

Laboratory **Durocrete Engineering Services Pvt. Ltd., PAP D 122-125, TTC Industrial Area, Turbhe, Navi Mumbai, Maharashtra**

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

Certificate Number **TC-5917 (In lieu of T-2473, T-2474 & T-2475) Page 1 of 6**

Validity **28.05.2017 to 27.05.2019** Last Amended on **30.06.2017**

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**

<b>I.</b>	<b>BUILDING MATERIAL</b>			
<b>1.</b>	<b>Cement (OPC, PPC &amp; PSC)</b>	SiO <sub>2</sub>	IS 4032 (Clause 4.3)	15 % to 40 %
		Al <sub>2</sub> O <sub>3</sub>	IS 4032 (Clause 4.6.1)	3.0 % to 10 %
		Fe <sub>2</sub> O <sub>3</sub>	ASTM C114 IS 4032 (Clause 4.5.2)	3.0 % to 6.0 %
		CaO	IS 4032 (Clause 4.7.2)	35 % to 70 %
		MgO	IS 4032 (Clause 4.8.2 & 7.2)	0.1 % to 8.0 %
		LOI	IS 4032 (Clause 4.2)	1.0 % to 10 %
		SO <sub>3</sub>	IS 4032 (Clause 4.9)	0.5 % to 4.0 %
		Insoluble Residue	IS 4032 (Clause 4.10)	0.5 % to 35 %
		Cl	IS 4032	0.01 % to 0.5 %
		<b>2.</b>	<b>Admixture (Plasticizer)</b>	Ash Content
pH Value	IS 9103			2 to 12
Dry material content	IS 9103			2 % to 60 %
Relative density	IS 9103			1.0 to 2.0
Chloride	IS 6925			0.01 % to 1 %
<b>II.</b>	<b>METALS &amp; ALLOYS</b>			
<b>1.</b>	<b>Ferrous Materials and Alloys (Low Alloy Steel &amp; Plain Carbon Steel)</b>	Carbon	ASTM E415	0.01 % to 0.75 %
		Silicon		0.01 % to 0.61 %
		Phosphorus		0.001 % to 0.085 %
		Sulphur		0.001 % to 0.085 %
<b>III.</b>	<b>WATER</b>			
<b>1.</b>	<b>Construction Water</b>	pH	IS 3025 (Part 11)	4 to 14
		Acidity	IS 3025 (Part 22) IS 456	Upto 10 ml
		Alkalinity	IS 3025 (Part 23) IS 456	0.5 ml to 55 ml

**Birendra Prasad Murmu**  
Convenor

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		Sulphates	IS 3025 (Part 24)	1 mg/l to 5000 mg/l
		Chlorides	IS 3025 (Part 32)	1 mg/l to 5000 mg/l
		Total Hardness (as mg CaCO <sub>3</sub> /L)	IS 3025 (Part 21)	1 mg/l to 10000 mg/l
		Total Suspended Solids	IS 3025 (Part 17)	10 mg/l to 5000 mg/l
		Organic Solids	IS 3025 (Part 18)	10 mg/l to 500 mg/l
		Inorganic Solids	IS 3025 (Part 18)	10 mg/l to 5000 mg/l

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### MECHANICAL TESTING

<b>I.</b>	<b>MECHANICAL PROPERTIES OF METALS</b>			
<b>1.</b>	<b>Steel (High Strength Deformed Steel Bars &amp; Wires, Hard-Drawn Steel Wires, Mild Steel, Structural Steel )</b>	Yield Strength	IS 1608	200 N/mm <sup>2</sup> to 850 N/mm <sup>2</sup>
		Tensile Strength	IS 1608	200 N/mm <sup>2</sup> to 950 N/mm <sup>2</sup>
		% Elongation	IS 1608	1 % to 40 %
		Weight per meter	IS 1786	0.1 kg/m to 12 kg/m
		Bend	IS 1599	Qualitative (18 mm to 256 mm) Mandrel diameter
		Re-bend	IS 1786	Qualitative (18 mm to 256 mm) Mandrel diameter
<b>II.</b>	<b>BUILDING MATERIALS</b>			
<b>1.</b>	<b>Hardened Concrete</b>	Compressive Strength of Cubes/Cores	IS 516	3 N/mm <sup>2</sup> to 120 N/mm <sup>2</sup>
<b>2.</b>	<b>Masonry Blocks (Hollow/Solid)</b>	Compressive Strength	IS 2185 (Part 1)	1 N/mm <sup>2</sup> to 15 N/mm <sup>2</sup>
		Water Absorption	IS 2185 (Part 1)	1 % to 15 %
		Dry Shrinkage/Moisture Movement	IS:2185 (Part 1)	0.001 % to 0.1 %
<b>3.</b>	<b>Masonry Blocks (AAC Block)</b>	Compressive Strength	IS 6441 (Part 1)	1 N/mm <sup>2</sup> to 25 N/mm <sup>2</sup>
		Density	IS 6441 (Part 5)	400 kg/m <sup>3</sup> to 1500 kg/m <sup>3</sup>
		Dry Shrinkage	IS 6441 (Part 2)	0.001 % to 0.1 %
<b>4.</b>	<b>Burnt Clay Bricks &amp; Fly Ash Bricks</b>	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)	1 % to 30 %
		Efflorescence	IS 3495 (Part 3)	Qualitative
		Dimensions: Length	IS 1077	2000 mm to 6000 mm
		Dimensions: Width	IS 13757	1000 mm to 4000 mm
		Dimensions: Height		500 mm to 2000 mm
<b>5.</b>	<b>Paving Block</b>	Compressive Strength	IS 15658	10 N/mm <sup>2</sup> to 80 N/mm <sup>2</sup>
		Water Absorption	IS 15658	0.5 % to 40 %

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6.	<b>Cement</b>	Standard consistency	IS 4031 (Part 4)	20 % to 35 %
		Initial Setting time	IS 4031 (Part 5)	5 minutes to 250 minutes
		Final Setting time	IS 4031 (Part 5)	15 minutes to 500 minutes
		Fineness by Blaine's air permeability	IS 4031 (Part 2)	200 m <sup>2</sup> /kg to 450 m <sup>2</sup> /kg
		Soundness Le-Chatelier's expansion	IS 4031 (Part 3)	0.1 mm to 10 mm
		Density / specific gravity	IS 4031 (Part 11)	1.50 to 3.50
		72hrs Compressive strength	IS 4031 (Part 6)	10 N/mm <sup>2</sup> to 40 N/mm <sup>2</sup>
		168 hrs Compressive strength	IS 4031 (Part 6)	10 N/mm <sup>2</sup> to 50 N/mm <sup>2</sup>
		672 hrs Compressive strength	IS 4031 (Part 6)	10 N/mm <sup>2</sup> to 80 N/mm <sup>2</sup>
			Soundness by Autoclave method	IS 4031 (Part 3)
7.	<b>Ceramic Tile</b>	Dimensions: Length	IS 13630 (Part 1)	1 mm to 1000 mm
		Dimensions: Width		1 mm to 1000 mm
		Dimensions: Thickness		0.1 mm to 15 mm
		Water Absorption	IS 13630 (Part 2)	0.01 % to 15 %
		Modulus of rupture	IS 13630 (Part 6)	6 N/mm <sup>2</sup> to 50 N/mm <sup>2</sup>
	Crazing Resistance	IS 13630 (Part 9)	Qualitative	
	Scratch Hardness	IS 13630 (Part 13)	Qualitative (1 to 10)	
8.	<b>Concrete/ Chequered Flooring Tile</b>	Water Absorption	IS 1237 IS 13801	0.01 % to 15 %
		Modulus of rupture	IS 1237 IS 13801	6 N/mm <sup>2</sup> to 50 N/mm <sup>2</sup>
9.	<b>Coarse Aggregate</b>	Specific Gravity	IS 2386 (Part 3)	2.30 to 3.00
		Water Absorption	IS 2386 (Part 3)	1 % to 10 %
		Sieve Analysis	IS 2386 (Part 1)	1 % to 100 %
		Loose Bulk Density	IS 2386 (Part 1)	1.30 kg/l to 3.00 kg/l
		Aggregate Impact Value	IS 2386 (Part 3)	1 % to 60 %

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		Aggregate Crushing Value	IS 2386 (Part 4)	1 % to 60 %
		Flakiness Index	IS 2386 (Part 4)	Upto 40 %
		Elongation Index	IS 2386 (Part 1)	Upto 40 %
<b>10.</b>	<b>Fine Aggregate</b>	Specific Gravity	IS 2386 (Part 3)	2.00 to 3.00
		Water Absorption	IS 2386 (Part 3)	1 % to 10 %
		Sieve Analysis	IS 2386 (Part 1)	Upto 100 %
		Material Finer than 75 micron	IS 2386 (Part 1)	1 % to 30 %
		Loose Bulk Density	IS 2386 (Part 3)	1.30 kg/l to 3 kg/l
<b>III.</b>	<b>SOIL &amp; ROCKS</b>			
<b>1.</b>	<b>Soil</b>	Natural Moisture content	IS 2720 (Part II)	1 % to 50 %
		Standard Proctor density	IS 2720 (Part VII)	1.5 g/cm <sup>3</sup> to 3 g/cm <sup>3</sup>
		Modified Proctor density	IS 2720 (Part VIII)	1.5 g/cm <sup>3</sup> to 3 g/cm <sup>3</sup>
		Liquid limit	IS 2720 (Part V)	1 % to 100 %
		Plastic limit	IS 2720 (Part V)	1 % to 50 %
		Free swell index of soil	IS 2720 (Part XL)	Upto 400 %
		Specific Gravity	IS 2720 (Part III) (Section 1,2)	2.00 to 3.00

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**NON – DESTRUCTIVE TESTING**

I.	<b>BUILDING MATERIALS-REINFORCED CONCRETE STRUCTURES</b>			
1.	<b>Reinforced Concrete/ Reinforce Concrete Structural Members</b>	Rebound Hammer	IS 13311 (Part 2)	10 N/mm <sup>2</sup> to 80 N/mm <sup>2</sup>
		Ultrasonic Pulse velocity Measurement	IS 13311 (Part 1)	20 µs to 999 µs
		Carbonation Depth	BS 1881(Part 201) (Clause 2.2.2)	Qualitative ( 1 mm to 100mm)
		Half Cell potential	ASTM C876	-1 mV to -500 mV
		Cover Depth	BS 1881 Part 204	1 mm to 75 mm
		Slab Load	IS 456, SP24 Explanatory hand book	0.5 mm to 25 mm

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