

Laboratory **Beacon Infralab India Pvt. Ltd., Mahua House, A-156, Rohit Nagar
Ext., Phase-2, Part-3, Bhopal, Madhya Pradesh**

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

Certificate Number **TC-6174**

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Validity **29.06.2018 to 28.06.2020**

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
<u>MECHANICAL TESTING</u>				
I.	BUILDING MATERIALS			
1.	Cement (OPC/PPC) 43/53	Consistency	IS 4031 (Part IV)	20% to 40%
		Initial Setting Time	IS 4031 (Part V)	30 Minute to 300 Minute
		Final Setting Time	IS 4031 (Part V)	100 Minute to 600 Minutes
		Density	IS 4031 (Part XI)	2 g/cc to 3.5 g/cc
		Fineness test by Blains	IS 4031 (Part II)	150m ² / kg to 700m ² /kg
		Air Permeability		
		Soundness Test By Le Chateler Apparatus	IS 4031 (Part III)	0.50mm to 10mm
2.	Aggregate (Coarse Aggregate)	Compressive Strength Test	IS 4031 (Part VI)	5.0 N/mm ² to 70 N/mm ²
		Sieve Analysis	IS 2386 (Part I)	Up to 100% (4.75mm to 90mm)
		Specific Gravity	IS 2386 (Part III)	2.0 to 3.0
		Water Absorption	IS 2386 (Part III)	0.10% to 10%
		Impact Value	IS 2386 (Part IV)	5% to 40%
		Abrasion Value	IS 2386 (Part IV)	5% to 50%
		Crushing Value	IS 2386 (Part IV)	5% to 50%
		Flakiness Index	IS 2386 (Part I)	5% to 60%
		Elongation Index	IS 2386 (Part I)	5% to 60%
		Bulk Density	IS 2386 (Part III)	1.20 kg/lit to 2.40 kg/lit
3.	Aggregate (Fine Aggregate)	10% Fines Value	IS 2386 (Part IV)	5 tonne to 50 tonne
		Sieve Analysis	IS 2386 (Part I)	Up to 100% (0.15mm to 4.75mm)
		Bulk Density	IS 2386 (Part III)	1.20 kg/lit to 2.40 kg/lit
		Specific Gravity	IS 2386 (Part III)	2.0 to 3.0
		Water Absorption	IS 2386 (Part III)	0.10% to 10%
		Bulking of Fine Aggregate	IS 2386 (Part III)	1% to 25%

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4.	Concrete	Compressive Strength Test	IS 516	5 N/mm ² to 80 N/mm ²
		Flexural Strength	IS 516	1N/mm ² to 10 N/mm ²
		Accelerated Curing of Concrete for compressive strength	IS 9013	5 N/mm ² to 80 N/mm ²
5.	Brick	Compressive Strength	IS 3495 (Part I)	2N/mm ² to 40 N/mm ²
		Water Absorption	IS 3495 (Part II)	1% to 30%
		Efflorescence Test	IS 3495 (Part III)	Qualitative (Nil to Severe)
		Dimension	IS 1077	L-3000mm to 5500mm, W-1400mm to 2200mm, T-1000mm to 2200mm
6.	Paver Block	Dimensions	IS 15658	L-100mm to 300mm, W-20mm to 300mm, T-50mm to 120mm
		Water Absorption	IS 15658	1% to 20 %
		Compressive Strength	IS 15658	10 N/mm ² to 40 N/mm ²
		Flexural strength	IS 15658	1 N/mm ² to 25 N/mm ²
		Abrasion Resistance	IS 15658	50mm ³ to 10000mm ³ per 5000mm ²
6	Cement Concrete tile	Dimensions	IS1237	L-100 mm to 500 mm, W-100 mm to 500 mm, T-10 mm to 50 mm
		Water Absorption	IS1237	Up to 10 %
		Wet Transverse Strength	IS1237	0.1 N/mm ² to 7.5 N/mm ²
		Abrasion Resistance	IS1237	0.1 mm to 10 mm
7	Bitumen	Penetration Test	IS 1203	10 to 100 (1 / 10mm)
		Softening Point	IS 1205	30°C to 100°C
		Specific Gravity	IS 1202	0.95 to 1.3 g/cc
		Flash Point and Fire Point	IS 1209	100° to 360°
		Striping Value	IS 6241	50 % to 100 %
		Ductility at 25°C	IS 1208	10 cm to 100 cm
		Absolute Viscosity at 60°C	IS 1206 (Part-2)	100 poise to 8000 poise

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		Kinematic Viscosity at 135°C	IS 1206 (Part-3)	100 cSt to 800 cSt
		Viscosity Ratio at 60°C	IS 1206 (Part-2)	1 to 4
		Solubility in Trichloroethylene	IS 1216	10 % to 100 %
	Bitumen Mix	Marshal Stability	ASTM D 6927 & MS2	2 kN to 20 kN
		Binder Content	IRC SP 11	1 % to 10%
		Bulk Specific Gravity	ASTM D 2726	1 to 3
		Theoretical Maximum Specific Gravity	ASTM D 2041	1 to 3
8.	Bitumen Emulsion	Viscosity by Sayboltfurol viscometer		
		(i) at 25°C	IS 3117 (Annexure-A)	5 Sec. to 250 Sec.
		(ii)at 50° C	IS 3117: (Annexure-A)	5 Sec. to 400 Sec.
		Residue on 600 micron	IS 8887	0.01% to 10 %
		Water content	IS 1211	1 % to 30 %
		Tests on Residue		
		Residue by Evaporation	IS 8887: Annexure – J	40 % to 70 %
		Penetration	IS 1203	10 to 100
		Ductility	IS 1208	5 cm to 100 cm
		Solubility in Trichloroethylene	IS 1216	90 % to 100 %
II.	SOIL & ROCK			
1	Soil Testing	Grain Size Analysis	IS 2720 (Part IV) (Clause 3 & 4)	0% to 100% (for sieve 0.075mm to 40mm)
		Specific Gravity	IS 2720 (Part III)	1.40 to 2.70
		Moisture Content	IS 2720 (Part II)	1% to 50%
		Light Compaction	IS 2720 (Part VII)	MDD-1.0 to 2.50 g/cc OMC-5% to 30%
		Heavy Compaction	IS 2720 (Part 8)	MDD-1.0 to 2.70 g/cc OMC-5% to 30%
		Liquid Limit	IS 2720 (Part 5)	5% to 100%
		Plastic Limit	IS 2720 (Part 5)	10% to 60%

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		Shrinkage Limit	IS 2720 (Part VI)	1% to 40%
		C.B.R	IS 2720 (Part 16)	1% to 90%
		Free Swell Index	IS 2720 (Part 40)	1 % to 200 %
		Triaxial Shear Test	IS 2720 (Part XI)	C-0 to 2.5 kg/cm ² , φ : 5° to 50°
		Direct Shear Test	IS 2720 (Part XIII) (Clause 5.1)	C- 0 to 2.5 kg/cm ² , Ø : 5° to 50°
		Permeability Test	IS 2720 (Part 17)	10 ⁻³ cm/sec to 10 ⁻⁸ cm/sec
		Grain Size Analysis (Pipette Method)	IS 2720 (Part 4 (Clause 5.1)	0.1 % to 90 %
		Unconfined Compressive Strength of Soil	IS 2720 (Part 10)	10 kPa to 1000 kPa
		Swelling Pressure	IS 2720 (Part 41)	10 kN/m ² to 500 kN/m ²
2	Soil Testing (Field)	Standard Penetration Test	IS :2131	1 to 80
3	Rock	Unconfined compressive Strength Test of Rock	IS 9143	20 N/mm ² to 500 N/mm ²
		Water Content	IS 13030	0.1 % to 25 %
III.	MECHANICAL PROPERTIES OF METAL			
1	HSD bar/ TMT bar.	Ultimate Tensile Strength	IS 1608	100 N/mm ² to 800 N/mm ² (10 kN to 1000 kN Load)
		Yield Stress	IS 1608	100 N/mm ² to 800 N/mm ² (10 kN to 1000 kN Load)
		% of elongation	IS 1608	5% to 50%
		Wt. per Meter	IS 1786	0.18 kg/m to 8 kg/m

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<u>NON-DESTRUCTIVE TESTING</u>				
I.	BLUIDING MATERIALS- RAINFOCED CONCRETE STRUCTURES			
1.	Reinforced Concrete Structures.	Rebound Hammer Test	IS 13311 (Part 2)	10 MPa to 65 MPa
		Ultrasonic Pulse	IS 13311 (Part 1)	1.0 km/s to 5 km/s
		Velocity Test		