

Laboratory **Manglam Consultancy Services, Plot No. 44, Sandhpore Pardi, Valsad, Gujarat**

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

Certificate Number **TC-6853**

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Validity **07.02.2018 to 06.02.2020**

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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**MECHANICAL TESTING**

I.	<b>BUILDING MATERIALS</b>			
1.	<b>Cement (OPC,PPC)</b>	Consistency	IS 4031 (Part 4)	25 % to 40 %
		Initial Setting Time	IS 4031 (Part 5)	30 min. to 250 min.
		Final Setting Time	IS 4031 (Part 5)	100 min. to 600 min.
		Compressive Strength	IS 4031 (Part 6)	10 N/mm <sup>2</sup> to 80 N/mm <sup>2</sup>
		Soundness by Le-Chatilier method	IS 4031 (Part 3)	0.5 mm to 10 mm
		Fineness by Blain's Method	IS 4031 (Part 2)	100 m <sup>2</sup> /kg to 500 m <sup>2</sup> /kg
2.	<b>Concrete Cube</b>	Compressive Strength	IS 516	10 N/mm <sup>2</sup> to 80 N/mm <sup>2</sup>
3.	<b>Brick Clay</b>	Compressive Strength	IS 3495	3.5 N/mm <sup>2</sup> to 10 N/mm <sup>2</sup>
		Water Absorption	IS 3495 (Part 2)	2 % to 25 %
		Efflorescence	IS 3495 (Part 3)	Qualitative
		Dimension	IS 1077	Length: 4400 mm to 4800 mm Width: 2000 mm to 2300 mm Height: 1200 mm to 1500 mm
4.	<b>Coarse Aggregate</b>	Sieve analysis	IS 2386 (Part 1)	90 mm to 4.75mm 0 to 100 %
		Bulk Density	IS 2386 (Part 3)	1.2 gm/cc - 1.6 gm/cc
		Flakiness Index	IS 2386 (Part 1)	5 % to 40 %
		Elongation Index	IS 2386 (Part 1)	5 % to 40 %
		Impact Value	IS 2386 (Part 4)	5 % to 50 %
		Los Angeles Abrasion Value	IS 2386 (Part 4)	5 % to 60 %
		Crushing Value	IS 2386 (Part 4)	5 % to 60 %
		Specific Gravity	IS 2386 (Part 3)	2.5 to 3.5
		Water Absorption	IS 2386 (Part 3)	1 % to 10 %

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5.	<b>Fine Aggregate</b>	Sieve analysis	IS 2386 (Part 1)	4.75 mm to 0.15 mm 0 to 100 %
		Bulk Density	IS 2386 (Part 3)	1.2 gm/cc to 1.8 gm/cc
		Specific Gravity	IS 2386 (Part 3)	2.5 to 3.5
		Water Absorption	IS 2386 (Part 3)	1 % to 10 %
6.	<b>Concrete Pavers Blocks</b>	Compressive Strength	IS 15658, Annex D	5 N/mm <sup>2</sup> to 80 N/mm <sup>2</sup>
		Water Absorption	IS 15658, Annex C	0.5 % to 20 %
7.	<b>Bitumen</b>	Specific Gravity	IS 1202	0.99 to 1.102
		Ductility	IS 1208	25 cm to 100 cm
		Penetration	IS 1203	35 to 100 (1/10mm)
		Softening Point	IS 1205	20 °C to 65 °C
		Absolute Viscosity	IS 1206 (Part 2)	800 Poise to 4800 Poise
		Kinematics Viscosity	IS 1206 (Part 3)	250 cSt to 700 cSt
8.	<b>Bitumen Mix</b>	Binder Content	ASTM D 2172	1 % to 10 %
		Marshal Stability	ASTM D 6927	600 kg to 2500 kg
		Flow Test	ASTM D 6927	1 mm to 10 mm
		Density	ASTM D2041	1.5 g/cc to 3.5 g/cc
<b>II.</b>	<b>SOIL &amp; ROCK</b>			
1.	<b>Soil</b>	California Bearing Ratio	IS 2720 (Part 16)	1 % to 60 %
		Light Compaction	IS 2720 (Part 7)	MDD: 1 gm/cc to 2.1 gm/cc OMC: 5 % to 40 %
		Heavy Compaction	IS 2720 (Part 8)	MDD: 1.4 gm/cc to 2.6 gm/cc OMC: 5 % to 40 %
		Direct Shear Test	IS 2720 (Part 13)	0 to 0.4 kg/cm <sup>2</sup> Φ 5° to 50°
		Free Swell Index	IS 2720 (Part 40)	0 to 400 %
		Specific Gravity	IS 2720 (Part 3)	2.4 to 3.0
		Shrinkage Limit	IS 2720 (Part 6)	5.0 % to 25%
		Liquid Limit	IS 2720 (Part 5)	22 % to 120 %
Plastic Limit	IS 2720 (Part 5)	6 % to 50 %		

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		Consolidation	IS 2720 (Part 15)	Cc =0.001 to 1.0 Pc=0.5 kg/cm <sup>2</sup> to 5.0 kg/cm <sup>2</sup>
		Triaxial Shear	IS 2720 (Part 11)	Cohesion 0.05 kg/cm <sup>2</sup> to 3 kg/cm <sup>2</sup> ø 0-35 degree
		Grain Size Analysis (Hydrometer Analysis)	IS 2720 (Part 4)	Silt % - 20 % to 80 % Clay % - 20 % to 80 %
		Grain Size Analysis	IS 2720 (Part 4)	75 µm to 4.75 mm 0 to 100 %
<b>III.</b>	<b>MECHANICAL PROPERTIES OF METALS</b>			
<b>1.</b>	<b>High Strength Deformed Steel Bars for Concrete Reinforcement</b>	Mass per meter	IS 1786	0.1 kg/m to 9.5 kg/m
		Tensile Strength	IS 1608	100 N/mm <sup>2</sup> to 800 N/mm <sup>2</sup>
		Yield Stress	IS 1608	100 N/mm <sup>2</sup> to 800 N/mm <sup>2</sup>
		Elongation	IS 1608	10 % to 40 %
		Bend Test	IS 1599	Qualitative Mandrel Diameter in mm 24, 30, 32, 36, 40, 48, 64, 66, 80, 100, 125, 128, 160
		Re-bend Test	IS 1786	Qualitative Mandrel Diameter 40, 50, 84, 112, 140, 175, 224