

Laboratory

Bureau of Indian Standards (Eastern Regional Laboratory), P-230,  
C.I.T. Scheme, VII M, Block W, Kankurgachi, Kolkata, West Bengal

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7977 (in lieu of T-0178 & T-0107 & T-0161) Page 1 of 14

Validity 18.09.2018 to 17.09.2020

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
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**CHEMICAL TESTING**

I.	METALS & ALLOYS			
1.	<b>Carbon Steel</b>	Chemical Analysis		
		Carbon	IS 228(Pt-1):1987 (RA 2018)	0.05 % to 1.50 %
		Manganese	IS 228(Pt-2):1987 (RA 2018)	0.10 % to 4.00 %
		Sulphur	IS 228(Pt-9):1987 (RA 2014)	0.01 % to 0.25 %
		Phosphorus	IS 228(Pt-3):1987 (RA 2018)	0.005 % to 0.20 %
		Silicon	IS 228(Pt-8):1989 (RA 2014)IS 228 (Pt-11):1990(RA 2014)	0.01 % to 0.50 %
		Nitrogen	IS 228(Pt-19):1998 (RA 2016)	0.002 % to 0.50 %
2.	<b>Copper &amp; its Alloys</b>	Copper	IS 4027(Pt-1):1987 (RA 2018)IS 3685:1966 (RA 2018)	50 % to 99.99 %
		Lead	IS 4027(Pt-1):1987 (RA 2018)IS 3685:1966 (RA 2018)	0.10 % to 35 %
		Tin	IS 4027(Pt-5):1987 (RA 2018)IS 3685:1966 (RA 2018)	0.01 % to 30.0 %
		Silicon	IS 4027(Pt-10):2000 (RA 2018)IS 3685:1966 (RA 2018)	0.01 % to 20.0 %
		Manganese	IS 4027(Pt-2):1987 (RA 2018) IS 3685:1966 (RA 2018)	0.02 % to 6.0 %

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Laboratory

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Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7977 (in lieu of T-0178 & T-0107 & T-0161) Page 2 of 14

Validity 18.09.2018 to 17.09.2020

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
		Zinc	IS 4027(Pt-6):1987 (RA 2018) IS 3685:1966 (RA 2018)	0.1 % to 10.0 %
		Nickel	IS 4027(Pt-4):1987 (RA 2018)/ IS 3685:1966 (RA 2018)	0.1 % to 10.0 %
		Iron	IS 4027(Pt-8):-1991 (RA 2018)/ IS 3685:1966 (RA 2018)	0.01 % to 6.0 %
3.	Aluminium & its Alloys	Thickness of anodic coating	IS 5523:1983(RA 2016)	1 µm to 20 µm
<b>II. BUILDING MATERIALS</b>				
1.	Cement PSC/PPC/ OPC/Clinker/ Fly-Ash	Chemical Analysis: Loss of ignition	IS 4032:1985(RA 2014)/ IS 1727:1967(RA 2018)	0.1 % to 10.0 %
		Sulphuric Anhydride	IS 4032:1985(RA 2014)/ IS 1727:1967(RA 2018)	0.5 % to 5.0 %
		Insoluble residue	IS 4032:1985(RA 2014)	0.1 % to 50.00 %
		Magnesium Oxide	IS 4032:1985(RA 2014)/ IS 1727:1967(RA 2018)	0.2 % to 25.00 %
		Calcium Oxide	IS 4032:1985(RA 2014)/ IS 1727:1967(RA 2018)	20.0 % to 80.0 %
		Ferric Oxide	IS 4032:1985(RA 2014)/ IS 1727:1967(RA 2018)	0.2 % to 15.0 %
		Aluminium Oxide	IS 4032:1985(RA 2014)/ IS 1727:1967(RA 2018)	0.5 % to 35.0 %
		Sulphide Sulphur	IS 4032:1985(RA 2014)/ IS 1727:1967(RA 2018)	0.01 % to 4.0 %

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Laboratory Bureau of Indian Standards (Eastern Regional Laboratory), P-230,  
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Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7977 (in lieu of T-0178 & T-0107 & T-0161) Page 3 of 14

Validity 18.09.2018 to 17.09.2020 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
		Silica	IS 4032:1985(RA 2014)/ IS 1727:1967(RA 2018)	-75.0 %
		Chloride	IS 4032:1985(RA 2014)	0.005 % to 0.2 %
		Alkali Content	IS 4032:1985(RA 2014)	0.1 % to 2.0 %
III.	<b>LEATHER</b>			
1.	<b>Others (Leather Safety Foot wear)</b>	Solvent extractable substances	IS 582(LC-4):1970 (RA 2014)	1.0 % to 10.0 %
		Chromium	IS 582(LC-10):1970 (RA 2014)	1.0 % to 10.0 %
IV.	<b>PLASTICS &amp; RESINS</b>			
1.	<b>Plastics &amp; Polymers</b>	Overall Migration	IS 9845:1998(RA 2015)	Upto 10 mg/dm <sup>2</sup> or 60 mg/lit
		Colour Migration	IS 9845:1998(RA 2015)	Qualitative

Laboratory

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Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7977 (in lieu of T-0178 & T-0107 & T-0161) Page 4 of 14

Validity 18.09.2018 to 17.09.2020 Last Amended on --

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**ELECTRICAL TESTING**

I.	CABLES AND ACCESSORIES			
1.	PVC Insulated cables for working voltage upto & including 1100 V, Heavy Duty cable  Size:Upto 35mm <sup>2</sup> & Shot Firing Cable (Used other than Shaft)		IS 694-2010(RA 2015), IS 1554(Pt.-1)-1988 (RA 2015) & IS 5950-1984 (RA 2016)	
		Conductor Resistance Test	IS 10810(Pt.-5)-1984 (RA 2016)	1 mΩ to 11 Ω
		Thickness of Insulation & Sheath	IS 10810(Pt.-6)-1984 (RA 2016)	0.3mm to 10 mm
		Loss of mass Test	IS 10810(Pt.-10)-1984 (RA 2016)	0.2 g to 30 g
		Thermal Ageing in air oven	IS 10810(Pt.-11)-1984 (RA 2016)	60 <sup>0</sup> C to 200 <sup>0</sup> C
		Shrinkage Test	IS 10810(Pt.-12)-1984 (RA 2016)	0.5mm to 300 mm
		Heat Shock Test	IS 10810(Pt.-14)-1984 (RA 2016)	70 <sup>0</sup> C to 150 <sup>0</sup> C
		Hot Deformation Test	IS 10810(Pt.-15)-1984 (RA 2016)	0.3mm to 150mm
		Insulation Resistance Test.	IS 10810(Pt.-43)-1984 (RA 2016)	(10 to 100)X10 <sup>6</sup> Meg ohms100 V to 500V
		High Voltage Test (water immersion Test) a) a.c b) d.c	IS 10810(Pt.-45)-1984 (RA 2016)	1.5kv to 7 kV a.c (Qualitative)1kv to 5 kV d.c(Qualitative)
		Flammability Test	IS 10810(Pt.-53)-1984 (RA 2016)	0.2 sec to 60 sec 1mm to 300mm.
		IS 1554(Pt.-1)-1988 (RA 2015)		
	High Voltage Test at room temperature	IS 10810(Pt.-45)-1984 (RA 2016)	1.5kv to 7 kV a.c(Qualitative)	

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

**Certificate Number** TC-7977 (in lieu of T-0178 & T-0107 & T-0161) Page 5 of 14

**Validity** 18.09.2018 to 17.09.2020 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
		Thermal stability Test	IS 10810(Pt.-60)-1984 (RA 2016)	200°C
		Tensile Test for Aluminium conductor	<b>IS 694-2010 (RA 2015)</b> IS 10810 (Pt.-2)-1984 (RA 2016)	10 N to 2500 N
		Annealing Test for copper conductor	IS 10810(Pt.-1)-1984 (RA 2016)	5 N to 1000 N
		a) Tensile strength & b) elongation of insulation and sheath	IS 10810(Pt.-7)-1984 (RA 2016)	a) 10 N to 500N b) 2 cm to 30 cm
			<b>IS 1554(Pt.-1)-1988 (RA 2015)</b>	
		Tensile test on Aluminum conductor	IS 10810(Pt.-2)-1984 (RA 2016)	10 N to 2500 N
		Annealing test on copper conductor	IS 10810(Pt.-1)-1984 (RA 2016)	10 N to 2500 N
		Tensile test on insulation & sheath	IS 10810(Pt.-7)-1984 (RA 2016)	10 N to 500N
		Elongation on insulation & sheath	IS 10810(Pt.-7)-1984 (RA 2016)	2 cm to 30 cm
		Test on Armouring wire & strips	IS 10810(Pt.36 to 42)-1984 (RA 2016)	
			<b>IS 5950-1984(RA 2016)</b>	
		Annealing Test for Copper Conductor	IS 10810(Pt.-2)-1984 (RA 2016)	10 N to 500 N
		Tensile Strength of Insulation & Sheath	IS 10810(Pt.-7)-1984 (RA 2016)	10 N to 500N
		Elongation of & Sheath Insulation	IS 10810(Pt.-7)-1984 (RA 2016)	2 cm to 30 cm

Laboratory

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Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7977 (in lieu of T-0178 & T-0107 & T-0161) Page 6 of 14

Validity 18.09.2018 to 17.09.2020 Last Amended on --

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II.	<b>ELECTRICAL MATERIALS</b>			
1.	<b>Aluminium conductor for overhead Transmission Purposes, Aluminium Stranded Conductors Aluminium Conductor for overhead Transmission Purposes, Aluminium Stranded Conductor Galvanized Steel Reinforced (Upto 100 mm<sup>2</sup>) Aluminium Conductor for overhead Transmission Purposes, Aluminium Alloy Stranded Conductors</b>	Lay ratio	IS 398(Pt.-1)-1996 (RA 2018)	40 mm to 150 mm
Dimension of wires		IS 398(Pt.-2)1996 (RA 2018)	1 mm to 25 mm	
Resistance Test		IS 398(Pt.-4)-1994 (RA 2014)	1 mΩ to 11 Ω	
Wrapping Test (AAC&ACSR only)			(Qualitative)	
Weight of Zn-coating (ACSR Only)			1 g to 200 g	
Dip Test (ACSR Only)			(Qualitative)	
Breaking Load		IS 398(Pt.-1)-1996 (RA 2018)	100 N to 5000 N	
Breaking load of 'Al'			100 N to 5000 N	
Breaking load of steel		IS 398(Pt.-2)1996 (RA 2018)	500 N to 40000 N	
Torsion test on steel wire			weight load 3kg to 35 kg	
Breaking load			500N to 5000 N	
Elongation		IS 398(Pt.-4)-1994 (RA 2014)	Stainless steel scale (0.05 cm to 30 cm)	

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Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7977 (in lieu of T-0178 & T-0107 & T-0161) Page 7 of 14

Validity 18.09.2018 to 17.09.2020 Last Amended on --

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**MECHANICAL TESTING**

I.	<b>MECHANICAL PROPERTIES OF METALS</b>			
1.	<b>Ferrous materials, alloys &amp; products</b>	Tensile Test Yield Stress Tensile Strength % Elongation	IS 1608:2005(RA 2017)	8 kN to 350 kN
		Bend Test	IS1599:2012(RA 2017) IS 2329:2005(RA 2017)	4 mm to 150 mm (for Flat, round) 15-50 mm NB (tube) (dia of mandrel in mm- 4, 5, 6, 7, 8, 9, 10, 11, 12, 18, 20, 23, 32, 33, 35, 40, 45, 48, 50, 54, 60, 64, 72, 80, 84, 100, 111, 112, 125, 126, 140, 150, 160, 175, 200)
		Flattening Test for tube	IS 2328:2018	>50 to 150 mm OD
		Re-bend Test	IS 1786:2008(RA 2013)	4 mm to 32 mm
		Dimensions, Deformation & Surface Characteristics, Mass	IS 204 (Pt 1):1991 (RA 2016) IS 274 (Pt1& 2)-1981 (RA 2013) IS 277:2018 IS 278:2009(RA 2015) IS 280:2006 (RA 2015) IS 281:2009 (RA 2013) IS 362:1991 (RA 2016) IS 513:2016 IS 808:1989 (RA 2014)IS 1029:1970 (RA 2013) IS 1038:1983 (RA 2017) IS 1079:2017 IS 1161:2014 IS 1239 (Pt-1):2004 (RA 2014), IS 1239(Pt-2) 2011	0.5 mm to 2000 mm 0.001 mm to 25 mm 25 mm to 50 mm. 0.5 g to 6000 g 0.5 mm to 300 mm

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

**Certificate Number** TC-7977 (in lieu of T-0178 & T-0107 & T-0161) Page 8 of 14

**Validity** 18.09.2018 to 17.09.2020 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
			(RA 2016) IS 1341:1992 (RA 2017), IS1536:2001(RA 2012), IS 1538:1993 (RA 2013) IS 1730:1989 (RA 2014)	
			IS 1732:1989 (RA 2014) IS 1759:1986 (RA 2013) IS1785(Pt1&2):1983 (RA 2013) IS1786:2008 (RA 2013) IS 1852:1985 (RA 2013) IS 1993:2006 (RA 2016) IS 2141:2000 (RA 2016) IS 2879:1998 (RA 2013) IS 3589:2001 (RA 2017) IS 3601:2006 (RA 2017) IS 3954:1991 (RA 2016) IS 4109:1967 (RA 2015) IS:6003:2010 (RA 2016) IS 6006:2014 IS 6392:1971 (RA 2013) IS1875:1992 (RA 2014) IS3502:2009 (RA 2015) IS7887:1992 (RA 2017) IS10748:2004 (RA 2014) IS11513:2017 IS 5290-1993(RA 2013)	0.5 mm to 2000 mm 0.001 mm to 25 mm 25 mm to 50 mm. 0.5 g to 6000 g 0.5 mm to 300 mm 0.01 mm to 300mm 0.01 mm to 25 mm
		Brinell Hardness	IS 1500 (Part 1):2013	200 to 350 HBW 10/3000
2.	Aluminium materials, alloys & products	Dimensions	IS 204(Pt 2):1992 (RA 2017), IS 205:1992 (RA 2017) IS 208:1996 (RA 2017), IS 2681:1993 (RA 2013) IS 7092 (Pt 1):1992(RA 2017) IS 7092(Pt 2):1987 (RA 2017)	0.001 mm to 25 mm 25 mm to 50 mm. 0.5 mm to 300 mm



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Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7977 (in lieu of T-0178 & T-0107 & T-0161) Page 9 of 14

Validity 18.09.2018 to 17.09.2020

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
		Dimension of Eyelets	IS 5041:1978 (RA2013)	0.01 mm to 25 mm 0.01 mm to 150 mm
3.	Copper materials, alloys & products	Dimensions	IS 5290-1993(RA 2013)	0.01 mm to 300 mm 0.01 mm to 25 mm
4.	Others(Toe Cap)	Dimensions, Performance Test & Finish	IS 5852:2004(RA2016)	0.01 mm to 150 mm 0.01 mm to 25 mm
II.	<b>WOOD AND WOOD PRODUCTS</b>			
1.	Plyboard	Moisture Content	IS 1734 (Pt 1):1983 (RA 2013)	(2 to 30)%
		Adhesion of Plies	IS 1734 (Pt 5):1983 (RA 2013)	(10 to 16000)N
		Water resistance	IS 1734 (Pt 6):1983 (RA 2013)	(10 to 16000)N
		Mycological Test	S 1734 (Pt7):1983 (RA 2013)	(10 to 16000)N
		Tensile Strength	IS 1734 (Pt9):1983 (RA 2013)	(4 to 100)MPa
		Static Bending Strength MOE & MOR	IS 1734 (Pt 11):1983 (RA 2013)IS 710:2010 (RA 2017)	(10 to 16000)Mpa
		End immersion	IS 4020 (Pt 13):1998 (RA 2013)	Qualitative
		Knife test	IS 4020(Pt 14):1998 (RA 2013)	Qualitative
		Glue Adhesion test	IS 4020(Pt 15): 1998 (RA 2013)	Qualitative

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Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7977 (in lieu of T-0178 & T-0107 & T-0161) Page 10 of 14

Validity 18.09.2018 to 17.09.2020

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
III.	<b>PERFORMANCE/DURABILITY/SAFETY TEST</b>			
A.	<b>Domestic Appliances</b>			
1.	<b>Domestic Pressure Cookers</b>	Capacity Test	IS 2347:2017	(0.5 to 22) lit (5 to 500) ml (10 to 1000) ml
		Temperature Responsive safety pressure device Test	IS 2347:2017	(0.1 to 4) kgf/cm <sup>2</sup> kg/cm <sup>2</sup>
		Air Pressure Test	IS 2347:2017	(0.05 to 1.6) kgf/cm <sup>2</sup>
		Proof pressure & Bursting Pressure Test	IS 2347:2017	(0.2 to 7) kgf/cm <sup>2</sup> & (0.25 to 21)
		Operating Test for Pressure Regulating Device	IS 2347:2017	(0.05 to 1.6)kgf/cm <sup>2</sup>
		Safety Pressure Relief Device	IS 2347:2017	(0.1 to 4) kgf/cm <sup>2</sup>
		Check the Workmanship & Finish	IS 2347:2017	
IV.	<b>TEXTILE MATERIALS</b>			
1.	<b>Jute&amp; its products</b>	Measurement of length & width	IS 1943:1995(RA 2016), IS 2566:1993 (RA 2016), IS 12650:2003(RA 2012), IS 15138:2010 (RA 2015), IS 3667:1993 (RA 2016), IS 3984:2002(RA 2016), IS 16186:2014	(0.5 to 200) cm (0.5 to 100) cm
		Measurement of Ends, Picks	IS 1943:1995 (RA 2016), IS 2566:1993 (RA 2016), IS 12650:2003(RA 2012), IS 15138:2010(RA 2015), IS 3667:1993(RA 2016), IS 16186:2014	(20 to 110)/dm

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

**Certificate Number** TC-7977 (in lieu of T-0178 & T-0107 & T-0161) Page 11 of 14

**Validity** 18.09.2018 to 17.09.2020 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
		Measurement of stitches	IS 1943:1995 (RA 2016), IS 2566:1993 (RA 2016), IS 12650:2003 (RA 2012), IS 15138:2010 (RA 2015), IS 9113:2012, IS 16186:2014	(5 to 15)/dm
		Mass & Thickness of liner	IS 15138:2010 (RA 2015)	(0.001 to 200) g (0.01 to 25) mm
		Mass & Moisture regain (%) of Jute Bags & fabric	IS 1943:1995 (RA 2016), IS 2566:1993 (RA 2016), IS 12650:2003 (RA 2012), IS 15138:2010 (RA 2015), IS 3667:1993 (RA 2016), IS 3984:2002 (RA 2016), IS 16186:2014	(0.5 to 6000) g 8 % to 30 %
		Measurement of Oil content	IS 1943:1995 (RA 2016), IS 2566:1993 (RA 2016), IS 12650:2003 (RA 2012), IS 15138:2010 (RA 2015), IS 3667:1993 (RA 2016), IS 16186:2014	(0.1 to 5) %
		Breaking Load Test	IS 1969:1985 (RA 2010)	(50 to 4000) N
		Seam Strength	IS 9030:1979 (RA 2014)	(50 to 4000) N
<b>2.</b>	<b>Jute &amp; its products</b>	Threads/dm of Canvas & Cotton Drill	IS 1963:2004 (RA 2014)	(20 to 400)/dm (20 to 300)/dm
		Width & Breaking Load of Binding Material	IS 1969(P-1): 2009 (RA 2014), IS 1969 (P-2): 2010 (RA 2014), IS 1954:1990 (RA 2017)	(0.01 to 150) mm (10 to 5000)N
		Length, Breaking Load & Slip Resistance of Laces	IS 4778:1982 (RA 2017), IS 1969(P-1): 2009 (RA 2014), IS 1969(P-2): 2010 (RA 2014)	(0.5 to 2000) mm (2 to 1000) N

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Laboratory **Bureau of Indian Standards (Eastern Regional Laboratory), P-230,  
C.I.T. Scheme, VII M, Block W, Kankurgachi, Kolkata, West Bengal**

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

Certificate Number **TC-7977 (in lieu of T-0178 & T-0107 & T-0161) Page 12 of 14**

Validity **18.09.2018 to 17.09.2020** 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
<b>V.</b>	<b>PLASTIC AND POLYMERS</b>			
<b>1.</b>	<b>Plastic pipes &amp; Accessories HDPE Pipe</b>	Dimensions	IS 4984-2016	(0.01 to 25) mm (0.01 to 300) mm (0.5 to 300) mm
		Reversion Te	IS 4984-2	-3% to +3
		Melt Flow Rate	IS 2530:1963 (RA 2013)	(0.1 to 1.1) g/10 Min
<b>2.</b>	<b>UPVC Potable water Pipe</b>	Dimensions	IS 4985-2000 (RA 2015)	(0.01 to 300) mm
		Resistance to External Blow at 0°C	Annx C of IS 4985:2000 (RA 2015)	Qualitative
<b>3.</b>	<b>PVC Fittings &amp; 90° bend (Potable water supplies)</b>	Dimensions	IS 10124 (Pt 2):2009 (RA 2014) IS 10124 (Pt 8):2009 (RA 2014)	(0.01 to 300) mm
<b>4.</b>	<b>Packaging &amp; containers</b>	Wall Thickness	IS 2798:1998	(0.001 to 25) mm
		Capacity	IS 2798:1998	(1 to 2000) ml
		Transparency	IS 15410:2003	(1 to 100) %
		Leakage Test	IS 2798:1998	Qualitative
		Drop Test	IS 2798:1998	Qualitative
<b>VI.</b>	<b>RUBBER AND RUBBER PRODUCTS</b>			
<b>A.</b>	<b>Gaskets, Seals, &amp; Packings</b>			
<b>1.</b>	<b>Rubber Sealing Ring</b>	Stretch Test	IS 5382:1985 (RA 2013)	Qualitative
		Tensile Strength & Elongation at break	IS 3400 (Pt 1): 2012 (RA 2017)	(2 to 40) MPa (5 to 500) %
		Compression Set	IS 3400 (Pt X):1977 (RA 2013)	(5 to 70) %
		Accelerated ageing in air	IS 3400 (Pt 4): 2012 (RA 2017)	Tensile Strength (2 to 40) MPa Elongation (5 to 500) %

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

**Certificate Number** TC-7977 (in lieu of T-0178 & T-0107 & T-0161) Page 13 of 14

**Validity** 18.09.2018 to 17.09.2020 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
		Water immersion test	IS 3400 (Pt 6): 2012 (RA 2017)	(0.1 to 15) %
		Water Absorption Test	IS 5382:1985 (Appn-C) (RA 2013)	(0.1 to 20) %
<b>B.</b>	<b>Others</b>			
<b>1.</b>	<b>Branch Pipe &amp; Nozzle (Fire hose)</b>	Dimensions	IS 903-1993 (RA 2013)	(0.01 to 25) mm (0.01 to 300) mm (0.5 to 1000) mm
<b>2.</b>	<b>Rubber (Boots &amp; Shoes)</b>	Relative density of foxing & toe cap of Rubber Sole & Heel Impact Test	IS 3400:(Pt 9):2014 IS 3976:2003 (RA 2016), IS 11226:1993 (RA 2013), IS 1989 (Pt 1):1986 (RA 2016), IS 1989 (Pt 2):1986 (RA 2016) IS 3400 (Pt 1):2017	0.01 to 3.0 (0.01 to 300) mm
		Tensile strength & Elongation at break of rubber sole & heel Compression Set Test of Rubber sole & heel Measurement of cut growth of rubber by Ross flexing machine Ageing Test (in air)	IS 3400(Pt X):1977 (RA 2013)  IS 3400 (Pt XVI):1974 (RA 2017)  IS 3400 (Pt 4):2012 (RA 2017)  IS 3400 (Pt 5):1986 (RA 2013)	(2 to 40) MPa  (5 to 500) %  (5 to 70) %  Qualitative  Tensile Strength (2 to 40) MPa  Hardness (20 to 100) IRHD  Elongation (5 to 500) %

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

**Certificate Number** TC-7977 (in lieu of T-0178 & T-0107 & T-0161) Page 14 of 14

**Validity** 18.09.2018 to 17.09.2020 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
		Adhesion & Consolidation Test of Foxing & Composite Rubber Determination of Mass	1989 (Pt 1):1986 (RA 2016), IS 1989 (Pt 2):1986 (RA 2016), IS 3735:1996 (RA 2016), IS 5676:1995 (RA 2016), IS 11226:1993 (RA 2013), IS 3976:2003 (RA 2016) IS 5557:2004 (Appn-B) (RA 2016) IS 5557:2004 (RA 2016)	Qualitative  (5 to 6000) g
		Flexing Endurance Test of Body Leakage Resistance Test		Qualitative  Qualitative

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Venugopal C  
Convenor

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N. Venkateswaran  
Program Manager