

<b>Laboratory</b>	<b>Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 2: No. 26, Wazirpur Industrial Area, Delhi</b>		
<b>Accreditation Standard</b>	<b>ISO/IEC 17025: 2005</b>		
<b>Discipline</b>	<b>Mechanical Testing</b>	<b>Issue Date</b>	<b>04.09.2015</b>
<b>Certificate Number</b>	<b>T-0310</b>	<b>Valid Until</b>	<b>03.09.2017</b>
<b>Last Amended on</b>	<b>08.10.2015</b>	<b>Page</b>	<b>1 of 39</b>

<b>S. No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
<b>LOCATION 1</b>				
<b>I. PLASTIC, RUBBER AND LEATHER</b>				
<b>1.</b>	<b>Rubber and Rubber products</b>	Tensile Stress Strain properties	IS 3400 (Part 1): 2012	5 MPa to 50 MPa
		Tensile Strength	ISO 37: 2005; BS 903 (Part A2)	
		Stress at 1000% elongation	ASTM D412; IS 15298-1: 2015	1 MPa to 5 MPa
		Stress at 200% elongation	ISO 20344: 2011, ISO 2023, ISO 4643	1 MPa to 10 MPa
		Elongation at Break	DIN 53504, JIS K6301	50 % to 700 %
		Hardness IRHD/Durometer	IS 3400 (Part 2): 2014 SATRA-TM55, ISO 48: 2010/ ISO 7619-1: 2004	50 to 90
		Abrasion test	IS 3400 (Part 3): 1987/ ISO 4649: 2010/ SATRA-TM84/ IS O15298: 2015/ IS 20344: 2011, ASTM D1630 DIN 53516	(0.01 mg to 1000 mg)/ 40 m
		Accelerated ageing in air		
		1. Change in Hardness IRHD	IS 3400 (Part 4): 2012	(+) 15/ (-) 5
		2. Change in tensile strength	(RA 2008)	(±) 25 %
3. Change in elongation at break	BS 903 (Part A3),	(±) 50 %		
4. Change in Volume	ASTM D865 ISO 188: 2007, JIS K6301	(±) 10 %		

**Laboratory**                      **Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi**  
**Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi**  
**Location 2: No. 26, Wazirpur Industrial Area, Delhi**

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

**Discipline**                      **Mechanical Testing**                      **Issue Date**    **04.09.2015**

**Certificate Number**            **T-0310**                      **Valid Until**    **03.09.2017**

**Last Amended on**              **08.10.2015**                      **Page**              **2 of 39**

<b>S. No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
	<b>Rubber and Rubber products</b>	Adhesion of rubig Burnerer to textile fabrics	IS 3400 (Part 5): 1986	(0.5 kN to 5 kN)/m
		Effect of Liquids		
		Change in mass	IS 3400 (Part 6): 2012 ISO 1817: 2005	0.01 % to 10 %
		Change in volume	IS 443: 1975 BS 903 (Part A16)	0.01 % to 50 %
		Change in dimensions	JIS K6301	0.01 % to 50 %
		Change in surface area		0.01 % to 100 %
		Change in hardness		0.01 % to 25 %
		Change in tensile stress/strain properties		0.01 % to 50 %
		Density/Specific Gravity	IS 3400-9: 2014	(0.6 g to 2 g)/cc
		Compression Set at Constant Strain	IS 3400 (Part 10): 1977 BS 903 (Part A6) ASTM D395 JIS K6301	Upto 80 %
	Tear strength	IS 3400 (Part 12): 1971 (RA 2008), ISO 4674-1 IS 3400-17, ISO 3377-2 BS 903 (Part A3), JIS K6301	0.5 kg to 100 kg	

<b>Laboratory</b>	<b>Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 2: No. 26, Wazirpur Industrial Area, Delhi</b>		
<b>Accreditation Standard</b>	<b>ISO/IEC 17025: 2005</b>		
<b>Discipline</b>	<b>Mechanical Testing</b>	<b>Issue Date</b>	<b>04.09.2015</b>
<b>Certificate Number</b>	<b>T-0310</b>	<b>Valid Until</b>	<b>03.09.2017</b>
<b>Last Amended on</b>	<b>08.10.2015</b>	<b>Page</b>	<b>3 of 39</b>

<b>S. No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
	<b>Rubber and Rubber products</b>	Tension set	IS 3400 (Part 13): 1983 ISO 2285: 2001 IS 3565: 1966 Clause. B-6	5 % to 50 %
		Volume resistivity Electrical resistance	IS 3400 (Part 15): 1971 ISO 8031: 1993	100 Ω/m to 10 <sup>6</sup> Ω/m
		Resistance to Ozone cracking	IS 3400 (Part 20): 2004 ASTM D1149; JIS K6301 ISO 1431; ISO 7326: 2006, JIS K63307 (Part 7)	Qualitative
		Air tightness test	IS 13098: 2012 Clause. 5	Qualitative
		Strength of Splice	IS 5382: 1985 Clause 3.7.7	Qualitative
		Grip strength test	IS 9573: 2012 IS 10908: 1991 (RA 2008)	Qualitative
		Resistance of lining to n-pentane	JIS 2093: 1991 Table 17/item 2	2 % to 20 %
		Performance Test for Gasket for domestic pressure cooker Gasket ageing test	IS 7466: 1994, Annexure C EN 12778: 2002 Clause. 5.5.4.3 JIS 2093: 1991 Table 17/item 2	Qualitative
		Stretch Test	IS 5382; ISO 4633	Qualitative

<b>Laboratory</b>	<b>Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 2: No. 26, Wazirpur Industrial Area, Delhi</b>		
<b>Accreditation Standard</b>	<b>ISO/IEC 17025: 2005</b>		
<b>Discipline</b>	<b>Mechanical Testing</b>	<b>Issue Date</b>	<b>04.09.2015</b>
<b>Certificate Number</b>	<b>T-0310</b>	<b>Valid Until</b>	<b>03.09.2017</b>
<b>Last Amended on</b>	<b>08.10.2015</b>	<b>Page</b>	<b>4 of 39</b>

<b>S. No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
2.	<b>Rubber and plastic hose</b>	Dimensional Test	IS 443: 1975 Clause 4 JIS K 6330 -1 ISO 4671: 1999	Thickness 1 mm to 10 mm ID 5 mm to 200 mm Od 8 mm to 250 mm Length 1 m to 25 m
		Hydrostatic Test	IS 443: 1975 Clause 8/ JIS K6330-2/ ISO 1402: 2009	2 Mpa to 80 Mpa
		Change in length test	IS 443: 1975 Clause. 8.4	0.01 % to 29 %
		Hydrostatic distortion test	IS 443: 1975 Clause. 8.6	0.5 % to 20 %
		Resistance to vacuum	ISO 7233: 2006 API 1529	60 % to 95 % Diameter retention
		Crushing Test	IS 10908: 1991	Qualitative
		Chemical Resistant Test	IS 443: 1975 Clause. 9	Qualitative
		Resistance to cold flexing Cold bend test/sub ambient flexibility test/low temperature flexibility	IS 443: 1975 Clause. 15 / IS 12657: 2014/ ISO 10619-2: 2011/ ISO 4672: 1988	Qualitative
		Leakage Pressure	IS 637: 1994	Qualitative
		Matter Soluble in Iso-Octane & Toluene	IS 9573: 2012 Clause 5.4	1 % to 20 %

<b>Laboratory</b>	<b>Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 2: No. 26, Wazirpur Industrial Area, Delhi</b>		
<b>Accreditation Standard</b>	<b>ISO/IEC 17025: 2005</b>		
<b>Discipline</b>	<b>Mechanical Testing</b>	<b>Issue Date</b>	<b>04.09.2015</b>
<b>Certificate Number</b>	<b>T-0310</b>	<b>Valid Until</b>	<b>03.09.2017</b>
<b>Last Amended on</b>	<b>08.10.2015</b>	<b>Page</b>	<b>5 of 39</b>

<b>S. No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
	<b>Rubber and plastic hose</b>	Electrical Continuity/Bonding	IS 443: 1975 Clause. 12 IS 9573: 2012 Clause. 5.5.6	Qualitative
		Circumferential Swelling	IS 2765: 1993	0.1 % to 10 %
		Resistance to Vacuum	IS 443 Clause.14 ISO 7233	Qualitative
		Expandability Test	IS 2765: 1993	0.1 % to 10 %
		Resistance to Hot water	IS 5821: 1986	Qualitative
		Resistance to ozone	IS 9573: 2012 Clause. 5.5.4/ IS 10908: 1991/ ISO 7326: 2006	Qualitative
		Electrical resistance	BS EN ISO 8031: 2009	Qualitative
		Adhesion between components	IS 3400 (Part 24): 2012 EN 28033 ; ISO 8033 BS 903 (Part A12)	(0.5 kN to 5 kN)/m
		Minimum bend radius	IS 12656: 2014 ISO 10619-1: 2011 ISO 1746: 1996	5 d to 20 d
		Loss in mass on heating	IS 12585: 1988 Appendix A	0.01 % to 10 %
	Oil absorption test	IS 446 Annexure A	5 % to 25 %	

**Laboratory** **Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi**  
**Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi**  
**Location 2: No. 26, Wazirpur Industrial Area, Delhi**

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

**Discipline** **Mechanical Testing** **Issue Date** **04.09.2015**

**Certificate Number** **T-0310** **Valid Until** **03.09.2017**

**Last Amended on** **08.10.2015** **Page** **6 of 39**

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	<b>Rubber and plastic hose</b>	Water Absorption Test	IS 3400 (Part 6), IS 15295-1, ISO 20344	0.5 % to 15 %
3.	<b>V-Belts</b>	Nominal height of belt	IS 2494: 1994	0.01 mm to 25 mm
		Nominal top width	IS 2494: 1994	0.01 mm to 40 mm
		Tensile test/elongation	IS 2494 (Part 1): 1994, ISO 3376	500 N to 15000 N 0 to 25% elongation
4.	<b>Rigid Plastics / Polymers including Plastic and GRP Film Sheets Pipe and products such as containers</b>	Migration Test	IS 9845/ EN 1186 (Part 1 to 15)	Upto 1 g/m <sup>2</sup> 0.01 ng/l to 100 ng/l
		Density	IS 13360 (Part 3/Sec I): 1995 Method A& B IS 13360 (Part 3/Sec VII): 1995 IS 14753: 1999 Annexure A IS 2508: 1984 Appendix A IS 7328: 1992 Annexure A ISO 2420, ISO 1183-1: 2004 IS 2508: 1984, IS 4671: 1984 ISO 3514, ASTM D792: 1991	0.85 g/cc to 1.8 g/cc
		Apparent density	IS 13360 (Part 3/Sec II): 1997 IS 13360 (Part 3/Sec III): 1997 IS 4671: 1984 Clause. 4.1 ISO 60, ISO 61, ISO 845: 1988	0.2 g/cc to 2 g/cc

<b>Laboratory</b>	<b>Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 2: No. 26, Wazirpur Industrial Area, Delhi</b>		
<b>Accreditation Standard</b>	<b>ISO/IEC 17025: 2005</b>		
<b>Discipline</b>	<b>Mechanical Testing</b>	<b>Issue Date</b>	<b>04.09.2015</b>
<b>Certificate Number</b>	<b>T-0310</b>	<b>Valid Until</b>	<b>03.09.2017</b>
<b>Last Amended on</b>	<b>08.10.2015</b>	<b>Page</b>	<b>7 of 39</b>

<b>S. No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
	<b>Rigid Plastics / Polymers including Plastic and GRP Film Sheets Pipe and products such as containers</b>	Thickness of film and sheeting including gravimetric thickness and wall thickness	IS 13360 (Part 3/Sec VI): 2000 IS 2508: 1984 Annexure 2 IS 6307: 1985 Appendix A IS 278: 1998, ISO 4648 IS 2798: 1998 Clause. 4.5 IS 14625: 1999 Clause. 4.5	10 $\mu$ to 15 mm
		Melt flow index Melt mass flow rate	IS 13360 (Part 4/Sec I): 2000 IS 2530: 1963, ASTM D1238: 1994, ISO 1133-05	(0.01 g to 25 g)/10 min
		Tensile Properties	IS 2530: 1963; IS 5831: 1984; IS 2508: 1984 Annexure 4 IS 6719: 1972 Annexure 2 IS 13360-5-1,2&3, ISO 2023 IS 10810 (Part 7), ISO 4643 IS 14856: 2000 Annexure D ISO 527-2,3 ,4&5 IS 1998: 1962, IS 2508: 1984, IS 6307: 1985 Appendix D ASTM D412: 1998, ASTM D 638: 1999, ASTM D 882: 1997, ASTM D 1708: 1996, DIN 53455-71, BS 2782 (Part 3)	10 MPa to 100 MPa Elongation 0 to 800 %

<b>Laboratory</b>	<b>Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 2: No. 26, Wazirpur Industrial Area, Delhi</b>		
<b>Accreditation Standard</b>	<b>ISO/IEC 17025: 2005</b>		
<b>Discipline</b>	<b>Mechanical Testing</b>	<b>Issue Date</b>	<b>04.09.2015</b>
<b>Certificate Number</b>	<b>T-0310</b>	<b>Valid Until</b>	<b>03.09.2017</b>
<b>Last Amended on</b>	<b>08.10.2015</b>	<b>Page</b>	<b>8 of 39</b>

<b>S. No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
	<b>Rigid Plastics / Polymers including Plastic and GRP Film Sheets Pipe and products such as containers</b>	Impact Resistance (Dart Impact)	IS 13360 (Part 5/Sec VI): 1999 IS 2508: 1984 Annexure 6 IS 10889: 1984	0.01 gf to 1000 gf
		Flexural properties	IS 13360 (Part 5/Sec VII): 1996 ISO 2023, ISO 178: 2010 ISO 4643, ISO 1738	0.5 MPa to 10 MPa
		Compressive properties	IS 13360 (Part 5/Sec VIII):1996 ISO 604	5 MPa to 20 MPa
		Tear Resistance by trouser tear method	IS 13360 (Part 5/Sec V): 1996 ISO 6383-1	100 mN to 100 N
		Durometer hardness	IS 13360 (Part 5/Sec XI): 1992	30 to 100
		Rockwell Hardness (R, M)	IS 13360-5-13: 1992	40 to 150
		Barcol Hardness	IS 13360 (Part 5/Sec XIV): 2001 ASTM D2583/ BS 2782 (Part 10) Method 1001/ IS 14856: 2000 Annexure C	20 to 95
		Tear resistance by Elmendorf Method	IS 13360 (Part 5/Sec XXIII): 1996 ISO 6383-2	(0.01 kg to 50 kg)/cm
		Impact Resistance (Dart Impact)	IS 13360 (Part 5/Sec XXIV): 2012 IS 2508: 1984 Annexure 6 IS 10889: 1984	0.01 gf to 1000 gf



<b>Laboratory</b>	<b>Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 2: No. 26, Wazirpur Industrial Area, Delhi</b>		
<b>Accreditation Standard</b>	<b>ISO/IEC 17025: 2005</b>		
<b>Discipline</b>	<b>Mechanical Testing</b>	<b>Issue Date</b>	<b>04.09.2015</b>
<b>Certificate Number</b>	<b>T-0310</b>	<b>Valid Until</b>	<b>03.09.2017</b>
<b>Last Amended on</b>	<b>08.10.2015</b>	<b>Page</b>	<b>9 of 39</b>

<b>S. No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
	<b>Rigid Plastics / Polymers including Plastic and GRP Film Sheets Pipe and products such as containers</b>	Vicat softening temperature	IS 13360 (Part 6/Sec I): 1999 IS 6307: 1985 Appendix B IS 10810 (Part 22): 1984 ASTM D 1525: 1998, ISO 306: 1995	50 C to 250 C
		Burning behavior of horizontal and vertical specimen with a small flame ignition source	IS 13360 (Part 6/Sec IV): 1997 IS 14753: 1999 Annexure D IS 6307: 1985 Appendix G ISO 1210: 1992/UL 94, ASTM D3801 IEC 60695-11-10, IEC 60707	0 to 125mm
		Flammability of Plastic Materials for Parts and Devices in Appliances	IS 13360 (Part 6/Sec 5): 2001	0.01 mm to 125 mm 10 s to 300 s
		Oxygen index	IS 13360 (Part 6/Sec VI): 2004 IS 13360 (Part 6/Sec XIX): 2001 ISO 4589-2/NES 714 ASTM D 2863	15 % to 40 %
		Smoke density	IS 13360 (Part 6/Sec IX): 2001 ASTM D2843	0.1 % to 100 %
		Resistivity of conductive plastics	IS 13360 (Part 7/Sec I): 1996 ISO 3915	10 Ωcm to 10 <sup>6</sup> Ωcm
		Transparency	IS 13360 (Part 9/Sec I): 2001 IS 14625: 1999 Annexure B IS 15410: 2003 Annexure A ASTM D1003	0.1 % to 100 %

**Laboratory**                      **Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi**  
**Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi**  
**Location 2: No. 26, Wazirpur Industrial Area, Delhi**

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

**Discipline**                      **Mechanical Testing**                      **Issue Date**    **04.09.2015**

**Certificate Number**            **T-0310**                      **Valid Until**    **03.09.2017**

**Last Amended on**              **08.10.2015**                      **Page**              **10 of 39**

<b>S. No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
	<b>Rigid Plastics / Polymers including Plastic and GRP Film Sheets Pipe and products such as containers</b>	Specular gloss	IS 13360 (Part 9/Sec VII): 2001 IS 2508: 1984 Annexure 5.1	30 to 100
		Yield Tolerance	IS 2508: 1984 Annexure 3	0.01 % to 20 %
		Stack load test	IS 2798: 1998 Clause. 9 IS 15609: 2005 Annexure F	Qualitative
		Hydrostatic Pressure Test	IS 2798: 1998 Clause. 10	Qualitative
		Ink adhesion of printed articles	IS 2798: 1998 Clause. 13 IS 15609: 2005 Annexure H	Qualitative
		Capacity	IS 2798: 1998 Clause. 5	100 ml to 25 l
		Neck Dimensions	IS 14625: 1999, IS 2798: 1998	10 mm to 100 mm
		Squareness of sheets	IS 6307: 1985	0.01 mm to 15 mm
		Linear dimensions	IS 2508: 1984 Clause. 4.2.3 IS 6307: 1985 Clause. 4.3	100 mm to 20000 mm
		Bending strength	IS 14856: 2000 Annexure E	50 MPa to 200 MPa
		Elastic modulus	IS 14856: 2000 Annexure F	500 MPa to 2500 MPa
		Resistance to Delamination	IS 6307: 1985 Method A, Appendix F	Qualitative
		Resistance to Environmental stress cracking	IS 8747: 1987	Qualitative

<b>Laboratory</b>	<b>Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 2: No. 26, Wazirpur Industrial Area, Delhi</b>		
<b>Accreditation Standard</b>	<b>ISO/IEC 17025: 2005</b>		
<b>Discipline</b>	<b>Mechanical Testing</b>	<b>Issue Date</b>	<b>04.09.2015</b>
<b>Certificate Number</b>	<b>T-0310</b>	<b>Valid Until</b>	<b>03.09.2017</b>
<b>Last Amended on</b>	<b>08.10.2015</b>	<b>Page</b>	<b>11 of 39</b>

<b>S. No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
	<b>Rigid Plastics / Polymers including Plastic and GRP Film Sheets Pipe and products such as containers</b>	Co efficient of friction slip resistance	IS 2508: 1984 Annexure 7	0.01 to 0.7
		Leakage Test	IS 14625: 1999 Clause. 4.7.3 IS 15609: 2005 Annexure D IS 2798: 1998 Clause. 6	Qualitative
		Drop Test	IS 14625: 1999 Annexure C IS 2798: 1998 Clause. 8 IS 15609: 2005 Annexure G	Qualitative
		water potability	IS 15609: 2005 Annexure E IS 15410: 2003 Annexure B	Qualitative
		Ageing Resistance	IS 14625: 1999 Clause. 4.7.5	Qualitative
		Compressive Deformation resistance	IS 14625: 1999 Annexure D	0.01 % to 20 %
		Product resistance of Printed Containers	IS 2798 Clause. 14	Qualitative
		Heat Stability	IS 5831: 1984	Qualitative
		Heat Ageing	IS 5831: 1984	Upto 7 days upto (±)40 %
		Capacity of Plastic Containers	IS 14525: 1999	100 ml to 1000 l
	Dimensional changes on heating	IS 6307: 1985 Appendix B	1 % to 30 %	

**Laboratory**                      **Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi**  
**Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi**  
**Location 2: No. 26, Wazirpur Industrial Area, Delhi**

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

**Discipline**                      **Mechanical Testing**                      **Issue Date**    **04.09.2015**

**Certificate Number**        **T-0310**                                      **Valid Until**    **03.09.2017**

**Last Amended on**        **08.10.2015**                                      **Page**            **12 of 39**

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
5.	Conveyer Belt	Dimension	IS 1891 (Part 1): 1994	0.01 cm to 200 cm
		Full thickness tensile strength	IS 1891 (Part 1): 1994	0.5 kN to 800 kN
6.	Plastic Pipe	Reversion Test	ISO 2505-1&2: 1994 IS 12235 (Part 5): 2004 IS 14885: 2001 Annexure C EN 743	0.01 % to 10 %
		Stress relief test	IS 12235 (Part 6): 2004	Qualitative
		Tensile strength	IS 12235 (Part 13): 2004 ISO 6259-1,2 &3: 1997 IS 14885 Annexure J EN 1393: 1996	10 MPa to 75 MPa
		Vicat Softening Temperature	IS 12235 (Part 2): 2004 ISO 2507 (Part 1 & 2): 1995 EN 727	50 °C to 95 °C
		Water tightness test	IS 13592: 1992 Clause. 11 EN 1053	Qualitative
		Resistance to external blows	ISO 3127: 1994	Qualitative
		light transmission	IS 12235 (Part 3): 2004 ISO 7686	0.01 % to 10 %
Dimensions	IS 12235-1: 2004 ISO 3126 ISO 4671: 1999 IS 14885: 2001	OD: 10 mm to 1000 mm Wall Thickness: 1 mm to 50 mm Length 1 m to 6 m Ovality 0.1 mm to 40 mm		

**Ajay Kumar Sharma**  
**Convenor**

**N. Venkateswaran**  
**Program Manager**

<b>Laboratory</b>	<b>Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 2: No. 26, Wazirpur Industrial Area, Delhi</b>		
<b>Accreditation Standard</b>	<b>ISO/IEC 17025: 2005</b>		
<b>Discipline</b>	<b>Mechanical Testing</b>	<b>Issue Date</b>	<b>04.09.2015</b>
<b>Certificate Number</b>	<b>T-0310</b>	<b>Valid Until</b>	<b>03.09.2017</b>
<b>Last Amended on</b>	<b>08.10.2015</b>	<b>Page</b>	<b>13 of 39</b>

<b>S. No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
	<b>Plastic Pipe</b>	Water absorption	ISO 8361 (Part 1,2&3): 1991	0.1 % to 10 %
		Gel time of resins	IS 6746: 1994 Annexure B	(±)30 % of declared value
		Pipe Stiffness	IS 9271: 2004 Annexure A	100 kPa to 500 kPa
		Resistance to Chemicals	IS 4985: 2000	Weight loss 0.01 % to 10 %
<b>7.</b>	<b>Paper</b>	Tear Strength/Tear Factor/Tear resistance/Tear Index	IS 1060 (Part 1): 1966 Clause. 12.7, & 12.3 IS 1060-6-1: 2014 IS 9335 (Part 1): 1998 Clause. 5 & 6	1 to 15 mNm <sup>2</sup> g
		Grammage including substance	IS 1060 (Part 1): 1966 Clause. 6 IS 1060-5-5: 2014 IS 9335 (Part 1): 1998 Clause. 3	(40 gm to 400 gm)/m <sup>2</sup>
		Breaking Strength/ Breaking length	IS 1060 (Part 1): 1966 Clause. 12.4 ID 1060-5-6: 2014	510 m to 5100 m
		Water Absorption / Water penetration	Co Big Burner Test IS 1060 (Part 3): 1959 Clause. 10 IS 4006 (Part 1): 1985 Clause. 7	Qualitative

<b>Laboratory</b>	<b>Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 2: No. 26, Wazirpur Industrial Area, Delhi</b>		
<b>Accreditation Standard</b>	<b>ISO/IEC 17025: 2005</b>		
<b>Discipline</b>	<b>Mechanical Testing</b>	<b>Issue Date</b>	<b>04.09.2015</b>
<b>Certificate Number</b>	<b>T-0310</b>	<b>Valid Until</b>	<b>03.09.2017</b>
<b>Last Amended on</b>	<b>08.10.2015</b>	<b>Page</b>	<b>14 of 39</b>

<b>S. No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
	<b>Paper</b>	Water Absorption (Cobb Method)	IS 1060 (Part 2): 1966 Clause. 13.2.2.2 IS 1060-5-4: 2014	Upto 30 %
		Oil Absorption	IS 6162 (Part 1 & 2): 1971 Appendix D	Height of rise of oil 5 mm to 100 mm
		Thickness including bulking thickness	IS 1060 (Part 1): 1966 Clause. 7 IS 935: 1992 Clause. 2	Upto 500 $\mu$
		Opacity	IS 1060 (Part 1) Clause. 16	60 to 100
		Brightness	IS 1060 (Part 2) Clause. 13	60 to 100
<b>II. PERFORMANCE TEST</b>				
<b>1.</b>	<b>LPG Stove/ Mini domestic water heater for use with LPG/ Cooking Range/ Domestic Grillers</b>	Ageing test for plastic components	IS 4246: 2002 Clause. 5 / IS 5116: 1996 Clause. 5	Qualitative
		Flame flashback		Qualitative
		Mercurous nitrate test		Qualitative
		Rigidity & Stability	IS 4246: 2002 Clause. 7, IS 4760: 2002 Clause. 7, IS 11480: 1998 Clause. 7	Qualitative
		Vitreous enameled component test	IS 4246: 2002 Clause. 8.1 IS 5116: 1996 Clause. 7 GB 16410: 2007 Clause 6.21.5	Qualitative

<b>Laboratory</b>	<b>Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 2: No. 26, Wazirpur Industrial Area, Delhi</b>		
<b>Accreditation Standard</b>	<b>ISO/IEC 17025: 2005</b>		
<b>Discipline</b>	<b>Mechanical Testing</b>	<b>Issue Date</b>	<b>04.09.2015</b>
<b>Certificate Number</b>	<b>T-0310</b>	<b>Valid Until</b>	<b>03.09.2017</b>
<b>Last Amended on</b>	<b>08.10.2015</b>	<b>Page</b>	<b>15 of 39</b>

<b>S. No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
	<b>LPG Stove/ Mini domestic water heater for use with LPG/ Cooking Range/ Domestic Grillers</b>	Thickness of Ni/Cr plating	IS 4246: 2002 Clause. 8.1 IS 3203: 1982	0.1 μ to 20 μ
		Adhesion of Ni/Cr plating	IS 4246: 2002 Clause. 8.1 IS 5116: 1996 Clause. 7.3.2	Qualitative
		Corrosion resistance test	IS 4246: 2002 Clause. 8 IS 5116: 1996 Clause. 7.3.3 of JIS S 2093: 1991 Clause. 17/Table 17 GB 16410: 200 Clause 6.21.3	Qualitative
		Abrasion test for painted surface	IS 5116: 1996 Clause 7.4.1	Qualitative
		Resistance to heating test of paint surface	IS 5116: 1982 Clause. 7.4.2	Qualitative
		Gas taps fitment and control handles	IS 4246: 2002 Clause. 9, IS 4760: 2002 Clause. 9, IS 11480: 1998 Clause. 9 IS 15558: 2005 Clause. 8, IS 5116: 1996 Clause 8	Qualitative
		Injector jets and adjustors	IS 4246: 2002 Clause. 10, IS 4760: 2002 Clause. 10, IS 11480: 1998 Clause. 10 IS 5116: 1996 Clause. 9	Qualitative
		Burners including hot plate burners	IS 4246: 2002 Clause. 11, IS 4760: 2002 Clause. 11, IS 11480: 1998 Clause. 11 IS 5116: 1996 Clause. 10	Qualitative

**Laboratory**                      **Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi**  
**Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi**  
**Location 2: No. 26, Wazirpur Industrial Area, Delhi**

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

**Discipline**                      **Mechanical Testing**                      **Issue Date**    **04.09.2015**

**Certificate Number**        **T-0310**                                      **Valid Until**    **03.09.2017**

**Last Amended on**            **08.10.2015**                                      **Page**            **16 of 39**

<b>S. No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
	<b>LPG Stove/ Mini domestic water heater for use with LPG/ Cooking Range/ Domestic Grillers</b>	Steel ball shock test Test of gravitational impact resistance	JIS 2093: 1991 Table 17/item 4	Qualitative
		Gas soundness Gas tightness	IS 4246: 2002 Clause. 13 IS 5116: 1996 Clause. 16	Qualitative
		Dimensions	IS 4246: 2002 Clause. 9 IS 5116: 1996 Clause. 8	1 mm to 30 mm
		Strength & rigidity	IS 4246: 2002 Clause. 15 IS 4760: 2002 Clause. 25/Annexure C	Qualitative
		Ignition & flame travel	IS 4246: 2002 Clause. 18 IS 4760: 2002 Clause. 29	Qualitative
		Flame stability	IS 4246: 2002 Clause. 19 IS 4760: 2002 Clause. 29	Qualitative
		Noise control	IS 4246: 2002 Clause. 20 IS 4760: 2002 Clause. 30	Qualitative
		Combustion CO/CO <sub>2</sub> rating Analysis of the products of combustion	IS 4246: 2002 Clause. 24 IS 4760: 2002 Clause. 38/Annexure H	0.001 : 1 to 05:1 CO:CO <sub>2</sub> ratio
		Thermal efficiency	IS 4246: 2002 Clause. 26	50 % to 90 %



<b>Laboratory</b>	<b>Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 2: No. 26, Wazirpur Industrial Area, Delhi</b>		
<b>Accreditation Standard</b>	<b>ISO/IEC 17025: 2005</b>		
<b>Discipline</b>	<b>Mechanical Testing</b>	<b>Issue Date</b>	<b>04.09.2015</b>
<b>Certificate Number</b>	<b>T-0310</b>	<b>Valid Until</b>	<b>03.09.2017</b>
<b>Last Amended on</b>	<b>08.10.2015</b>	<b>Page</b>	<b>17 of 39</b>

<b>S. No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
2.	<b>Fire hazard &amp; Limiting Temperatures Heating of various parts</b>	Temp rise test	IS 4246: 2002 Clause. 25, IS 15558	10 °C to 75 °C
		Surface temp	IS 4760: 2002 Clause. 39	40 °C to 130 °C
		Flame temp		100 °C to 600 °C
3.	<b>Domestic Pressure Cookers</b>	Capacity	IS 2347: 2006 Clause. 4 EN 12778: 2005 Clause. 5.3.5	1 l to 25 l
		Operating test for Pressure regulating Device	IS 2347: 2006 Clause. 6.1/Clause. 8.3	Qualitative
		Safety Pressure relief Device Verifications of safety device	IS 2347: 2006 Clause. 6.2/Clause. 8.4 IS 12778: 2002 Clause. 5.5.4.1 and 5.5.4.2	Qualitative
		Thickness of Ni/Cr plating	IS 3203	0.1 μ to 20 μ
		Adhesion of Coating	IS 1068: 1993 Clause. 7.3	Qualitative
		Corrosion Resistance	IS 1068: 1993 Clause. 7.4	Qualitative
		Anodisation	IS 2347: 2006 Clause. 7.2	Qualitative
		Finish of coating	IS 2347: 2006 Clause. J-1.2	Qualitative
Thickness of anodic coating	IS 2347: 2006 Clause. J-2 IS 5523: 1983, ISO 2360: 2003 ISO 2064: 1964	10 micron to 100 micron		

**Laboratory**                      **Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi**  
**Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi**  
**Location 2: No. 26, Wazirpur Industrial Area, Delhi**

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

**Discipline**                      **Mechanical Testing**                      **Issue Date**    **04.09.2015**

**Certificate Number**        **T-0310**                                      **Valid Until**    **03.09.2017**

**Last Amended on**            **08.10.2015**                                      **Page**            **18 of 39**

<b>S. No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
	<b>Domestic Pressure Cookers</b>	Abrasion resistance	IS 2347: 2006 Clause. J-3	Qualitative
		Resistance to staining	IS 2347: 2006 Clause. J-5 EN 12983-1: 2000 Annexure H	Qualitative
		Alkali resistance	IS 2347: 2006 Clause. J-6 EN 12983-1: 2000 Annexure J	Qualitative
		Cross cut adhesion test of organic coating	ISO 2409: 1992	Qualitative
		Pencil hardness test	EN 12983-1: 2003 Annexure K	Qualitative test with 1H to 6H grade pencil
		Pencil hardness test at elevated temperature	EN 12983-1: 2003 Annexure K	1H Qualitative test with 1H to 6H grade pencil
		Concavity after aging	EN 12778: 2002 Clause. 5.3.2	0 to 10 %
		Verification of pressure control device	EN 12778: 2002 Clause. 5.5.2	Qualitative
		Proof Pressure	IS 2347: 2006 Clause. 8.2	Qualitative
		Bursting pressure	IS 2347: 2006 Clause. 8.5	Upto 1.6 kgf/cm <sup>2</sup>
		Verification of pressure indicator	EN 12778: 2002 Clause. 5.5.3	Qualitative
		Verification of decompression device	EN 12778: 2002 Clause. 5.5.5	Qualitative

<b>Laboratory</b>	<b>Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 2: No. 26, Wazirpur Industrial Area, Delhi</b>		
<b>Accreditation Standard</b>	<b>ISO/IEC 17025: 2005</b>		
<b>Discipline</b>	<b>Mechanical Testing</b>	<b>Issue Date</b>	<b>04.09.2015</b>
<b>Certificate Number</b>	<b>T-0310</b>	<b>Valid Until</b>	<b>03.09.2017</b>
<b>Last Amended on</b>	<b>08.10.2015</b>	<b>Page</b>	<b>19 of 39</b>

<b>S. No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
	<b>Domestic Pressure Cookers</b>	Opening tests	EN 12778: 2002 Clause. 5.5.6	Qualitative
		Test of resistance to deformation of the body and the lid	EN 12778: 2002 Clause. 5.7.1	Qualitative
		Test of resistance to destruction of the body and the lid	EN 12778: 2002 Clause. 5.7.2	Qualitative
		Removal of lid under pressure	IS 2347: 2006 Clause. 8.6	Upto 12 kgf/cm <sup>2</sup>
		Spring Loaded Mechanism	IS 2347: 2006 Clause. 8.7	Qualitative
<b>4.</b>	<b>Handles and Handle Assemblies Attached to Cookware</b>	Torque test	IS 13395: 1995 Clause. 4.5	2 N to 20 N torque
		Bending strength	IS 13395: 1995 Clause. 5.2 EN 12983-1: 2000 Annexure D	50 N to 100 N
		Torque Strength Torque resistance	IS 13395: 1995 Clause. 5.3 EN 12983-1: 2000 Annexure C	2 N to 10 N
		Impact Strength	IS 13395: 1995 Clause. 5.4	Qualitative
		Fatigue resistance	IS 13395: 1995 Clause. 5.5 EN 12983-1: 2000 Annexure E	Qualitative
		Leakage	IS 13395: 1995 Clause. 5.6	Qualitative
		Thermal Insulation The maximum temperature rise above ambient °C	IS 13395: 1995 Clause. 5.7 EN 12983-1: 2000 Annexure F EN 12778: 2002 Clause. 5.4.1	10 °C to 70 °C

<b>Laboratory</b>	<b>Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 2: No. 26, Wazirpur Industrial Area, Delhi</b>		
<b>Accreditation Standard</b>	<b>ISO/IEC 17025: 2005</b>		
<b>Discipline</b>	<b>Mechanical Testing</b>	<b>Issue Date</b>	<b>04.09.2015</b>
<b>Certificate Number</b>	<b>T-0310</b>	<b>Valid Until</b>	<b>03.09.2017</b>
<b>Last Amended on</b>	<b>08.10.2015</b>	<b>Page</b>	<b>20 of 39</b>

<b>S. No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
	<b>Handles and Handle Assemblies Attached to Cookware</b>	Heat Resistance	IS 13395: 1995 Clause. 5.8 EN 12983-1: 2000 Annexure B	Qualitative
		Washing resistance	IS 13395: 1995 Clause. 5.9	Qualitative
		Burning Resistance	IS 13395: 1995 Clause. 5.10 EN 12983-1: 2000 Annexure A	Qualitative
<b>5.</b>	<b>Hydraulically Regulated Door Closers</b>	Performance test	IS 3564: 1995 Clause B1.4	Qualitative
		Endurance Test	IS 3564: 1995 Clause B1.4	Qualitative
<b>III. BUILDING MATERIALS</b>				
<b>1.</b>	<b>Wood &amp; wood Products Including Timber</b>	Moisture content	IS 287: 1993 (RA 2008) IS 1708 (Part 1): 1986 (RA 2008) IS 11215: 1991 (RA 2010)	0.5 % to 100 %
		Dimensions	IS 4030-2	1 mm to 2500 mm
		Density	IS 1708 (Part 2): 1986	(200 kg to 1200 kg)/m <sup>3</sup>
		Volumetric shrinkage	IS 1708 (Part 3): 1986	1 % to 10 %
		Static bending strength MOR/MOE	IS 1708 (Part 5/6): 1986	(20 N to 80 N)/mm <sup>2</sup> (MOR) (2000 N to 8000 N)/mm <sup>2</sup> (MOE)

<b>Laboratory</b>	<b>Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 2: No. 26, Wazirpur Industrial Area, Delhi</b>		
<b>Accreditation Standard</b>	<b>ISO/IEC 17025: 2005</b>		
<b>Discipline</b>	<b>Mechanical Testing</b>	<b>Issue Date</b>	<b>04.09.2015</b>
<b>Certificate Number</b>	<b>T-0310</b>	<b>Valid Until</b>	<b>03.09.2017</b>
<b>Last Amended on</b>	<b>08.10.2015</b>	<b>Page</b>	<b>21 of 39</b>

<b>S. No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
	<b>Wood &amp; wood Products Including Timber</b>	Compressive strength parallel/perpendicular to grain	IS 1708 (Part 8/9): 1986	(2 N to 25 N)/mm <sup>2</sup>
		Hardness under static indentation	IS 1708 (Part 10): 1986	0.5 kN to 25 kN
		Tensile strength parallel/perpendicular to grain	IS 1708 (Part 12,13): 1986	(0.1 N to 50 N)/mm <sup>2</sup>
		Nail and screw holding power	IS 1708 (Part 15): 1986	0 to 10000 N
2.	<b>Door Shutters, Window Ventilator Shutters, Flush Door Shutter, GRP panel type door shutters</b>	Dimension & Squareness	IS 4020 (Part 2): 1998	0 to 3000 mm
		General Flatness test	IS 4020 (Part 3): 1998	0 to 10 mm
		Local planeness Test	IS 4020 (Part 4): 1998	0 to 2 mm
		Slamming Test	IS 4020 (Part 10): 1998 IS 1003 (Part 2): 1994 Annexure C	Qualitative
		Misuse Test	IS 4020 (Part 11): 1998	Qualitative
		End immersion test	IS 4020 (Part 13): 1998	Qualitative
		Knife test	IS 4020 (Part 14): 1998	Qualitative
		Glue adhesion test	IS 4020 (Part 15): 1998	Qualitative
	Screw withdrawal strength	IS 4020 (Part 16): 1998	0 to 10000 N	

**Laboratory**                      **Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi**  
**Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi**  
**Location 2: No. 26, Wazirpur Industrial Area, Delhi**

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

**Discipline**                      **Mechanical Testing**                      **Issue Date**    **04.09.2015**

**Certificate Number**            **T-0310**                      **Valid Until**    **03.09.2017**

**Last Amended on**              **08.10.2015**                      **Page**              **22 of 39**

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
3.	<b>Particle boards/ Fibre boards</b>	Moisture content	IS 2380 (Part 3): 1977	1 % to 25 %
		Dimensions	IS 2380 (Part 2): 1977	H 1 m to 3 m W 500 mm to 1500 mm Thickness 2 mm to 50 mm Sq. 0 to 10 mm
		Dimensional changes associated with humidity changes	IS 2380 (Part 2): 1977	Upto 10 % Recovery 80 % to 100 %
		Density	IS 2380 (Part 3): 1977	(200 kg to 1000 kg)/m <sup>3</sup>
		Screw withdrawal strength	IS 2380 (Part 14): 1977	0 to 1000 kg
		Water absorption	IS 2380 (Part 16): 1977	1 % to 80 %
		Linear expansion Swelling in water	IS 2380 (Part 17): 1977	1 % to 20 %
		Swelling due to surface absorption	IS 3087: 2005 IS 3097: 1980 IS 12823: 1990	1 % to 20 %
		Modulus of Rupture	IS 2380 (Part 4): 1977	(0.5 N to 50 N)/mm <sup>2</sup>
		Modulus of Elasticity		(1000 N to 6000 N)/mm <sup>2</sup>
Tensile strength Perpendicular to surface	IS 2380 (Part 5): 1977	(0.1 N to 2 N)/mm <sup>2</sup>		

**Laboratory**                      **Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi**  
**Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi**  
**Location 2: No. 26, Wazirpur Industrial Area, Delhi**

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

**Discipline**                      **Mechanical Testing**                      **Issue Date**    **04.09.2015**

**Certificate Number**            **T-0310**                      **Valid Until**    **03.09.2017**

**Last Amended on**              **08.10.2015**                      **Page**              **23 of 39**

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	<b>Particle boards/ Fibre boards</b>	after cycling	IS 2380 (Part 5): 1977	(0.1 N to 2 N)/mm <sup>2</sup>
		accelerated water resistance test		(0.1 N to 2 N)/mm <sup>2</sup>
		Resistance to stain	IS 14587: 1998 Annexure F	Qualitative
		Resistance to crack	IS 14587: 1998 Annexure D	Qualitative
		Resistance to cigarette burns	IS 14587: 1998 Annexure E	Qualitative
		Resistance to steam	IS 14587: 1998 Annexure C	Qualitative
<b>4.</b>	<b>Block Board</b>	Dimensions	IS 1659: 2004 Clause 7	Height 1 m to 3 m W 500 mm to 1500 mm
			IS 1659: 2004 Annexure E	Thickness 2 mm to 50 mm
			IS 1659: 2004 Annexure D	Squareness 0.1 % to 5 % Straightness 0.1 % to 5 %
		Dimensional changes caused by humidity	IS 1659 Annexure F	Change in length 0.05 mm to 5 mm Change in thickness 0.05 mm to 2 mm Change in local planeness 0.1/150 to 2.5/150

**Laboratory**                      **Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi**  
**Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi**  
**Location 2: No. 26, Wazirpur Industrial Area, Delhi**

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

**Discipline**                      **Mechanical Testing**                      **Issue Date**    **04.09.2015**

**Certificate Number**        **T-0310**                                      **Valid Until**    **03.09.2017**

**Last Amended on**        **08.10.2015**                                      **Page**            **24 of 39**

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	<b>Block Board</b>	Resistance to water	IS 1659: 2004 Annexure G	Qualitative
		Adhesion of plies	IS 1659: 2004 Annexure H	Qualitative
		Mycological test	IS 1659: 2004 Annexure J	Qualitative
		Modulus of Rupture	IS 1659: 2004 Annexure K	20 N/mm <sup>2</sup> to 80 N/mm <sup>2</sup>
		Modulus of Elasticity	IS 1659: 2004 Annexure G	2000 N/mm <sup>2</sup> to 8000 N/mm <sup>2</sup>
		Preservative treatment	IS 1659: 2004 Annexure L	Qualitative
5.	<b>Plywood, Marine Plywood, Shuttering Plywood, Fire Retardant Plywood, Veneered Decorative Plywood</b>	Water Resistance test	IS 1734 (Part 5): 1983 (RA 2003) EN 314-1	Qualitative
		Glue shear strength	IS 1734 (Part 4) IS 14842: 2000 Annexure C	100 N to 2000 N
		Mycological tests	IS 1734 (Part 7): 1983 (RA 2003)	Qualitative
		Dimensions including Edge squareness and straightness	IS 303: 1989 (RA 2003) IS 710: 1976 (RA 2004) IS 4990: 1999 (RA 2003) IS 1328: 1996 (RA 2007) IS 5509: 2000 Appendix A	Height 1 m to 3 m Width 500 mm to 1500 mm Thickness 2 mm to 50 mm Squareness 0 to 10 mm Straightness 0.1 mm to 0 to 5 mm



**Laboratory**                      **Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi**  
**Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi**  
**Location 2: No. 26, Wazirpur Industrial Area, Delhi**

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

**Discipline**                      **Mechanical Testing**                      **Issue Date**    **04.09.2015**

**Certificate Number**            **T-0310**                      **Valid Until**    **03.09.2017**

**Last Amended on**              **08.10.2015**                      **Page**              **25 of 39**

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection	
	<b>Plywood, Marine Plywood, Shuttering Plywood, Fire Retardant Plywood, Veneered Decorative Plywood</b>	Moisture content	IS 1734 (Part 1): 1983 (RA 2003)	0.5 % to 25 %	
		Modulus of Rupture	IS 1734 (Part 11) ASTM D1037	10 N/mm <sup>2</sup> to 80 N/mm <sup>2</sup>	
		Modulus of Elasticity		1000 N/mm <sup>2</sup> to 8000 N/mm <sup>2</sup>	
		Flammability	IS 1734 (Part 3): 1983	0 to 100 min	
		Flame penetration	IS 1734 (Part 3): 1983	0 to 30 min	
		Rate of burning	IS 1734 (Part 3): 1983	0 to 50 min	
		Preservative treatment	IS 2753	5 kg/m <sup>3</sup> to 20 kg/m <sup>3</sup>	
		Tensile strength	IS 1734 (Part 9): 1983	5 kg/cm <sup>2</sup> to 1000 kg/cm <sup>2</sup>	
<b>6.</b>		<b>Laminated Veneer Lumber</b>	Modulus of rupture parallel to grain	IS 1734 (Part 11): 1983	20 N/mm <sup>2</sup> to 80 N/mm <sup>2</sup>
			Modulus of rupture perpendicular to grain	IS 1734 (Part 11): 1983	20 N/mm <sup>2</sup> to 80 N/mm <sup>2</sup>
	Modulus of elasticity parallel to grain		IS 1734 (Part 11): 1983	5000 N/mm <sup>2</sup> to 10000 N/mm <sup>2</sup>	
	Modulus of elasticity perpendicular to grain		IS 1734 (Part 11): 1983	5000 N/mm <sup>2</sup> to 10000 N/mm <sup>2</sup>	

**Laboratory**                      **Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi**  
**Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi**  
**Location 2: No. 26, Wazirpur Industrial Area, Delhi**

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

**Discipline**                      **Mechanical Testing**                      **Issue Date**    **04.09.2015**

**Certificate Number**            **T-0310**                      **Valid Until**    **03.09.2017**

**Last Amended on**              **08.10.2015**                      **Page**              **26 of 39**

<b>S. No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
	<b>Laminated Veneer Lumber</b>	Horizontal shear strength parallel to grain	IS 1708 (Part 12): 1986	2 N/mm <sup>2</sup> to 20 N/mm <sup>2</sup>
		Horizontal shear strength perpendicular to grain	IS 1708 (Part 12): 1986	2 N/mm <sup>2</sup> to 20 N/mm <sup>2</sup>
		Tensile strength parallel to grain	IS 1734P9: 1983	20 N/mm <sup>2</sup> to 100 N/mm <sup>2</sup>
		Thickness swelling in water	IS 2380 P1: 1977	1 % to 10 %
		Nail and screw holding power	IS 1708 P15: 1986	1500 N to 4000 N

<b>Laboratory</b>	<b>Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 2: No. 26, Wazirpur Industrial Area, Delhi</b>		
<b>Accreditation Standard</b>	<b>ISO/IEC 17025: 2005</b>		
<b>Discipline</b>	<b>Mechanical Testing</b>	<b>Issue Date</b>	<b>04.09.2015</b>
<b>Certificate Number</b>	<b>T-0310</b>	<b>Valid Until</b>	<b>03.09.2017</b>
<b>Last Amended on</b>	<b>08.10.2015</b>	<b>Page</b>	<b>27 of 39</b>

<b>S. No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
<b>LOCATION 2</b>				
<b>I. BUILDING MATERIALS</b>				
<b>1. Cement</b>	Blain Fineness		IS 4031-2: 2008	150 m <sup>2</sup> /kg to 450 m <sup>2</sup> /kg
	Fineness by dry/wet sieving		IS 4031-1: 2005	1 % to 12 %
	Compressive Strength		IS 4031-6: 2009	5 MPa to 75 MPa
	Degree of Whiteness		IS 8042: 2009	20 % to 90 %
	Consistency		IS 4031-4: 2005	25 % to 35%
	Drying Shrinkage		IS 4031-10: 2005	0.01 % to 0.25 %
	Specific gravity		IS 4031-11: 2005	1.5 to 3.5
	Setting Time			
	Initial		IS 4031-5: 2005	30 min to 600 min
	Final			100 min to 600 min
	Soundness By Le-Chatelier Method		IS 4031-3: 2003	1 mm to 10 mm
	By Autoclave Method			0.02 % to 4 %
	<b>2. Pozzolanas / Flyash</b>	Fineness (Blaine)		IS 1727: 2004

**Laboratory**                      **Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi**  
**Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi**  
**Location 2: No. 26, Wazirpur Industrial Area, Delhi**

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

**Discipline**                      **Mechanical Testing**                      **Issue Date**    **04.09.2015**

**Certificate Number**            **T-0310**                      **Valid Until**    **03.09.2017**

**Last Amended on**              **08.10.2015**                      **Page**              **28 of 39**

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	<b>Pozzolanas / Flyash</b>	Fineness by wet sieving	IS 1727: 2004	2 % to 20 %
		Specific Gravity	IS 1727: 2004	1.5 to 3.5
		Lime Reactivity	IS 1727: 2004	0.1 N/mm <sup>2</sup> to 6 N/mm <sup>2</sup>
		Compressive Strength	IS 1727: 2004	5 % to 100 %
		Transverse Strength	IS 1727: 2004	2.5 MPa to 20 MPa
		Drying Shrinkage	IS 1727: 2004	0.01 % to 0.25 %
		Soundness By Le-Chatelier Method	IS 1727: 2004	0.01 % to 3.00 %
		By Autoclave Method	IS 1727: 2004	1.0 mm to 25 mm
<b>3.</b>	<b>Lime</b>	Compressive strength	IS 6932-7: 1973	0.5 MPa to 10 MPa
		Transverse strength	IS 6932-8: 1973	0.5 MPa to 10 Mpa
		Setting time	IS 6932-11: 1973	30 minute minimum
		Popping and pitting	IS 6932-10: 1973	Qualitative
		Soundness	IS 6932-9: 1973	0.5 mm to 20 mm
		Fineness Residue on 300/850 $\mu$ Sieve	IS 6932-4: 1973	0.5 % to 95 %

**Laboratory**                      **Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi**  
**Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi**  
**Location 2: No. 26, Wazirpur Industrial Area, Delhi**

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

**Discipline**                      **Mechanical Testing**                      **Issue Date**    **04.09.2015**

**Certificate Number**            **T-0310**                      **Valid Until**    **03.09.2017**

**Last Amended on**              **08.10.2015**                      **Page**              **29 of 39**

<b>S. No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
<b>4.</b>	<b>Aggregates Sub – base, base, embankment non bituminous material for road work</b>	Flakiness Index	IS 2386-1: 2007	5 % to 40 %
		Elongation Index	IS 2386-1: 2007	5 % to 40 %
		Bulk Density	IS 2386-3: 2007	1 g/cc to 3 g/cc
		Specific Gravity	IS 2386-3: 2007	1.5 to 3
		Water Absorption	IS 2386-3: 2007	0.1 % to 2.5 %
		Moisture Content	IS 2386-3: 2007	0.1 % to 2.5 %
		Crushing Value	IS 2386-4: 2007 BS 812-110: 1990	2.5 % to 40 %
		Soundness	IS 2386-5: 2007	0.1 % to 10 %
		Sieve Analysis	IS 2386-1: 2007	1 % to 100 %
Deleterious Materials	IS 2386-1&2: 2007	Coal and lignite 0.1 % to 3 %  Clay lumps 0.1 % to 3 %  Materials finer than 75-u IS Sieve 0.1 % to 10 %  Soft fragments 0.1 % to 3 %  Shale 0.1 % to 3 %		

<b>Laboratory</b>	<b>Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 2: No. 26, Wazirpur Industrial Area, Delhi</b>		
<b>Accreditation Standard</b>	<b>ISO/IEC 17025: 2005</b>		
<b>Discipline</b>	<b>Mechanical Testing</b>	<b>Issue Date</b>	<b>04.09.2015</b>
<b>Certificate Number</b>	<b>T-0310</b>	<b>Valid Until</b>	<b>03.09.2017</b>
<b>Last Amended on</b>	<b>08.10.2015</b>	<b>Page</b>	<b>30 of 39</b>

<b>S. No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
	<b>Aggregates Sub – base, base, embankment non bituminous material for road work</b>	Los-Angel Abrasion Value	IS 2386 -4: 2007	5 % to 50 %
		Impact Value	IS 2386-4: 2007	2 % to 40 %
		Voids	IS 2386-3: 2007	0.5 % to 10 %
		10% fines value	IS 2386-4: 2007	5 T to 50 T
		Bulking of Fine Aggregate	IS 2386-3: 2007 BS 812-2: 1995	2 % to 30 %
		Silt Content	IS 2386-2: 2007	1 % to 25 %
<b>5.</b>	<b>Chemical Admixture For Concrete</b>	Water content	IS 1199: 2009	20 % to 90 %
		Slump	IS 1199: 2009	10 mm to 200 mm
		Time of setting	IS 6241	20 mm to 600 min
		Compressive strength	IS 516: 2004	5 MPa to 100 MPa
		Flexural strength	IS 516: 2004	0.1 MPa to 50 Mpa
		Length change	IS 516: 2004	0.005 mm to 1 mm
		Bleeding	IS 9103: 2008	1 % to 10 %
		Air content	IS 1199: 2009	0.5 % to 5 %
		Flow	IS 9103: 2008	400 mm to 700 mm
		Loss of workability on standing	IS 9103-2008	Qualitative

**Laboratory**                      **Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi**  
**Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi**  
**Location 2: No. 26, Wazirpur Industrial Area, Delhi**

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

**Discipline**                      **Mechanical Testing**                      **Issue Date**    **04.09.2015**

**Certificate Number**        **T-0310**                                      **Valid Until**    **03.09.2017**

**Last Amended on**         **08.10.2015**                                      **Page**            **31 of 39**

<b>S. No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
<b>6.</b>	<b>Concrete</b>	Compressive Strength	IS 516: 2004	5 Mpa to 100 Mpa
		Flexural Strength	IS 516: 2004	0.5 Mpa to 20 Mpa
		Unit weight	IS 1199: 2009	1 g/cc to 5 g/cc
		Air content	IS 1199: 2009	1 % to 10 %
		Bleeding	IS 9103: 2008	1 % to 10 %
		Water content	IS 1199: 2009	0.2 % to 10 %
		Slump	IS 1199: 2009	20 mm to 200 mm
		Tensile Splitting strength	BS 1881-117: 1983	1 MPa to 20 MPa
		Drying shrinkage	IS 1199: 2009	0.01 % to 1 %
		Moisture movement		0.01 % to 1 %
		Accelerated Test for Concrete for Compressive Strength	IS 9013: 1999	1 Mpa to 100 Mpa
<b>7.</b>	<b>Concrete Masonry Units</b>	Permeability Test	DIN 1048-105: 1991	3 mm to 250 mm
		Dimension	IS 2185-3&4: 2005,	50 mm to 5000 mm
		Block Density	IS 2185-3&4: 2005	500 kg/m <sup>3</sup> to 2500 kg/m <sup>3</sup>
		Compressive Strength	IS 2185-3&4: 2005	1 MPa to 50 MPa

**Ajay Kumar Sharma**  
**Convenor**

**N. Venkateswaran**  
**Program Manager**

**Laboratory**                      **Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi**  
**Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi**  
**Location 2: No. 26, Wazirpur Industrial Area, Delhi**

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

**Discipline**                      **Mechanical Testing**                      **Issue Date**    **04.09.2015**

**Certificate Number**        **T-0310**                                      **Valid Until**    **03.09.2017**

**Last Amended on**         **08.10.2015**                                **Page**            **32 of 39**

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	<b>Concrete Masonry Units</b>	Water Absorption	IS 2185-3&4: 2005	1 % to 50 %
		Drying Shrinkage	IS 2185-3&4: 2005	0.01 % to 1.0 %
		Moisture Movement	IS 2185-3&4: 2005	0.005 % to 1%
<b>8.</b>	<b>Refractories</b>	Cold Crushing Strength	IS 1528-4: 2002	0.5 MPa to 80 MPa
		Apparent Porosity	IS 1528-8: 2002	0.2 % to 40 %
		Bulk Density	IS 1528-12: 2007	1 g/cc to 3 g/cc
		Specific Gravity	IS 1528-9: 2007	1 to 3
		Water Absorption	IS 1528-8: 2002	0.5 % to 30 %
		Sieve Analysis	IS 1987: 2002	0.1 % to 100 %
<b>9.</b>	<b>Bricks</b>	Compressive Strength	IS 3495-1to4: 2007	3.5 N/mm <sup>2</sup> to 35 N/mm <sup>2</sup>
		Water Absorption		2 % to 35 %
		Efflorescence		Qualitative test
		Dimensions	IS 1077	10 mm to 5000 mm
<b>10.</b>	<b>Natural Stone</b>	Dimension	IS 3316: 1974. IS 3622: 1997, IS 1128: 1974	1 mm to 5000 mm
		Water Absorption	IS 1124: 2003	0.05 % to 20 %



<b>Laboratory</b>	<b>Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 2: No. 26, Wazirpur Industrial Area, Delhi</b>		
<b>Accreditation Standard</b>	<b>ISO/IEC 17025: 2005</b>		
<b>Discipline</b>	<b>Mechanical Testing</b>	<b>Issue Date</b>	<b>04.09.2015</b>
<b>Certificate Number</b>	<b>T-0310</b>	<b>Valid Until</b>	<b>03.09.2017</b>
<b>Last Amended on</b>	<b>08.10.2015</b>	<b>Page</b>	<b>33 of 39</b>

<b>S. No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
	<b>Natural Stone</b>	Specific Gravity	IS 1124: 2003,	1 to 3
		Hardness (Mho's Scale)	IS 13630-13: 2003	1 to 8
		Compressive Strength	IS 1121-1: 2013	10 kg/cm <sup>2</sup> to 2000 kg/cm <sup>2</sup>
		Transverse/flexural strength	IS 1121-2: 2013	2 N/mm <sup>2</sup> to 50 N/mm <sup>2</sup>
		Durability	IS 1126 : 2013	Qualitative
		Abrasion resistance	IS 1706: 1972	0.5 mm to 25 mm
		Weathering of natural stone	IS 1125: 2013	Qualitative
<b>11.</b>	<b>Cement Concrete</b>			
<b>a.</b>	<b>Tiles</b>	Dimension	IS 1237: 2012	0 to 600 mm
		Water absorption	IS 1237: 2012	2 % to 10 %
		Transverse strength	IS 1237: 2012	1 N/mm <sup>2</sup> to 20 N/mm <sup>2</sup>
		Abrasion Resistance	IS 1237: 2012	0.5 mm to 10 mm
<b>b.</b>	<b>Interlocking</b>	Dimension	IS 1568: 2006	1 mm to 5000 mm
<b>c.</b>	<b>paver block</b>	Water absorption	15658: 2006 Annexure C	1 % to 10 %
		Compressive strength	15658: 2006 Annexure D	10 Mpa to 70 Mpa
		Transverse Strength/Flexural Strength/Breaking load	15658: 2006 Annexure F	2 N/mm <sup>2</sup> to 20 N/mm <sup>2</sup>

<b>Laboratory</b>	<b>Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 2: No. 26, Wazirpur Industrial Area, Delhi</b>		
<b>Accreditation Standard</b>	<b>ISO/IEC 17025: 2005</b>		
<b>Discipline</b>	<b>Mechanical Testing</b>	<b>Issue Date</b>	<b>04.09.2015</b>
<b>Certificate Number</b>	<b>T-0310</b>	<b>Valid Until</b>	<b>03.09.2017</b>
<b>Last Amended on</b>	<b>08.10.2015</b>	<b>Page</b>	<b>34 of 39</b>

<b>S. No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
	<b>paver block</b>	Tensile Splitting strength	IS 15658: 2006	1 N/mm <sup>2</sup> to 20 N/mm <sup>2</sup>
		Abrasion Resistance	IS 15658: 2006 Annexure G	1 mm to 10 mm
		Freeze-thaw durability	IS 15658: 2006	Qualitative
<b>12.</b>	<b>Ceramic/ Vitrified/ Vitreous acid resisting tiles</b>	Dimensions/ Surface Quality	IS 13630-1: 2006	1 mm to 5000 mm
		Water Absorption	IS 13630-2: 2006	0.2 % to 30 %
		Modulus of Rapture	IS 13630-6: 2006	0.1 N/mm <sup>2</sup> to 100 N/mm <sup>2</sup>
		Abrasion Resistance	IS 13630-11&12: 2006	0.5 mm to 5 mm
		Thermal Shock Resistance	IS 13630-5: 2006	Qualitative
		Frost Resistance	IS 13630-2: 2006	Qualitative
		Chemical resistance	IS 13630-7&8: 2006	Qualitative
		Crazing resistance	IS 13630-9: 2006	Qualitative
		Scratch Hardness	IS 13630-13: 2006	1 to 8 MHO'S Scale
<b>13.</b>	<b>Bentonite</b>	Liquid Limit	IS 2720-5: 2007	10 % to 500 %
		Sand Content	IS 6186: 2003	0.5 % to 20 %
		Free Swelling	IS 2720-40	5 % to 250 %
		pH Value	IS 2720-26	4 to 13

**Laboratory**                      **Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi**  
**Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi**  
**Location 2: No. 26, Wazirpur Industrial Area, Delhi**

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

**Discipline**                      **Mechanical Testing**                      **Issue Date**    **04.09.2015**

**Certificate Number**        **T-0310**                                      **Valid Until**    **03.09.2017**

**Last Amended on**            **08.10.2015**                                **Page**            **35 of 39**

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	<b>Bentonite</b>	Density	IS 2720-3: 2007	0.1 g/cc to 5 g/cc
		Marsh Viscosity	IS 6186: 2010	5 s to 90 s
		Dry Fineness	IS 6186: 2003 IS 2720:4	0.1 % to 100 %
		Wet Fineness		0.1 % to 100 %
		Gel formation Index	IS 6186: 2003	Qualitative
<b>14.</b>	<b>Soil</b>	Water content	IS 2720-2: 2010	0.1 % to 20 %
		Proctor Test (MDD/OMC)	IS 2720-7: 2007	MDD 1 g/cc to 3 g/cc OMC 0.5 % to 50 %
		Plastic Limit	IS 2720-5: 2010	0.5 % to 50 %
		Liquid Limit		1 % to 100 %
		Specific Gravity	IS 2720-3-1&2: 2007	0.1 to 1-5
		Grain Size Analysis	IS 2720-4: 2007	10 % to 100 %
		California bearing ratio	IS 2720-16: 2007	5 to 60
		Swelling Index	IS 2720-41: 2007	5 % to 50 %
		Direct Shear Test	IS 2720-13&14	1 MPa to 20 MPa
		Permeability	IS 2720-17: 2007	10 <sup>-4</sup> to 10 <sup>-8</sup>

<b>Laboratory</b>	<b>Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 2: No. 26, Wazirpur Industrial Area, Delhi</b>		
<b>Accreditation Standard</b>	<b>ISO/IEC 17025: 2005</b>		
<b>Discipline</b>	<b>Mechanical Testing</b>	<b>Issue Date</b>	<b>04.09.2015</b>
<b>Certificate Number</b>	<b>T-0310</b>	<b>Valid Until</b>	<b>03.09.2017</b>
<b>Last Amended on</b>	<b>08.10.2015</b>	<b>Page</b>	<b>36 of 39</b>

<b>S. No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
15.	<b>Manhole Cover And Frame</b>	Dimensions	EN 124: 1994, EN 124 (Part 1 to 6): 2015	0.5 mm to 1 m
		Load Test	IS 12592: 2002	5 kN to 1000 kN
		Permanent Set		0 to 10 mm
16.	<b>Water Proofing Compound</b>	Setting time	IS 4031-5: 1988	20 min to 600 min
		Compressive strength	IS 4031 (Part 6): 1988	5 MPa to 80 MPa
		Permeability	IS 2645: 2003	Qualitative
17.	<b>Bitumen products</b>	Specific gravity	IS 1202: 1990	0.5 to 3
		Flash point	IS 1448-69: 2003	40 °C to 360 °C
		Softening point	IS 1205: 1988	10 °C to 200 °C
		Penetration	IS 1203: 1990	0.1 mm to 250 mm
		Ductility	IS 1208: 1988	0.5 mm to 1000 mm
		Loss of heating	IS 1212: 1988	0.1 mg to 200 gm
18.	<b>Bitumen Felt</b>	Pliability	IS 13826-2: 2008	Qualitative
		Breaking strength	IS 13826-1: 2008	20 kg to 200 kg
		Weight kg/10m <sup>2</sup>	IS 1322: 2008	(10 kg to 50 kg)/10m <sup>2</sup>
		Heat resistance	IS 13826-5: 2008	Qualitative



<b>Laboratory</b>	<b>Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi</b>		
	<b>Location 2: No. 26, Wazirpur Industrial Area, Delhi</b>		
<b>Accreditation Standard</b>	<b>ISO/IEC 17025: 2005</b>		
<b>Discipline</b>	<b>Mechanical Testing</b>	<b>Issue Date</b>	<b>04.09.2015</b>
<b>Certificate Number</b>	<b>T-0310</b>	<b>Valid Until</b>	<b>03.09.2017</b>
<b>Last Amended on</b>	<b>08.10.2015</b>	<b>Page</b>	<b>38 of 39</b>

<b>S. No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
	<b>Ferrous &amp; Non Ferrous Metals (Rod, Dumb bell, Sheet, Channel, Angle, Rail, square, Tabular, Tor, TMT) Cast iron Copper &amp; copper alloy Aluminum &amp; aluminum alloy, steel tubes</b>	Dimensions	IS 2062: 2006, IS 737: 2008, IS 277, IS 320: 1980, IS 617, IS 808, IS 1852, IS 1161, IS 1239, IS 3589, IS 4270, IS 3601 IS 9295, IS 1786	0.1 mm to 3000 mm
		Mass per meter	IS 1786: 2008; IS 1161, IS 1239 IS 3589: 2001	1 kg to 90 kg
		Izod Impact test	IS 1598: 1977	10 J to 160 J
		Charpy Impact test	IS 1757: 1988	10 J to 300 J
		Hardness HRB	IS 1586: 2006, ASTM E 18-08b	20 to 100
		Hardness HRC		20 to 70
		Hardness HBW	IS 1500: 2005, ISO 6506-1: 1999 ASTM E 10-08	50 to 400
		Hardness Vickers	IS 1501: 2002, ISO 6507-1: 1997 ASTM E 92-82(2003)e2	50 to 600

**Laboratory**                      **Bharat Test House, 454/2, Timber Market, Azadpur Commercial Complex, Delhi**  
**Location 1: 454/2, Timber Market, Azadpur Commercial Complex, Delhi**  
**Location 2: No. 26, Wazirpur Industrial Area, Delhi**

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

**Discipline**                      **Mechanical Testing**                      **Issue Date**    **04.09.2015**

**Certificate Number**            **T-0310**                      **Valid Until**    **03.09.2017**

**Last Amended on**              **08.10.2015**                      **Page**            **39 of 39**

S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	<b>Ferrous &amp; Non Ferrous Metals (Rod, Dumb bell, Sheet, Channel, Angle, Rail, square, Tabular, Tor, TMT) Cast iron Copper &amp; copper alloy Aluminum &amp; aluminum alloy, steel tubes</b>	Re bend Test	IS 1786: 2008, BS 4449: 2005	Qualitative
		Ribs Area	IS 1786: 2008, BS 4449: 2005	Upto 8 mm <sup>2</sup> /mm
		Flattening Test	IS 2328: 1983	Qualitative
		Drift Expansion Test	IS 2335	Qualitative
		Cold Bend Test	IS 2329	Qualitative
		Hydraulic Test	IS 4711: 1974, IS 1161, IS 1239, IS 3589, IS 4270, IS 3601, IS 9295	Qualitative

**-X-X-X-X-X-X-X-X-X-X-X-X-**