

Laboratory **Manglam Consultancy Services, A-56, GIDC, Sector-25, Gandhinagar, Gujarat**

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

Certificate Number **TC-6750** (in lieu of T-3683, T-3684 & T-3870) **Page 1 of 8**

Validity **09.11.2017 to 08.11.2019** **Last Amended on 12.01.2018**

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
-----	----------------------------	-------------------------	---	--

CHEMICAL TESTING

I.	WATER			
1.	Water used in Construction	pH	IS 3025 (Part-11)	4.00 to 12.00
		Sulphate (as SO ₄)	IS 3025 (Part-24)	10 mg/l to 1000 mg/l
		Chloride	IS 3025 (Part-32)	10 mg/l to 1000 mg/l
		Alkalinity	IS 3025 (Part-23)	0.1 ml to 50 ml
		Acidity	IS 3025 (Part-22)	0.1 ml to 5 ml
		Organic Solid	IS 3025 (Part-18)	10 mg/l to 2000 mg/l
		Inorganic Solid	IS 3025 (Part-18)	10 mg/l to 2000 mg/l
		Total Dissolve Solids	IS 3025 (Part 16)	1 mg/l to 3000 mg/l
		Suspended Solid	IS 3025 (Part-17)	10 mg/l to 1000 mg/l
II.	METALS AND ALLOYS			
1.	Steel	Carbon	IS 228 (Part-1)	0.05% to 2.50 %
		Sulphur	IS 228 (Part-9)	0.01% to 0.25%
		Phosphorus	IS 228 (Part-3)	0.01% to 0.25%
III.	BUILDING MATERIALS			
1.	Cement (OPC & PPC)	Loss on Ignition	IS 4032	0.1% to 8%
		SiO ₂	IS 4032	15 % to 40%
		Alumina	IS 4032	3.5% to 15.0%

Laboratory Manglam Consultancy Services, A-56, GIDC, Sector-25, Gandhinagar, Gujarat

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-6750 (in lieu of T-3683, T-3684 & T-3870) **Page 2 of 8**

Validity 09.11.2017 to 08.11.2019 **Last Amended on 12.01.2018**

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Iron Oxide	IS 4032	0.1% to 6.0%
		Magnesia	IS 4032	0.5% to 10%
		Insoluble residue	IS 4032	0.1% to 40%
		Sulphuric Anhydride (SO ₃)	IS 4032	0.1% to 5%
		Calcium Oxide (CaO)	IS 4032	35 %to 70%
2.	Fly Ash	Sulphuric Anhydride	IS 1727	0.1 %to10%
		Lime as CaO	IS 1727	0.1 %to40%
		Mixed Oxides Fe ₂ O ₃ + Al ₂ O ₃	IS 1727	10 %to 45%
		Loss on Ignition	IS 1727	0.10% to 15%
		Magnesia (MgO)	IS 1727	0.1 %to 10%
		Silica Content (SiO ₂)	IS 1727	25 %to 70%
3.	Admixture	Chloride Content	IS 6925	0.001% to 5%
		Ash Content	IS 9103	0.10% to 35%
		pH	IS 9103	4 to 12.5
		Dry Material Content	IS 9103	0.1% to 60%
		Relative Density	IS 9103	0.995 to 1.30

Laboratory **Manglam Consultancy Services, A-56, GIDC, Sector-25, Gandhinagar, Gujarat**

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

Certificate Number **TC-6750** (in lieu of T-3683, T-3684 & T-3870) **Page 3 of 8**

Validity **09.11.2017 to 08.11.2019** **Last Amended on 12.01.2018**

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
-----	----------------------------	-------------------------	---	--

MECHANICAL TESTING

I.	BUILDING MATERIALS			
1.	Cement	Consistency	IS 4031 (Part 4)	20% to 50 %
		Initial Setting Time	IS 4031 (Part 5)	10 min to 300 Min
		Final Setting Time	IS 4031 (Part 5)	10 min % 600 Min
		Compressive Strength	IS 4031 (Part 6)	2 N/mm ² to 100 N/mm ²
		Soundness by Le-Chatelier method	IS 4031 (Part 3)	0.5 to 10 mm
		Fineness by Blain's Method	IS 4031 (Part 2)	100 m ² /kg to 700 m ² /kg
		Density	IS 4031 (Part 11)	2 g/cm ³ to 3.5 g/cm ³
2.	Concrete	Compressive Strength	IS 516	10 N/mm ² to 80 N/mm ²
		Slump	IS 1199	0 to 150 mm
3.	Bricks (Burnt Clay Bricks/ Fly Ash Bricks / Fly Ash Lime Bricks)	Compressive Strength	IS 3495 (Part 1)	1 N/mm ² to 20 N/mm ²
		Water Absorption	IS 3495 (Part 2)	0.1 % to 50%
		Efflorescence	IS 3495 (Part 3)	Visual
		Dimension	IS 1077 IS 12894 IS 13757	L=4400mm to 4800 mm, H=1200 mm to 1500 mm, W=1800 mm to 2300 mm
4.	Aggregate (Coarse Graded, Ungraded, Stone Metal, Ballast)	Sieve Analysis	IS 2386 (Part -1)	4.75 mm to 90 mm
		Bulk Density (Loose)	IS 2386 (Part -3)	1.0 kg/l to 3 kg/l
		Bulk Density (Compacted)	IS 2386 (Part -3)	1.0 kg/l to 3 kg/l
		Flakiness Index	IS 2386 (Part -1)	2% to 80 %
		Elongation Index	IS 2386 (Part -1)	2% to 80 %
		Impact value	IS 2386 (Part -4)	1.0% to 60 %
		Crushing Value	IS 2386 (Part -4)	1% to 60 %
		Loss Angles	IS 2386 (Part -4)	1% to 60 %

Laboratory

Manglam Consultancy Services, A-56, GIDC, Sector-25,
Gandhinagar, Gujarat

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-6750 (in lieu of T-3683, T-3684 & T-3870) Page 4 of 8

Validity 09.11.2017 to 08.11.2019

Last Amended on 12.01.2018

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Abrasion Value		
		Specific Gravity	IS 2386 (Part 3)	1.0 to 3.5
		Water Absorption	IS 2386 (Part -3)	0.1% to 20 %
		10 % Fines Value	IS 2386 (Part -4)	2 kN to 800 kN
		75 micron passing materials	IS 2386 (Part -1)	0.01 % to 100 %
5.	Aggregate (Fine, Crushed Stone Sand , Crushed Gravel Sand, Binding & Screening Material)	Sieve Analysis	IS 2386 (Part -1)	75 µm to 10 mm
		Bulk Density (Loose)	IS 2386 (Part -3)	1.0 kg/l to 3.0 kg/l
		Bulk Density (Compacted)	IS 2386 (Part -3)	1.0 kg/l to 3.0 kg/l
		Specific Gravity	IS 2386 (Part -3)	1.0 to 3.5
		Water Absorption	IS 2386 (Part -3)	0.1 % to 20 %
		75 micron passing materials	IS 2386 (Part -1)	0.01 % to 100 %
6.	Concrete Paver Block	Dimensions (Height)	IS 15658	50 mm to 120 mm
		Plan Area	IS 15658	50 cm ² to 400 cm ²
		Compressive Strength	IS 15658	5 N/mm ² to 100 N/mm ²
		Water Absorption	IS 15658	0.5% to 20 %
7.	Tiles	Modulus of Rupture	IS 13630 (Part-6)	5 N/mm ² to 60 N/mm ²
		Breaking Strength	IS 13630 (Part-6)	10 N to 1500 N
		Water Absorption	IS 13630 (Part-2)	0.1% to 10 %
8.	Bitumen	Specific Gravity	IS 1202	0.50 to 1.250
		Ductility	IS 1208	1 cm to 100 cm
		Penetration	IS 1203	(1 – 350) $\frac{1}{10}$ mm
		Softening Point	IS 1205	50 °C to 150 °C
		Absolute Viscosity	IS 1206 (Part-2)	50 Poise to 6000 Poise
		Kinematics Viscosity	IS 1206 (Part-3)	50 Cst to 1000 Cst
		Flash Point	IS 1209	20 °C to 400 °C
		Stripping Value	IS 6241	0.1 % to 100 %

Laboratory

Manglam Consultancy Services, A-56, GIDC, Sector-25,
Gandhinagar, Gujarat

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-6750 (in lieu of T-3683, T-3684 & T-3870) Page 5 of 8

Validity 09.11.2017 to 08.11.2019

Last Amended on 12.01.2018

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
9.	Bituminous Mix	Binder Content	ASTM D 2172	0.5% to 20%
		Marshal Stability	ASTM D 6927	0.1 kN to 50 kN
		Flow Test	ASTM D 6927	1 mm to 10 mm
		Theoretical Maximum specific gravity	ASTM D 2041	1 to 4
		Density	ASTM D 2726 ASTM D 1188	1 g/cm ³ to 3.5 g/cm ³
10.	Pozzolana (Fly Ash/ Fuel Ash/ bottom Ash)	Initial Setting Time	IS 1727	10 min to 300 min
		Final Setting Time	IS 1727	10 min to 600 min
		Density	IS 1727	1 g/cm ³ to 3.5 g/cm ³
		Fineness Specific Surface -Blain Air Permeability	IS 1727	50 m ² /kg to 600 m ² /kg
		Soundness By Autoclave test	IS 1727	0.01% to 5 %
11.	AAC Block	Unit Weight	IS 6441 (Part -1)	350 kg/m ³ to 1500 kg/m ³
		Drying Shrinkage	IS 6441 (Part -2)	0.1 %to 3 %
		Compressive Strength	IS 6441 (Part -5)	0.88 N/mm ² to 8.8 N/mm ²
		Thermal conductivity	IS 2185 (Part -3)	0.01 W/mK to 2 W/mK
12.	Timber	Moisture Content	IS 1708 (Part 1)	0.1% to 25%
		Density	IS 1708 (Part 2)	200 kg/m ³ to 1000 kg/m ³

Laboratory Manglam Consultancy Services, A-56, GIDC, Sector-25, Gandhinagar, Gujarat

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-6750 (in lieu of T-3683, T-3684 & T-3870) **Page 6 of 8**

Validity 09.11.2017 to 08.11.2019 **Last Amended on 12.01.2018**

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
II.	SOIL & ROCK			
1.	Soil, Moorum, GSB, WMM	Hydrometer analysis Silt Clay	IS 2720 (Part - 4)	0% to 100 % 0% to 100 %
		Grain Size analysis (Wet analysis)	IS 2720 (Part -4)	75 µm to 80 mm
		Liquid limit	IS 2720 (Part -5)	14 % to 400 %
		Plastic Limit	IS 2720 (Part -5)	14 % to 250 %
		Specific Gravity	IS 2720 (Part -3)	2.0 to 3.0
		Shrinkage Limit	IS 2720 (Part -6)	4% to 40 %
		Free Swell Index	IS 2720 (Part -40)	0.1%to 100 %
		Light Compaction Maximum Dry Density Optimum Moisture Content	IS 2720 (Part 7)	1.3 g/cm ³ to 2.60 g/cm ³ 5%to 100%
		Heavy Compaction Maximum Dry Density Optimum Moisture Content	IS 2720 (Part 8)	1.3 g/cm ³ to 2.60 g/cm ³ 5%to 100%
		California Bearing Ratio	IS 2720 (Part 16)	0.5% to 150 %
		Direct Shear Test	IS 2720 (Part 13)	0.01 kg/cm ² to 1 kg/cm ² Φ 0to 50°
		Consolidation Test	IS 2720 (Part -15)	Cc 0.0332 to 0.6643 Pc 0.1 kg/cm ² to 4.0 kg/cm ²
		Triaxial (UU)	IS 2720 (Part -11)	0.01 kg/cm ² to 1 kg/cm ²

Laboratory **Manglam Consultancy Services, A-56, GIDC, Sector-25, Gandhinagar, Gujarat**

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

Certificate Number **TC-6750** (in lieu of T-3683, T-3684 & T-3870) **Page 7 of 8**

Validity **09.11.2017 to 08.11.2019** **Last Amended on 12.01.2018**

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
				Φ 0 to 50°
		Swell Pressure	IS 2720 (Part -41)	0.05 kg/cm ² to 4.0 kg/cm ²
3.	Rock	Specific Gravity	IS 1124	1.0 to 5.0
		Water Absorption	IS 1124	0.1% to 30 %
		Porosity	IS 1124	0.05% to 50%
		Compressive Strength	IS 1121 (Part 1)	20 kg/cm ² to 3000 kg/cm ²
		True Specific Gravity	IS 1122	1 g/cm ³ to 3.5 g/cm ³
III.	PLASTIC AND POLYMERS			
1.	UPVC, CPVC Pipes	Density	IS 12235 (Part -14)	1.4 g/cm ³ to 1.7 g/cm ³
		Dimensions		
		Mean Outside Diameter	IS 12235 (Part1)	20 mm to 250 mm
		Wall Thickness	IS 12235 (Part1)	1.1 mm to 19.6 mm
IV.	MECHANICAL PROPERTIES OF METALS			
1.	Reinforcement Bar	Mass per meter	IS 1786	0.5 kg/m to 10 kg/m
		Tensile Strength	IS 1608	20 kN to 800 kN
		Yield Stress	IS 1608	20 kN to 800 kN
		Elongation	IS 1608	10 % to 40 %
		Bend Test	IS 1599	Qualitative (Mandrel diameter: 16, 22, 34, 40, 50, 64, 100, 112, 125, 140, 175, 224 in mm)
		Rebend Test	IS 1786	Qualitative

Laboratory Manglam Consultancy Services, A-56, GIDC, Sector-25, Gandhinagar, Gujarat
Accreditation Standard ISO/IEC 17025: 2005
Certificate Number TC-6750 (in lieu of T-3683, T-3684 & T-3870) **Page 8 of 8**
Validity 09.11.2017 to 08.11.2019 **Last Amended on 12.01.2018**

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
				(Mandrel diameter: 16, 22, 34, 40, 50, 64, 100, 112, 125, 140, 175, 224 in mm)
2.	Prestressed Strands	Ultimate Tensile Load	IS 1608	100 kN to 350 kN
		Elongation	IS 1608	Upto 10 %

NON-DESTRUCTIVE TESTING

(SITE TESTING)				
I.	BUILDING MATERIALS			
1.	Reinforced Concrete Structure	Rebound Hammer Test	IS 13311 (Part 2)	2 MPa to 70 MPa
		Ultrasonic Pulse Velocity Test	IS 13311 (Part 1)	Upto to 5 km/sec
		Half Cell Potential Reading	ASTM C 876	(-)1 to (-)999 mV
		Cover Thickness	BS 1881-204: Amend No: 1	5 mm to 80 mm