

Laboratory **Bureau Veritas (India) Private Limited, Shed No: F-2/B, Road No.9, IDA Nacharam, Hyderabad, Telangana**

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

Certificate Number **TC-6276**

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Validity **18.09.2017 to 17.09.2019**

Last Amended on **30.10.2017**

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
<u>MECHANICAL TESTING</u>				
I.	BUILDING MATERIALS			
1.	Aggregate Coarse	Sieve Analysis	IS:2386 (Part 1)	0.1 % to 100% (4.75 mm to 125 mm)
		Specific gravity	IS:2386 (Part 3)	2 to 4
		Bulk Density (Loose & Rodded)	IS:2386 (Part 3)	1 kg/L to 4 kg/L
		Materials finer than 75 microns	IS:2386 (Part 1)	0.1 to 5%
		Flakiness Index & Elongation Index	IS:2386 (Part 1)	0 % to 50%
		Water Absorption	IS:2386 (Part 3)	0.1 % to 5%
		Aggregate Impact value	IS:2386 (Part 4)	5 % to 50%
		Agg. Abrasion Value (Los Angeles Abrasion value)	IS:2386 (Part 4)	5 % to 50%
		Agg. Crushing value	IS:2386 (Part 4)	5 % to 50%
		Determination of 10% fines value	IS:2386 (Part 4)	50 kN to 700 kN
2.	Aggregate Fine	Sieve analysis	IS:2386 IS 383 (Part 1)	0.1 % to 100% (75 microns to 10 mm)
		Specific gravity	IS:2386 (Part 3)	2 to 4
		Bulk density (Loose & Rodded)	IS:2386 (Part 3)	1 kg/L to 4 kg/L
		Bulking	IS:2386 (Part 3)	10 % to 35%
		Materials finer than 75 microns	IS:2386 (Part 1)	0.1 % to 20%
		Water absorption	IS:2386 (Part 3)	0.4 % to 20%
3.	Bricks	Water absorption	IS:3495 (Part 1)	1 % to 20%
		Compressive strength	IS:3495 (Part 2)	1 MPa to 20MPa
		Efflorescence	IS:3495 (Part 3)	Qualitative

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4.	Concrete cubes & cores	Compressive strength	IS:516	5 MPa to 80 MPa
5.	Wood	Moisture Content	IS: 11215	1 % to 30%
6.	Cement	Consistency	IS:4031 (Part 4)	10 % to 35%
		Initial setting time	IS:4031 (Part 5)	5 minutes to 400 minutes
		Final setting time		40 minutes to 800minutes
		Fineness (Blaine's method)	IS:4031 (Part 2)	100 m ² /kg to 600 m ² /kg
		Compressive strength	IS:4031 (Part 6)	5 N/mm ² to 70N/mm ²
		Soundness (Le-Chatelier's method)	IS:4031 (Part 3)	0.1 mm to 10 mm
		Fineness by dry sieving	IS:4031 (Part 1)	1 % to 30 %
		Density	IS:4031 (Part 11)	2 g/cm ³ to 4 g/cm ³
7.	Concrete Blocks Hollow/Solid	Dimensional Analysis	IS:2185 (Part 1 Annex-B)	50 mm to 450 mm
		Water absorption	IS:2185 (Part 1 Annex-E)	1 % to 20%
		Compressive Strength	IS:2185 (Part 1 Annex-D)	1 MPa to 15 MPa
		Block Density	IS:2185 (Part 1 Annex-E)	1000 kg/m ³ to 2800 kg/m ³
8.	Pavers Block	Water Absorption	IS: 15658 Annex-C	0.1 % to 20%
		Compressive Strength	IS: 15658 Annex-D	1 N/mm ² to 75 N/mm ² (1 kN to 1950 kN)
II.	SOIL & ROCK			
1.	Soil	Liquid Limit	IS: 2720 (Part 5)	15 % to 150 %
		Plastic Limit	IS: 2720 (Part 5)	10 % to 70%
		Moisture Content	IS: 2720 (Part 2)	1 % to 30%
		Grain Size Analysis by sieving	IS: 2720 (Part 4)	0.1 % to 100% (4.75mm to 0.075mm)
		Grain size Analysis by Hydro meter method	IS: 2720 (Part 4)	0.1 % to 100% (2 μm to 75 μm)
		Standard Proctor Compaction	IS 2720 (Part -7)	
		Optimum Moisture Content		6 % to 30%
		Maximum Dry Density		1.2g/cm ³ to 2.2g/cm ³

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		Modified proctor compaction	IS: 2720 (Part 8)	5 % to 25%
		Optimum Moisture Content		
		Maximum Dry Density		1.3g/cm ³ to 2.4g/cm ³
		Specific Gravity	IS: 2720 (Part 3 by Sec 1)	2.0 to 2.8
		Free Swell Index	IS: 2720 (Part 40)	0.5 % to 200 %
		Field density by core cutter method	IS: 2720 (Part 29)	1.3 g/cm ³ to 2.4 g/cm ³
		Field density by sand replacement method	IS: 2720 (Part 28)	1.3 g/cm ³ to 2.4g/cm ³
		California Bearing Ratio (CBR)	IS: 2720 (Part 16)	1 % to 100%
III.	MECHANICAL PROPERTIES OF METALS			
1.	Reinforcing HSD Steel bar	Mass per meter	IS: 1786	0.1 kg to 15 kg
		0.2 % Proof Stress/Yield stress	I.S:1608	100 MPa to 700 MPa
		Tensile strength	IS:1608	100 MPa to 850 MPa
		Elongation	IS:1608	1 % to 40%
		Bend	IS: 1599	Qualitative (Mandrel Diameter: 24,30,32,36,40,48,60,64, 80,100,112,125, 128,140,160 mm)
		Rebend Test	IS: 1786	Qualitative (Mandrel Diameter: 32,40,50,72,84,96, 112,120,140,150,168, 175,192,196,224 mm)
2.	Structural Steel	Mass per meter	IS: 808	0.3 kg. to 100 kg
		Proof Stress/Yield stress	I.S:1608	50 MPa to 400MPa
		Tensile strength	I.S:1608	100 MPa to 700 MPa

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		Elongation	I.S:1608	5% to 50%
		Bend Test	IS: 1599	Qualitative (Mandrel Diameter: 12,16,20,24,28,32,36,40, 48,75,84,90 mm)
3.	Mild Steel Tube	Tensile Strength	IS:1608	100 N/mm ² to 700 N/mm ²
		Mass per meter	IS: 1161	0.1 kg to 30 kg
		Elongation	IS:1608	10 % to 50 %

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NON-DESTRUCTIVE TESTING

I.	BUILDING MATERIALS			
1.	Hardened Concrete	Rebound Hammer test	IS: 13311 (Part II)	10 RN to 70 RN
		Ultrasonic Pulse Velocity Test	IS: 13311 (Part I)	0.1 km/s to 5.0 km/s
		Cover meter Test	BS: 1881 (Part 204)	1 mm to 90 mm
		Carbonation Test	EN: 14630	5 mm to 100 mm
2.	Reinforced Concrete Structures	Deflection Measurement Test (Load Test)	IS: 456	0.01 mm to 50 mm