

Laboratory	Raicon Labs Pvt. Ltd., Plot No. 140, HSIIDC, Rai Industrial Area, Sonapat, Haryana		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Mechanical Testing	Issue Date	07.08.2015
Certificate Number	T-2603	Valid Until	06.08.2017
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S. No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
I. BUILDING MATERIALS				
1.	Cement	Fineness by Blain Air Permeability	IS 4031 (Part 2): 1999 (RA 2013)	100 m ² /kg to 500 m ² /kg
		Consistency	IS 4031 (Part 4): 1988 (RA 2014)	20 % to 40 %
		Setting Time Initial	IS 4031 (Part 5): 1988 (RA 2014) Clause. 5.2	30 min to 300 min
		Setting Time Final	IS 4031 (Part 5): 1988 (RA 2014) Clause. 5.3	50 min to 400 min
		Soundness by Le-Chatelier Test	IS 4031 (Part 3): 1988 (RA 2014) Clause. 5	Upto 20 mm
		Compressive Strength	IS 4031 (Part 6): 1988 (RA 2014)	10 N/mm ² to 70 N/mm ²
		Density	IS 4031 (Part 11): 1988 (RA 2014)	2 g/cc to 3.5 g/cc
2.	Fly Ash	Specific Gravity	IS 1727: 1967 (RA 2013) Clause. 15	1 to 3
		Fineness by Blain Air Permeability	IS 1727: 1967 (RA 2013) Clause. 6	100 m ² /kg to 600 m ² /kg
		Retained Particle Size at 45µ is Sieve	IS 1727: 1967 (RA 2013) Clause. 6.2.5	5 % to 60 %
3.	Coarse Aggregate	Sieve Analysis	IS 2386 (Part 1): 1963 (RA 2011) Clause. 2	0.5 % to 100 %

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	Coarse Aggregate	Crushing Value	IS 2386 (Part 4): 1963 (RA 2011) Clause. 2	10 % to 50 %
		Impact Value	IS 2386 (Part 4): 1963 (RA 2011) Clause. 4	10 % to 50 %
		Abrasion Value	IS 2386 (Part 4): 1963 (RA 2011) Clause. 5	10 % to 50 %
		10% Fine Value	IS 2386 (Part 4): 1963 (RA 2011) Clause. 3	5 tones to 30 tones
		Bulk Density	IS 2386 (Part 3): 1963 (RA 2011) Clause. 3	1.0 kg/l to 3.0 kg/l
		Water Absorption	IS 2386 (Part 3): 1963 (RA 2011) Clause. 2	0.1 % to 5 %
		Elongation Index	IS 2386 (Part 1): 1963 (RA 2011) Clause. 5	5 % to 50 %
		Flakiness Index	IS 2386 (Part 1): 1963 (RA 2011) Clause. 4	5 % to 50 %
		Total Deleterious Material	IS 2386 (Part 1&2): 1963 (RA 2011) Clause. 3 & 2,4	0.1 % to 10 %
		Specific Gravity	IS 2386 (Part 3): 1963 (RA 2011) Clause. 2	1 to 3
4.	Aggregate (Fine)	Sieve Analysis	IS 2386 (Part 1): 1963 (RA 2011) Clause. 2	0.5 % to 100 %
		Fineness Modulus	IS 2386 (Part 1): 1963 (RA 2011)	1.10 to 4

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	Aggregate (Fine)	Silt Content by Weight	IS 2386 (Part 2): 1963 (RA 2011) Clause. 3	1.0 % to 20 %
		Bulking of Sand	IS 2386 (Part 3): 1963 (RA 2011) Clause. 4	3 % to 25 %
		Total Deleterious Material	IS 2386 (Part 1&2): 1963 (RA 2011) Clause. 3 & Clause 2,4	0.5 % to 20 %
		Specific Gravity	IS 2386 (Part 3): 1963 (RA 2011) Clause. 2	1 to 3
		Water Absorption	IS 2386 (Part 3): 1963 (RA 2011) Clause. 2	0.1 % to 5 %
		Surface Moisture	IS 2386 (Part 3): 1963 (RA 2011) Clause. 5	0 to 5 %
		Organic Impurities	IS 2386 (Part 2) (RA 2011)	Qualitative
		Bulk Density	IS 2386 (Part 3): 1963 (RA 2011) Clause. 3	1 kg/l to 2.5 kg/l
5.	Bricks	Compressive Strength	IS 3495 (Part 1): 1995 (RA 2011)	3 N/mm ² to 50 N/mm ²
		Water Absorption	IS 3495 (Part 2): 1995 (RA 2011)	1 % to 50 %
		Efflorescence	IS 3495 (Part 3): 1995 (RA 2011)	Qualitative
		Dimension	IS 1077: 1992 (RA 2011)	25 mm to 5000 mm

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6.	Concrete Tiles	Wet Transverse Strength	IS 1237: 2012 Annexure F	1 MPa to 50 MPa
		Resistance to Wear	IS 1237: 2012 Annexure G	0.2 mm to 10 mm
		Water Absorption	IS 1237: 2012 Annexure E	0.1 % to 20 %
7.	Bentonite	Gel Formation Index	IS 6186: 1986 (RA 2003) Clause. A-4	Qualitative
		Specific Gravity/RD of Solution	IS 2911 (Part 3): 1980 (RA 2010) Appendix F	0.5 to 3
		Moisture Content	IS 6186: 1986 (RA 2003) Clause. A-2	0.1 % to 20 %
		Fineness	IS 6186: 1986 (RA 2003) Clause. A-6	10 % to 100 %
		Sand Content	IS 6186: 1986 (RA 2003) Clause. A-9	0.1 % to 10 %
		Liquid Limit	IS 2720 (Part 5): 1985 (RA 2010) Clause. 3	100 % to 600 %
		Free Swell Index	IS 2720 (Part 40): 1977 (RA 2002)	200 % to 2000 %
8.	Paver Block	Dimension (Thickness)	IS 15658: 2006 (RA 2011) Annexure B	20 mm to 200 mm
		Compressive Strength	IS 15658: 2006 (RA 2011) Annexure D	10 N/mm ² to 80 N/mm ²
		Water Absorption	IS 15658: 2006 (RA 2011) Annexure C	0.5 % to 10 %

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	Paver Block	Abrasion Resistance	IS 15658: 2006 (RA 2011) Annexure E	1000 mm ³ to 10000 mm ³
		Flexural Strength/ Breaking Load	IS 15658: 2006 (RA 2011) Annexure G	0.5 N/mm ² to 25 N/mm ²
9.	Bitumen	Specific Gravity	IS 1202: 1978 (RA 2004)	1 to 3
		Penetration at 25 °C, 100 g, 5 s, 0.1 mm	IS 1203: 1978 (RA 2004)	10 Div to 200 Div
		Softening Point	IS 1205: 1978 (RA 2004)	10 °C to 200 °C
		Ductility	IS 1208: 1978 (RA 2004)	5 cm to 100 cm
		Flash Point/Fire Point	IS 1209: 1978 (RA 2004)	50 °C to 500 °C
10.	Silica Fume	Specific Gravity	IS 1727: 1967 (RA 2008) Clause 15	1 to 3
		Compressive Strength	IS 1727: 1967 (RA 2008) Clause. 10	5 MPa to 50 MPa
		Particle Retained on 45 Micron is Sieve	IS 1727: 1967 (RA 2008)	2 % to 25 %
11.	Water Proofing Compounds	Permeability to Water	IS 2645: 2003 (RA 2005) Annexure B	Upto 60 mm
		Initial Setting Time	IS 4031 (Part 5): 1988 (RA 2009) Clause. 5.2	30 min to 400 min
		Final Setting Time	IS 4031 (Part 5): 1988 (RA 2009) Clause. 5.3	50 min to 600 min
		Compressive Strength	IS 4031 (Part 6): 1988 (RA 2009)	10 to 60

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12.	Plywood/Wood		IS 1659, IS 303, IS 10701, IS 710, IS 5509, IS 4990, IS 1328	
		Density	IS 1734 (Part 1): 1983 (RA 2003) Clause. 6.1	Upto 1500 kg/m ³
		Moisture Content	IS 1734 (Part 1): 1983 (RA 2003) Clause. 6.2	Upto 25 %
		Glue Shear Strength	IS 1734 (Part 4): 1983 (RA 2003)	100 N to 5000 N
		Adhesion of Plies	IS 1734 (Part 5): 1983	Qualitative
		Tensile Strength Parallel to Grain Perpendicular to Grain	IS 1734 (Part 9): 1983 (RA 2003)	0.1 kN to 10 kN
		Modulous of Rupture Parallel to Grain Perpendicular to Grain	IS 1734 (Part 11): 1983 (RA 2003)	0.1 kN to 10 kN
		Resistance to Water	IS 1734 (Part 4, 5 & 6): 1983 (RA 2003)	Qualitative
13.	Admixture	Slump	IS 1199: 1959 (RA 2008)	25 mm to 200 mm
		Initial Setting Time	IS 8142: 1976 (RA 2002)	100 mm to 500 min
		Final Setting Time	IS 8142: 1976 (RA 2002)	300 mm to 900 min
		Compressive Strength	IS 516: 1959 (RA 2008)	5 MPa to 80 MPa
		Flexural Strength	IS 516: 1959 (RA 2008)	1 MPa to 10 MPa
		Bleeding	IS 9103: 1999 (RA 2013)	0.1 % to 10 %
		Loss of Workability	IS 1199: 1959 (RA 2008)	25 to 200

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14.	Concrete	Compressive Strength	IS 516: 1959 (RA 2008)	10 MPa to 80 MPa
		Flexural Strength	IS 516: 1959 (RA 2008)	1 MPa to 10 MPa
		Slump	IS 1199: 1959 (RA 2008)	25 mm to 200 mm
		Permeability	DIN-1048-5: 1991	0.5 mm to 150 mm
		Drying Shrinkage	IS 1199: 1959 (RA 2008)	0.01 % to 2 %
		Moisture Movement	IS 1199: 1959 (RA 2008)	0.01 % to 2 %
15.	Ceramic Tiles	Dimension	IS 13630 (Part 1): 2006 (RA 2012)	5 mm to 600 mm
		Water Absorption	IS 13630 (Part 2): 2006 (RA 2012)	0.01 % to 30 %
		Modulus of Rupture	IS 13630 (Part 6): 2006 (RA 2012)	5 MPa to 50 MPa
		Hardness Moh's Scale	IS 13630 (Part 13): 2006 (RA 2012)	1 to 9
16.	Stone	Transverse Strength	IS 1121 (Part 2): 1974 (RA 2013)	1 kg/cm ² to 500 kg/cm ²
		Compressive Strength	IS 1121 (Part 1): 1974 (RA 2013)	10 MPa to 200 MPa
		Specific Gravity	IS 1122: 1974 (RA 2013)	1 to 3
		Moisture Content	IS 13030: 1991 (RA 2001)	0.01 % to 1 %
		Water Absorption	IS 1124: 1974 (RA 2013)	0.05 % to 8 %

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	Stone	Dry Density	IS 13030: 1991 (RA 2001)	1 to 3
		Resistance to Wear	IS 1706: 1972 (RA 2003)	0.1 mm to 5 mm
		Tensile Strength	IS 1121 (Part 3): 2012	5 MPa to 50 MPa
17.	Water Stopper	Tensile Strength	IS 15058, IS 9766 IS 8543 (Part 4/ Sec I): 1984 (RA 2003) Clause. 8.1	0.1 MPa to 100 MPa
		Elongation	IS 8543 (Part 4/ Sec I): 1984 (RA 2003)	100 % to 600 %
		Hardness Shore	IS 13360 (Part 5/ Sec II): 2013	50 to 150
		Water Absorption	IS 15058: 2002 Annexure A	0.1 % to 5%
II.	SOIL AND ROCK			
1.	Soil & Granular Material	Max. Dry Density	IS 2720 (Part 7 & 8): 1980 & 1983 (RA 2011 & 2010)	1.5 g/cc to 2.5 g/cc
		Optimum Moisture Content	IS 2720 (Part 7 & 8): 1980 & 1983 (RA 2011 & 2010)	5 % to 30 %
		Grain Size Analysis	IS 2720 (Part 4): 1985 (RA 2010)	4.75 mm to 0.075 mm
		Plastic Limit	IS 2720 (Part 5): 1985 (RA 2010)	0.1 % to 50 %
		Liquid Limit	IS 2720 (Part 5): 1985 (RA 2010)	0.1 % to 50 %
		C.B.R.	IS 2720 (Part 16): 1987 (RA 2011)	2 % to 50 %
		Moisture Content	IS 2720 (Part 2): 1973 (RA 2010)	1 % to 50 %

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	Soil & Granular Material	Direct Shear Test -Angle of Internal Friction (ϕ) -Cohesion (C)	IS 2720 (Part 13): 1986 (RA 2011)	5° to 45° 0 to 1.0 kg/m ²
III. MECHANICAL PROPERTIES OF METALLIC MATERIAL				
1.	Reinforced Steel/ Structural Steel	Tensile Strength	IS 1608: 2005 (RA 2010)	100 N/mm ² to 800 N/mm ²
		% Elongation	IS 1608: 2005 (RA 2010)	2 % to 40 %
		Yield Stress / 0.2% Proof	IS 1608: 2005 (RA 2010)	100 kN to 800 kN
		Bend Test	IS 1599: 2012/ IS 2389: 2005	Qualitative (Mandrel dia. 20, 32, 40, 50, 60, 72, 100, 112, 128, 140, 150, 175 mm)
		Rebend Test	IS 1786: 2008 (RA 2013)	Qualitative (Mandrel dia. 56, 84, 96, 140, 176, 200, 256, 288 mm)
		Mass	IS 1786: 2008 (RA 2013)	0.01 kg to 20 kg
		Slip Test	IS 16172: 2014	0.01 mm to 2 mm
		Length of Lay	IS 14268: 1995 (RA 2003)	Qualitative
		Flattening Test	IS 2328: 2005	Qualitative
		Location of Failure	IS 16172: 2014	Qualitative

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