 (RA 2016)	1 mm to 500 mm
5.	**Coarse and Fine Aggregate for Concrete**	Size and Grading	IS 2386 (1):1963 (RA 2016) Amds 4	75 µ to 80 mm
	Ballast	Deleterious Materials & Organic Impurities	IS 2386 (2):1963 (RA 2016) Amds 1	0 to 25%
		Soundness of Aggregates	IS 2386(5):1963 (RA 2016)	0.1% to 10%
		Crushing Value	IS 2386 (4):1963 (RA 2016) Amds 3	1% to 50%
		Impact value	IS 2386 (4):1963 (RA 2016) Amds 3	1% to 50%
		Abrasion value (by los Angeles)	IS 2386 (4):1963 (RA 2016) Amds 3	1% to 70 %
		Water absorption	IS 2386 (3):1963 (RA 2016)	0.1% to 30 %
		Bulking of Fine Aggregate	IS 2386 (3):1963 (RA 2016)	0 to 50 %
		Combined Flakiness and Elongation Index	IS 2386 (1):1963 (RA 2016) Amds 4	0 to 80 %
		Ten Percent Fines Value	IS 2386 (4):1963 (RA 2016) Amds 3	10 kN to 300 kN
6.	**Common Burnt Clay Building Bricks,**	Water Absorption	IS 3495 (2):1992 (RA 2016)	1% to 30%
		Compressive Strength	IS 3495 (1):1992 (RA 2016)	0.5 N/mm^2 to 80 N/mm^2
	Heavy Duty Burnt Clay Building Bricks,	Efflorescence	IS 3495 (3):1992 (RA 2016)	Qualitative (Visual Examination)
	Burnt Clay	Dimensions Length Width Thickness	IS 1077:1992 (RA 2016) Amds. 1	1 mm to 5000 mm 1 mm to 3000 mm 1 mm to 2000 mm

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Perforated Building Bricks, **Burnt Clay Facing Bricks,** **Burnt Clay Sewer Bricks,**	Dimensions Length Width Thickness	IS 12894:2002 (RA 2017) Amds. 1	1 mm to 5000 mm 1 mm to 3000 mm 1 mm to 2000 mm
		Dimensions Length Width Thickness	IS 2180:1988 (RA 2016)	1 mm to 200 mm 1 mm to 100 mm 1 mm to 100 mm
	Pulverized Fuel Ash-Lime Bricks	Dimensions Length Width Thickness	IS 2222:1991 (RA 2016) Amds. 1	1 mm to 250 mm 1 mm to 120 mm 1 mm to 100 mm
		Dimensions Length Width Thickness	IS 2691:1988 (RA 2016)	1 mm to 200 mm 1 mm to 100 mm 1 mm to 50 mm
		Dimensions Length Width Thickness	IS 4885:1988 (RA 2016)	1 mm to 200 mm 1 mm to 100 mm 1 mm to 100 mm
7.	**Pressed Ceramic Tiles,** **Ceramic Unglazed Vitreous Acid Resisting Tiles**	Water Absorption	IS 13630(Part 2):2006 (RA 2011)	0.1% to 30%
		Water Absorption	IS 4457:2007 (RA 2017) June	0.1% to 3%
		Modulus of Rupture	IS 13630(Part 6):2006 (RA 2011)	1 N/mm^2 to 60 N/mm^2
		Breaking Strength	IS 13630(Part 6):2006 (RA 2011)	1 N to 2500 N
		Modulus of Rupture	IS 4457:2007 (RA 2017) June	1 N/mm^2 to 60 N/mm^2
		Breaking Strength	IS 4457:2007 (RA 2017) June	1 N to 2500 N
		Scratch Hardness of Surface (Mohs Scale)	IS 13630(Part 13):2006 (RA 2011)	1 to 9 on Mohs Scale
		Chemical Resistance	IS 13630(Part 7):2006	Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
			(RA 2011)	(Visual Examination)
		Chemical Resistance	IS 13630(Part 8):2006 (RA 2011),	Qualitative (Visual Examination)
		Chemical Resistance	IS 4457:2007 (RA 2017) June	Qualitative (Visual Examination)
		Crazing Resistance	IS 13630(Part 9):2006 (RA 2011)	Qualitative (Visual Examination)
8.	**Cement Concrete Cubes, Cores, Concrete Admixtures**	Compressive Strength	IS 516:1959 (RA 2013) Amds. 2	0.5 N/mm^2 to 80 N/mm^2
9.	**Integral Water Proofing Compounds**	Permeability to Water	IS 2645:2003 (RA 2017)	1 to 1000ml.
		Compressive Strength	IS 4031 Part (6):1988 (RA 2014) Amds 4	0.5 N/mm^{2}to 80 N/mm^2
		Initial Setting Time	IS 4031 Part (5):1988 (RA 2014) Amds 2	05 to 600 minutes
		Final Setting Time	IS 4031 Part (5):1988 (RA 2014) Amds 2	05 to 600 minutes
10.	**Water**	Compressive Strength	IS 516:1959 (RA 2013) Amds. 2 and IS 456:2000	0.5 N/mm^2 to 80 N/mm^2
		Initial Setting Time	IS 4031 (5):1988 (RA 2014) Amds 2	05 to 600 minutes
II.	**SOIL AND ROCK**			

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
1.	**Soils Earth Blanketing Materials Sub grade**	Sieve Analysis	IS 2720(Part 1):1983 (RA 2015)	75 µ to 75 mm
		Atterberg Limits:- a)Liquid Limit	IS 2720(Part 5):1985 (RA 2010)	5 % to 100%
		b)Plastic Limit	IS 2720(Part 5):1985 (RA 2015)	5 % to 50%
		Moisture Content	IS 2720(Part 2):1973 (RA 2015) Amds. 1	0.1% to 50%
		California Bearing Ratio(CBR)	IS 2720(Part 16):1987 (RA 2016) Amds. 2	1% to 200%
		Optimum Moisture Content and Dry Density:- a) Optimum Moisture Content	IS 2720(Part 2):1973 (RA 2015) Amds. 1	0.1% to 50%
		b)Light Compaction	IS 2720(Part 7):1980 (RA 2016) Amds. 2	0.5 g/cc to 3 g/cc
		b)Heavy Compaction	IS 2720(Part 8):1983 (RA 2015)	0.5 g/cc to 3 g/cc
III.	**WOOD AND WOOD PRODUCTS**			
1.	**Ply Wood for General Purposes.,**	Dimensional Changes Caused By humidity	IS 1659:2004 (RA 2014) Amds. 2	0.1 to 50 mm (t) 0 .1 to 200 mm (l)
	Marine ply wood,	Resistance to Water	IS 1659:2004 (RA 2014) Amds. 2	Qualitative
	Plywood for Concrete Shuttering Work,	Water Resistance test	IS 1328:1996 (RA 2017) Amds. 6	Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Veneered Decorative Ply wood, Block Boards, Plain Particle Boards, , Veneered Particle Boards, Prelaminated Particle Boards, Medium Density Fibre Boards for General Purpose, Prelaminated Medium Density Fibre Boards, Wooden Flush Door Shutters Decorative Thermosetting Synthetic Resin Bonded Laminated Sheet	Moisture Content	IS 1734 (1):1983 (RA 2013)	1% to 35%
		Moisture Content	IS 2380 (3):1977 (RA 2013) Amds. 4	1% to 35%
		Moisture Content	IS 1708 (1)-86 (RA 2015) Amds. 2	1% to 40%
		Moisture Content	IS 287-93, (RA 2012)	1% to 50%
		Spot test	IS 1659:2004 (RA 2014) Amds. 2	Qualitative
		Modulus of Rupture	IS 2380 (4):1977 (RA 2013) Amds. 4	5 N/mm^2 to 150 N/mm^2
		Modulus of Elasticity	IS 2380 (4):1977 (RA 2013) Amds. 4	500 N/mm^2 to 15000 N/mm^2
		Modulus of Rupture	IS 1734 (11):1983 (RA 2013)	5 N/mm^2 to 150 N/mm^2
		Modulus of Elasticity	IS 1734 (11):1983 (RA 2013)	500 N/mm^2 to 15000 N/mm^2
		Modulus of Rupture	IS 1659:2004 (RA 2014) Amds. 2	5 N/mm^2 to 150 N/mm^2
		Modulus of Elasticity	IS 1659:2004 (RA 2014) Amds. 2	500 N/mm^2 to 15000 N/mm^2
		Dimensions	IS 2380 (2):1977 (RA 2013) Amds. 4	1mm to 2500 mm
		Dimensions	IS 4020 (2):1998 (RA 2013) Amds. 2	1 mm to 2100 mm
		Dimensions	IS 2046:1995	1 mm to 2500 mm

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
			(RA 2015) Amds. 1	
		Dimensions	IS 1734 (1):1983 (RA 2013)	1 mm to 2500 mm
		Density	IS 2380 (3):1977 (RA 2013) Amds. 4	50 kg/m^3 to 1200 kg/m^3
		Linear Expansion	IS 2380 (17):1977 (RA 2013) Amds. 4	0 .1% to 2 %
		Thickness Swelling (Swelling in water)		0 .1% to 25%
		Swelling in thickness due to surface absorption		0 .1% to 18%
		Tensile Strength Perpendicular to Surface/Internal bond	IS 2380 (5):1977 (RA 2013) Amds. 4	0.01 N/mm^2 to 7 N/mm^2
		Screw withdrawal Strength	IS 2380 (14):1977 (RA 2013) Amds. 4	10 N to 5000 N
		Screw withdrawal Strength	IS 4020 (16):1998 (RA 2013) Amds. 2	10 N to 5000 N
		Surface Abrasion Resistance	IS 12823:2015 Amds. 7	1 to 3000 Revolutions
		Surface Abrasion Resistance	IS 14587:1998 (RA 2013) Amds. 8	1 to 3000 Revolutions
		Surface Abrasion Resistance	IS 2046:1995 (RA 2015) Amds. 1	1 to 3000 Revolutions
		Resistance to Steam	IS 12823:2015 Amds. 7	Qualitative
		Resistance to Steam	IS 14587:1998 (RA 2013) Amds. 8	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 Steam	IS 2046:1995 (RA 2015) Amds. 1	Qualitative
		Resistance to crack	IS 12823:2015 Amds. 7	Qualitative
		Resistance to crack	IS 14587:1998 (RA 2013) Amds. 8	Qualitative
		Resistance to crack	IS 2046:1995 (RA 2015) Amds. 1	Qualitative
		Resistance to cigarette Burn	IS 12823:2015 Amds. 7	Qualitative
		Resistance to cigarette Burn	IS 14587:1998 (RA 2013) Amds. 8	Qualitative
		Resistance to cigarette Burn	IS 2046:1995 (RA 2015) Amds. 1	Qualitative
		Water Absorption	IS 2380 (16):1977 (RA 2013) Amds. 4	0.1% to 95%
		Surface defects	IS 2046:1995 (RA 2015) Amds. 1	Qualitative
		Surface defects & Surface quality	IS 303:1989 (RA 2013) Amds. 6	Qualitative
		Surface defects & Surface quality	IS 1328:1996 (RA 2017) Amds. 6	Qualitative
		Surface defects & Surface quality	IS 710:2010 (RA 2017)	Qualitative
		Glue Shear Strength Test	IS 1734 (4):1983 (RA 2013)	0.1 KN to 10 KN

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
			Amds. 3	
		Resistance to Staining	IS 12823:2015 Amds. 7	Qualitative
		Resistance to Staining	IS 2046:1995 (RA 2015) Amds. 1	Qualitative
		Resistance to Staining	IS 14587:1998 (RA 2013) Amds. 7	Qualitative
		Mycological Test	IS 1659:2004 (RA 2014) Amds. 2	Qualitative
		Mycological Test	IS 1734 (7):1983 (RA 2013) Amds. 1	Qualitative
		Adhesion of Plies (Knife test)	IS 1659:2004 (RA 2014) Amds. 2	Qualitative
		Adhesion of Plies (Knife test)	IS 4020 (14):1998 (RA 2013) Amds. 2	Qualitative
		Adhesion of Plies (Knife test)	IS 1734 (5):1983 (RA 2013)	Qualitative
		Tensile Strength	IS 1734 (9):1983 (RA 2013)	5 N/mm^2 to 100 N/mm^2
		Resistance to Immersion in Boiling water	IS 2046:1995 (RA 2015) Amds. 1	0.1 mm to 12 mm
		Dimensional Stability at deviated temperature	IS 2046:1995 (RA 2015) Amds. 1	0.1 mm to 200 mm
		Resistance to Dry heat at 180 ^0C	IS 2046:1995 (RA 2015) Amds. 1	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 Impact By small dia ball	IS 2046:1995 (RA 2015) Amds. 1	Qualitative
		Resistance to Scratching	IS 2046:1995 (RA 2015) Amds. 1	Qualitative
2.	**Wooden Flush Doors**	Slamming Test	IS 4020 (10):1998 (RA 2013)	Qualitative
		Local planeness	IS 4020 (4):1998 (RA 2013)Amds. 2	0 .05 mm to 10 mm
		Impact Indentation	IS 4020 (4):1998 (RA 2013)Amds. 2	0.05 mm to 10 mm
		Glue Adhesion Test	IS 4020 (15):1998 (RA 2013)Amds. 2	0.01 mm to 150 mm
		End Immersion Test	IS 4020 (13):1998 (RA 2013)Amds. 2	Qualitative
		General Flatness	IS 4020 (3):1998 (RA 2013)Amds. 2	0.01 mm to 10 mm
		Flexure Test	IS 4020 (6):1998 (RA 2013)Amds. 2	0.01mm to 100 mm
		Edge loading test	IS 4020 (7):1998 (RA 2013)Amds. 2	0 .01 mm to 25 mm
		Shock Resistance test	IS 4020 (8):1998 (RA 2013)Amds. 1	Qualitative
		Buckling test	IS 4020 (9):1998 (RA 2013)Amds. 2	0.01 mm to 100 mm
		Misuse test	IS 4020 (11):1998 (RA 2013)Amds. 2	Qualitative
		Varying Humidity Test	IS 4020(Part 12):1998 (RA 2013)Amds. 2	0.01 mm to 10 mm

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
IV.	**RUBBER AND RUBBER PRODUCTS**			
1.	**Rubber**	i)Hardness (Shore A)	By Durometer method ASTM-D 2240-05,2010	35 to 95
		ii) Tensile Strength	IS 3400(PT-1)-1987 (RA 2012)	3 N/mm^2 to 30 N/mm^2
		iii)Elongation	IS 3400(PT-1)-1987 (RA 2012)	110% to 900%
		iv)Compression set	IS 3400(Pt-X)-1977 (RA 2003)	0 to 60%
V.	**TEXTILE MATERIALS**			
1.	**Textiles(fabric)**	i) Weight (gm.per Square Meter)	IS-1964-2001 (RA 2000),	20 GSM to 800 GSM
		ii)Threads per unit length in woven fabric (Ends, Picks) (Per dm.)	IS-1963-1981 (RA 2004)	50 to 1000
		iii) Breaking load	IS-1969-1985 (RA 2006)	50 N to 2000 N
		iv) Length & width of fabric	IS-1954-1990 (RA 2004)	5 cm. to 700 cm.
VI.	**PAPER & PAPER PRODUCTS**			
1.	**Maplitho, Art paper, offset, cover, printing**	i) Gloss/Opacity/ Brightness,	IS-1060 (pt 1&2)1966 (RA 2004) Amnd 5 2011	0 to 100%
		ii) One Minute Cobb test for water penetration	IS-1060 (pt 1) 1966 (RA 2004) Amnd 5 2011	10 to 90

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		iii) Tensile Index	IS-1060 (pt 1) 1966 (RA 2004) Amnd 5 2011	10 to 100 N.m/g
		iv) Moisture Content	IS-1060 (pt 1) 1966 (RA 2004) Amnd 5 2011	1% to 50%
		v) Surface Strength Dennison (Wax Pick)	IS-1060 (pt 3) 1966 (RA 2004) Amnd 5 2011	2A to 22 A wax picks (Qualitative)
		vi) Ash content	IS-1060 (pt 1) 1966 (RA 2004) Amnd 5 2011	1% to 50%
		vii)Weight (G.S.M)	IS-1060 (pt 1) 1966 (RA 2004) Amnd 5 2011	10 GSM to 400 GSM
		viii)Thickness	IS-1060 (pt 1) 1966 (RA 2004) Amnd 5 2011	10 micron to 500 micron
		ix) Stiffness (Taber stiffness)	IS-1060 (pt 3) 1966 (RA 2004) Amnd 5 2011	0.5 to 5
		xi) Tear Index	IS-1060 (pt 1) 1966 (RA 2004) Amnd 5 2011	0.5 to 20 mNm^2/g
		xii) Bursting Strength	IS-1060 (pt 1) 1966 (RA 2004) Amnd 5 2011	1 kg/cm^2 to 20 kg/cm^2
		xiii)Double Fold(Folding endurance test)	IS 1060(Part 1) 1966Amdt.5,2011	5 to 100nos.
		xiv)Smoothness & Porosity (Bendtsen type)	IS 9894:1981 (RA 2002)	40 to 2900 mg./ml.

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
VII.	**PLASTICS AND PLASTIC PRODUCTS**			
1.	**Plastics**	i)Opacity	IS 12235(Part 3):2004	0 to 1% transparency
		ii)Vicat Softening Point	IS 12235(Part 2):2004	50 to 120deg.C
		iii)Reversion Test	IS 12235(Part5):2004& IS 4984(Annex.C)	1% to 7%
		iv)Density	IS 12235(Part 14):2004	1.1 g/cc to 1.8 g/cc
		v)Carbon Black Dispersion	IS 2530:1963 (RA 2003)	Satisfactory
		vi)Carbon Black Contents	IS 2530:1963 (RA 2003)	0.5% to 4%
		vii)Melt Flow Index	IS 2530:1963 (RA 2003)	0.1 to 4g/10 min.
		viii)Resistance to exter nal blows	IS 4985(Annex.C):2000	0 to 100% True Impact rate
		ix)Hydrostatic Pressure test for UPVC and HDPE Pipes	IS 12235(Part 8):2004&IS 4984(Annex. B):1995	No signs of rupture or leakage
		x)Dimensions of pipe a)Diameter b)Wall thickness	IS 12235(Part 1):2004	16 mm. to 600 mm. 1 mm. to 150 mm.
		xi)Sulphated ash	IS 4985(Annex.B):2000	0.1% to 15%
VIII.	**METALS& ALLOYS**			
1.	**(Ferrous, Nonferrous, Raw Materials Products)**	1.Tensile Strength	IS 1608-2005	50 MPa to 1700 MPa
		Yield Stress/0.2% Proof Stress		40 MPa to 1400 MPa
		% Elongation		1% to 80%
		Reduction in Area		1% to 80%

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		2. Bend Test	IS 1599-2012	(1.5 to 1000KN) Mandrel Size (mm)- 5,10,12,20,25,30,38,40, 51,54,60,96 (In Diameter) & 8,16,20,25,30,40,50,60, 70,80,90,100,120,140, 160(in Radius)
		3.Brinell Hardness Test	IS 1500-(pt-1) 2013	100 to 400 HBW(5/750); 100 to 400 HBW (10/3000)
		4. Rockwell Hardness Test	IS 1586(Pt-1)-2012	20 HRBW to 100 HRBW 20 HRC to 70 HRC
		5.Vickers Hardness Test	IS 1501(pt 1) 2013	250 to 750 HV 5 & HV30
2.	**Ferrous Raw Materials**	1.Izod Impact Test	IS 1598-2015	1 J to 170 J
		2.Charpy Impact Test	IS 1757(Part-1)-2014	2 J to 300 J (ambient to-40 °C)
3.	**Ferrous Pipes**	1.Compression Test	IS 9537(Pt-I)-1980	Qualitative
		2.Flatening Test	IS 2328-2005	Qualitative
		3.Crushing	IS 3601-2006	Qualitative
		4.Bend Test for Metallic	IS 2329-2005	Qualitative
		5.Bend Test for Conduit	IS 9537(Pt. 2)-1981	Qualitative
		6.Drift Expansion	IS 2335-2005	Qualitative
4.	**High Strength Deformed Steel bar**	1.Re-Bend Test	IS 1786-2008	Mandrel Size (mm)- 5,10,12,20,25,30,38,40, 51,54,60,96 (In Diameter) & 8,16,20,25,30,40,50,60, 70,80,90,100,120,140,160(in Radius)
5.	**Ferrous wires/rod upto 3 mm**	1. Wrapping Test 2.Reverse Bend Test	IS 1755-1983 IS 1716-1985	Qualitative Qualitative
6.	**Ferrous Steel 7 ply Strand**	1. 0.2 % Proof Load	IS 14268-1995	1.5 KN to 1000 KN
		2. Breaking Load/		1.5 kN to 1000 kN

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Strength		
		3. % Total Elongation at gauge length		1% to 10%
7.	**(Ferrous & Nonferrous) Bars, Wires, Pipes, Tubes, Valves, Sheets, Etc. PIPE TMT/HSD BARS**	Dimension	IS 1239(Pt.-1)-2004 Amdt.-4-2010 IS 1161-1998 (RA 2009) Amdt-5-2012, IS 1785 (Pt.-1)-1983 (RA 2009) IS 1785(Pt.-2)-1983 Amdt-4-2004 IS 1786-2008 Amdt-1-2012 IS 3589-2001 (RA 2009) IS 3601-2006 IS 2062-2011 Amdt 2012 IS 4270-2001 Amdt-2006 (RA 2006) IS 778-1984 (RA 2005) IS 4923-1997 (RA 2009) IS 9537(Pt.2)-1981 (RA 2007)	0.01 mm to 150 mm Min. 0.01 mm
		Mass	IS 1239(Pt.-1)-2004 (RA 2010)	0.5 g to 15 kg L.C. 0.5g.
			IS 1161-1998,Amdt-4-2011	
			IS 1786-2008 (RA 2008)	

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
			IS 3589-2001, Amdt-3-2006, (RA 2006)	
			IS 3601-2006	
			IS 2062-2011, Amdt-1-2012	
			IS 4270-2001, Amdt-1-2006, (RA 2006)	
			IS 4923-1997 Amdt-1-1998	
			IS 9537(Pt-I)-1980, Amdt-1-1995 (RA 2007)	
9.	**Gate valves, globe valves, Check valves and others Valves for water works Purposes, m.s. Tubuler & Other steel fittings.**	Hydraulic Pressure Test	IS 778-1984, Amdt-3-2005	0 to 70 kg/cm^2
10.	**Transformer Tank**	Air pressure Test/Vacuum Test	IS 1180(Pt.-1)-1989 & IS 1180(Pt.-2)-1989 (RA 2003)	Air pressure Test (0-2 $kg/cm^{2)}$ Vacuum Pressure Test (0-700mm. Hg)
11.	**TMT/HSD BAR**	Pullout test	IS 2770(Pt.01)-1967 (RA 2007)	4 to 32mm. Dia.
12.	**Steel Pipe/Tubes (Upto 150 mm Nominal size)**	Workmanship /Finish (Visual Inspection)	IS 1239 (Pt-1)-2004, Amdt-4-2010 IS 1161-1998, Amdt-4-2010	Qualitative
13.	**Ferrous Metals**	Macro Examination	IS 11371-1985 (RA 2007) IS 12037-1987 (RA 2007)	5X Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
14.	**Aluminium Section**	Coating Test (Instrument Method)	IS 6012-1992	12 to 80 Microns, ± 0.2 Microns
15.	**Welding Electrodes (Covered/Bare Electodes)**	Dimensions	IS 814-2004 (RA 2010) IS 5206-1983(RA 2013) IS 1395-1982(RA 2008) IS 6419-1996(RA 2010)	0-600 mm
		Concentricity of Flux covering	IS 814-2004 (RA 2010) IS 5206-1983(RA 2013) IS 1395-1982(RA 2008)	Qualitative
		Coating Ratio	IS 814-2004 (RA 2010) IS 5206-1983(RA 2013)	1.2 to 1.8
16.	**Ferrous Materials Weldments**	Tensile Test Yield Strength %Elongation	IS 1608:2005 (RA 2011) IS 3600(Part3)-2009	200 MPa to 800 MPa 250 MPa to 600 MPa 5% to 40%
		Bend Test	IS 1599-2012 IS 3600(Part 5 & 6)-1983 (RA-2008,RA 2010) IS 3600(PT3)-2009	10 mm to 30 mm
		Charpy Impact Test	IS 1757-2014	12J to 240J (-50˚C to ambient)
		Metal Recovery Test	IS 13043-1991	80% to 140 %
		Diffusible Hydrogen Test	IS 11802-1986 (RA 2013)	0.5 ml to 15 ml
		Fracture Test	IS 3600(Part 8)1985 (RA 2008)	Qualitative
		Fillet weld Test	IS 5206-1983(RA 2013) IS 1395-1992(RA 2008)	0.01 mm to 8 mm

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.	**RADIOGRAPHY TESTING FACILITY**			
1.	**Metallic materials (Welds & Castings)**	Radiography (X-Ray)	IS 1182-1983 (RA 2010), IS 2595-2008, ASTM E-94-2004/ ASTM E-1032-2006 ASTM E-1030-2005 IS 4853-1982(RA-2003) BS EN 1435-1997 (RA 2008)	5 mm to 40mm of steel thickness. Qualitative
II.	**ULRTASONIC TESTING FACILITY**			
1.	**Metallic materials (Welds, Plate, Forgings)**	Ultrasonic Testing (Contact method)	IS 3664-1981 (RA 1998), IS 4225-2004, IS 4260-2004, IS 8791-1978 (RA 2003) BS EN 1714-1997 ASTM E-114:2010 ASTM E-164:2008	Weld (10 mm to 60 mm) Plate (10 mm to 60 mm) Forging (10 mm to 1000 mm)