

Laboratory Bureau Veritas (India) Pvt. Ltd., Construction Services Laboratory,  
No.33/1178 F1, Chalikkavattom, New No.CC 47/1937 & 47/1938,  
Kumbalappally Road, Vennala Post, Cochin, Kerala

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-6369

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Validity 06.10.2017 to 05.10.2019

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><u>MECHANICAL TESTING</u></b>				
<b>I</b>	<b>MECHANICAL PROPERTIES OF METALS</b>			
1.	<b>High Strength Deformed Steel Bars and Wires for Concrete Reinforcement</b>	Weight / meter	IS 1786	0.1 kg/m to 10 kg/m
		<b>Tensile Test</b>		
		(a) 0.2 % Proof Stress/yield stress	IS 1608	100 N/mm <sup>2</sup> to 800 N/mm <sup>2</sup>
		(b) Ultimate Tensile Strength	IS 1608	100 N/mm <sup>2</sup> to 800 N/mm <sup>2</sup>
		(c) Elongation	IS 1608	10% to 40%
		Bend test	IS 1599	Qualitative (Mandrel Diameter in mm: 32,20,125, 142,156, 224,192,251,286,48, 60, 100. 180° bend)
	Rebend Test	IS 1786	Qualitative (Mandrel Diameter in mm: 32, 20, 125, 142, 156, 224, 192, 251, 286, 48, 100. 135° and 157.5° angle bend)	
2.	<b>Structural Steel</b>	Weight /meter	IS 808	0.9kg/m to 95kg/m
		<b>Tensile Test</b>		
		Yield Stress	IS 1608	50 N/mm <sup>2</sup> to 410 N/mm <sup>2</sup>
		UTS	IS 1608	100 N/mm <sup>2</sup> to 600 N/mm <sup>2</sup>
		Elongation	IS 1608	1% to 40%
	Bend	IS 1599	Qualitative (Mandrel Diameter in mm: 32, 20, 125, 142, 156, 224, 192, 251, 286, 48, and 100.180° bend)	

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<b>II.</b>	<b>BUILDING MATERIALS</b>			
<b>1.</b>	<b>Fine Aggregate</b>	Sieve Analysis Fine aggregate	IS 2386 (Part 1)	75 micron to 4.75mm (1% to 100%)
		Specific gravity Fine aggregate	IS 2386 (Part 3)	2 to 4
		Bulk Density Loose Rodded	IS 2386 (Part 3)	1.20 kg/l to 3.00 kg/l 1.20 kg/l to 3.00 kg/l
		Water Absorption	IS 2386 (Part 3)	0.1% to 10%
		Bulking	IS 2386 (Part 3)	0.5% to 50%
		Particle finer than 75 microns	IS 2386 (Part 1)	0.02% to 20%
		<b>2.</b>	<b>Coarse Aggregate</b>	Sieve Analysis
Specific gravity	IS 2386 (Part 3)			2 to 4
Bulk Density Loose Rodded	IS 2386 (Part 3)			1.20 kg/l to 3.00 kg/l 1.20 kg/l to 3.00 kg/l
Flakiness Index	IS 2386 (Part 1)			1% to 70%
Elongation Index	IS 2386 (Part 1)			1% to 70%
Water Absorption	IS 2386 (Part 3)			0.1% to 10%
Aggregate Impact value	IS 2386 (Part 4)			1% to 50%
Aggregate Crushing value	IS 2386 (Part 4)			1% to 50%
Particle finer than 75 microns	IS 2386 (Part 1)			0.1% to 20%
<b>3.</b>	<b>Cement (OPC, PPC and PSC)</b>	Consistency	IS 4031 (Part 4)	20% to 40%
		Initial setting time	IS 4031 (Part 5)	30 min to 400 min

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		Final setting time	IS 4031 (Part 5)	30 min to 800 min
		Fineness (Blaine's method)	IS 4031 (Part 2)	200 m <sup>2</sup> /kg to 500 m <sup>2</sup> /kg
		Fineness (by dry sieving)	IS 4031(Part 1)	0.01% to 100%
		Compressive strength	IS 4031 (Part 6)	10 N/mm <sup>2</sup> to 100N/mm <sup>2</sup>
		Soundness by Autoclave method	IS 4031 (Part 3)	0.001 to 2%
		Soundness by Le-Chatelier's method	IS 4031 (Part 3)	0.1 mm to 10 mm
		Density	IS 4031(Part 11)	2.7 to 3.5
4.	Concrete Cube & Core	Compressive strength	IS 516	5 N/mm <sup>2</sup> to 80 N/mm <sup>2</sup>
		Accelerated Compressive Strength	IS 9013	5 N/mm <sup>2</sup> to 80 N/mm <sup>2</sup>
5.	Bricks	Compressive strength	IS 3495 (Part 1)	1 N/mm <sup>2</sup> to 30 N/mm <sup>2</sup>
		Water Absorption	IS 3495 (Part 2)	7% to 25%
		Efflorescence	IS 3495 (Part 3)	Qualitative (Visual)
6.	Concrete Blocks Hollow/Solid	Water absorption	IS 2185 (Part 1)	1% to 20%
		Compressive Strength	IS 2185 (Part 1)	2 N/mm <sup>2</sup> to 25 N/mm <sup>2</sup>
		Block Density	IS 2185 (Part 1)	1500 kg/m <sup>3</sup> to 2500 kg/m <sup>3</sup>
7.	Paver Blocks	Water Absorption	IS 15658	1% to 20%
		Compressive Strength	IS 15658	5 N/mm <sup>2</sup> to 70 N/mm <sup>2</sup>
8.	Wood	Moisture Content	IS 11215	1% to 25%

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III.	<b>SOIL AND ROCK</b>			
1.	<b>Natural Building Stone</b>	Water Absorption	IS 1124	0.1% to 10%
		Apparent Specific Gravity	IS 1124	2 to 4
		Hardness by moh's scale	IS 13630 (Part 13)	1 to 9
2.	<b>Soil</b>	Liquid Limit	IS 2720 (Part 5)	20% to 95%
		Plastic Limit	IS 2720 (Part 5)	10% to 60%
		Shrinkage limit	IS 2720 (Part 6)	5% to 30%
		Water Content	IS 2720 (Part 2)	1% to 100%
		Grain size Analysis	IS 2720 (Part 4)	0.075mm to 4.75mm
		Specific Gravity	IS 2720 (Part 3/Sec1)	2.0 to 2.80
		Standard Proctor compaction Optimum Moisture Content Maximum Dry Density	IS 2720 (Part 7)	6% to 40% 1.2 g/cm <sup>3</sup> to 3.0 g/cm <sup>3</sup>
		Modified Proctor Compaction Optimum Moisture Content Maximum Dry Density	IS 2720 (Part 8)	6% to 40% 1.2 g/cm <sup>3</sup> to 3.0 g/cm <sup>3</sup>

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<b><u>NON-DESTRUCTIVE TESTING</u></b>				
I.	<b>BUILDING MATERIALS</b>			
1.	<b>Reinforced Concrete structures</b>	Rebound Hammer Test	IS 13311 (Part-2)	10 N/mm <sup>2</sup> to 60 N/mm <sup>2</sup>
		Ultrasonic Pulse Velocity Test	IS 13311 (Part 1)	0.5 km/sec to 5km/sec
		Cover meter	BS:1881 (Part :204)	1 mm to 90 mm
		Half Cell Potential Test	ASTM C-876	1 mV to 999 mV
		Carbonation Test	EN 14630	0 to 60 mm