

Laboratory **MaRS Enviro Research & Engineering Services Pvt. Ltd.,**  
**Survey No. 171/1, Gota-Jagatpur Road, Ahmedabad, Gujarat**

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

Certificate Number **TC-7070**

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Validity **22.07.2019 to 10.03.2020**

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
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**CHEMICAL TESTING**

<b>I.</b>	<b>WATER</b>			
<b>1.</b>	<b>Construction Water</b>	pH Value	IS 3025	1 pH to 14.00 pH
		Sulphate	IS 3025	10 mg/L to 2000 mg/L
		Chloride	IS 3025	5 mg/L to 5000 mg/L
		Total Suspended Solids	IS 3025	10 mg/L to 3000 mg/L
		Acidity Quantity of 0.02 N NaOH Required to neutralize 100ml of Water	IS 3025	0.1 ml to 10 ml
		Alkalinity Quantity of 0.02 N H <sub>2</sub> SO <sub>4</sub> Required to neutralize 100ml of Water	IS 3025	0.1 ml to 50 ml
		Organic Solids	IS 3025	10 mg/L to 1000 mg/L
		Inorganic Solids	IS 3025	10 mg/L to 4000 mg/L
<b>II.</b>	<b>BUILDING MATERIALS</b>			
<b>1.</b>	<b>Cement (OPC,PPC)</b>	Loss on Ignition	IS 4032	0.5% to 10%
		Silica	IS 4032	15% to 40%
		Ferric Oxide	IS 4032	1% to 10%
		Alumina	IS 4032	1% to 10%
		Calcium Oxide	IS 4032	40% to 70%
		Magnesium Oxide	IS 4032	0.3% to 10%
		Sulphuric Anhydride	IS 4032	0.2% to 5.0%
		Insoluble Residue	IS 4032	0.2 % to 40.0%
		Total Soda	IS 4032	0.05% to 2%
		Chloride	IS 4032	0.01% to 1%
		Total Potash	IS 4032	0.05% to 2%

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**MECHANICAL TESTING**

I.	SOIL & ROCKS			
	<b>Soil</b>	Gradation	IS 2720	75 micron to 4.75 mm
		Liquid Limit	IS 2720	15% to 150%
		Plastic Limit	IS 2720	5% to 30%
		Light Compaction	IS 2720	0.01 g/cc to 2.50 g/cc 0.1 % to 30.0 %
		Heavy Compaction	IS 2720	0.01 g/cc to 2.50 g/cc 0.1 % to 30.0 %
		California Bearing Ratio	IS 2720	1% to 70%
		Direct Shear	IS 2720	C: 0.00 to 2.0 kg/cm <sup>2</sup> Φ: 5° to 45°
		Unconfined Compressive Strength	IS 2720	0.2 kg/cm <sup>2</sup> to 6.0 kg/cm <sup>2</sup>
		Free Swell Index	IS 2720	0.1% to 100%
		Specific Gravity	IS 2720	0.1 to 2.80
		Shrinkage Limit	IS 2720	1.00% to 30.00%
		Permeability	IS 2720	10 <sup>1</sup> cm/sec to 10 <sup>-7</sup> cm/sec
		Consolidation Test	IS 2720	0.05 kg/cm <sup>2</sup> to 8.0 kg/cm <sup>2</sup>
		Swelling Pressure	IS 2720	0.01 kg/cm <sup>2</sup> to 3.00 kg/cm <sup>2</sup>
	Tri-Axial Shear	IS 2720	C: 0.00 to 2.00 kg/cm <sup>2</sup> Φ: 0° to 30°	
II.	<b>BUILDING MATERIALS</b>			
1.	<b>Fine Aggregate</b>	Sieve Analysis	IS 2386	4.75 mm to 150 micron
		Specific Gravity	IS 2386	2.00 to 3.00
		Water Absorption	IS 2386	0.50 % to 15.00%
		Slit content	IS 2386	0.50 % to 10.00%

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2.	Coarse Aggregate	Sieve Analysis	IS 2386	4.75 mm to 40 mm
		Specific Gravity	IS 2386	2.00 to 3.00
		Elongation Index	IS 2386	10.00% to 60.00%
		Flakiness Index	IS 2386	10.00% to 60.00%
		Impact Value	IS 2386	10.00% to 60.00%
		Los Angeles Abrasion Value	IS 2386	15.00% to 60.00%
		Soundness	IS 2386	5.00% to 20.00%
3.	Bitumen	Specific Gravity	IS 1202	0.5 to 2
		Penetration	IS 1203	40 mm to 100 mm
		Softening Point	IS 1205	25 °C to 100 °C
		Loss on Heating	IS 1212	10 % to 60%
		Ductility (at 25°C)	IS 1208	20 cm to 100 cm
4.	Bitumen Mix	Binder Content	ASTM D 2172	0.1% to 10 %
		Marshall Stability	ASTM D 1559	800 kg to 2000 kg
		Flow test	ASTM D 1559	1 mm to 10 mm
		Density	ASTM D 2726	1.00 g/cc to 4.00 g/cc
5.	Cement	Consistency	IS 4031	20 % to 40 %
		Compressive Strength	IS 4031	10 N/mm <sup>2</sup> to 70 N/mm <sup>2</sup>
		Soundness By Le-Chatelier Methods	IS 4031	0.01 mm to 5 mm
		Fineness by Dry Sieving	IS 4031	0.5% to 10%
		Fineness by Blaine Air Permeability	IS 4031	1500 cm <sup>2</sup> /gm to 5000 cm <sup>2</sup> /gm
6.	Bricks	Dimension	IS 1077	L:4520 to 4680mm W:2240 to 2160mm H:1760 to 1840mm
		Efflorescence	IS 3495	Qualitative
7.	Concrete	Compressive Strength	IS 516	10.00 N/mm <sup>2</sup> to 100.00 N/mm <sup>2</sup>
		Flexural Strength of Beam	IS 516	1.00 N/mm <sup>2</sup> to 8.00 N/mm <sup>2</sup>
8.	Paver Block	Water Absorption	IS 15658	5.00% to 20.00%

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III.	<b>MECHANICAL PROPERTIES OF METALS</b>			
1.	<b>Reinforcement Steel</b>	Mass	IS:1786	0.10 Kg/meter to 10.00 Kg/meter
		Yield stress	IS 1608	100 N/mm <sup>2</sup> to 650 N/mm <sup>2</sup>
		Ultimate Tensile Strength	IS 1608	100 N/mm <sup>2</sup> to 850 N/mm <sup>2</sup>
		Elongation	IS 1608	1.0% to 40.0 %
		Bend Test	IS 1599	Mandrel dia.:(24,30,32,36,40,48,60,64,80,100,125,128,160)mm Qualitative
		Re-Bend Test	IS:1786	Mandrel dia.:(40,50,84,112,140,175,224)mm Qualitative

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