

Laboratory **ARC Testing Laboratory, KH No. 42/9/4, Ground Floor, Village Badli, Delhi**

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

Certificate Number **TC-5750 (in lieu of T-3433 & T-3434)** **Page 1 of 6**

Validity **24.05.2017 to 23.05.2019** **Last Amended on 29.05.2017**

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.	BUILDING MATERIALS			
1.	Ordinary Portland Cement and Blended Cement (OPC & PPC)	Insoluble Residue	IS 4032	0.5 % to 30 %
		SiO ₂	IS 4032	15 % to 35 %
		Loss on Ignition	IS 4032	0.5 % to 6 %
		Chloride	IS 4032	0.01 % to 0.15 %
		MgO	IS 4032	1.0 % to 7 %
		CaO	IS 4032	30 % to 70 %
		Al ₂ O ₃	IS 4032	1 % to 10 %
		Fe ₂ O ₃	IS 4032	1 % to 6 %
		SO ₃	IS 4032	0.5 % to 5 %
2.	Fly Ash	SiO ₂	IS 1727	10 % to 80 %
		Loss on Ignition	IS 1727	0.5 % to 10 %
		Al ₂ O ₃	IS 1727	0.5 % to 30 %
		Fe ₂ O ₃	IS 1727	0.5 % to 10 %
		MgO	IS 1727	1.5 % to 7.5 %
		CaO	IS 1727	0.5 % to 5 %
		SO ₃	IS 1727	0.1 % to 6 %
		Reactive Silica	IS 3812 (Part 1)	5.0 % to 50 %
3.	Concrete Admixture	pH	IS 9103	4 to 12
		Relative density	IS 9103	1.0 to 1.5
		Chloride	IS 6925	0.03 % to 1.0 %
		Dry material content	IS 9103	2 % to 40 %
		Ash content	IS 9103	2 % to 30 %
4.	Mortar / Hardened Concrete	Chloride	BS 1881(Part 124)	0.001 % to 0.5 %
		Sulphate	BS 1881(Part 124)	0.01 % to 10 %
		Ratio of Ingredient	IS 1199 ASTM C 1084	Qualitative
5.	Aggregate	Water Soluble Chloride	BS 812 (Part 117)	0.001 % to 0.5 %
		Total Sulphate	BS 812 (Part 118)	0.01 % to 10 %
		Alkali Aggregate Reactivity	IS 2386 (Part 7)	Qualitative

Nikhil Kumar
Convenor

N. Venkateswaran
Program Director

Laboratory **ARC Testing Laboratory, KH No. 42/9/4, Ground Floor, Village Badli, Delhi**

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

Certificate Number **TC-5750 (in lieu of T-3433 & T-3434)** **Page 2 of 6**

Validity **24.05.2017 to 23.05.2019** **Last Amended on 29.05.2017**

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
6.	Bitumen	Soluble in Trichloroethylene	IS 1216	10 % to 100%
II.	SOIL & ROCK			
1.	Soil	pH	IS 2720 (Part 26)	4 to 12
		CaCO ₃	IS 2720 (Part 23)	0.2 % to 8.0 %
		Organic Matter	IS 2720 (Part 22)	0.01 % to 1.0 %
		Water Soluble Sulphate (as SO ₄)	IS 2720 (Part 27)	0.01 % to 2.0 %
		Water Soluble Sulphate (as Na ₂ SO ₄)	IS 2720 (Part 27)	0.01 % to 2.0 %
		SiO ₂	IS 2720 (Part 25)	5 % to 40 %
2.	Bentonite	pH	IS 6186	5 to 15
		Gel Formation Index	IS 6186	Qualitative
III.	METAL & ALLOYS			
1.	TMT Steel & Structure Steel	Carbon	IS 228 (Part 1)	0.05 % to 2.5 %
		Sulphur	IS 228 (Part 9)	0.01 % to 0.25 %
		Phosphorous	IS 228 (Part 3)	0.01 % to 0.25 %
		Manganese	IS 228 (Part 2)	0.2 % to 2.0 %
		Silicon	IS 228 (Part 8)	0.10 % to 1.5 %
IV.	WATER			
1.	Construction Water	pH Value	IS 3025 (Part 11)	4 to 12
		Chloride	IS 3025 (Part 32)	50 mg/l to 2000 mg/l
		Sulphate	IS 3025 (Part 24)	10 mg/l to 500 mg/l
		Total Suspended Matter	IS 3025 (Part 17)	5 mg/l to 3000 mg/l
		Limits of Acidity	IS 3025 (Part 22)	0.1 ml to 10 ml
		Limits of Alkalinity	IS 3025 (Part 23)	5 ml to 30 ml
		Organic Solids	IS 3025 (Part 18)	10 mg/l to 300 mg/l
		Inorganic Solids	IS 3025 (Part 18)	10 mg/l to 4000 mg/l

Nikhil Kumar
Convenor

N. Venkateswaran
Program Director

Laboratory **ARC Testing Laboratory, KH No. 42/9/4, Ground Floor, Village Badli, Delhi**

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

Certificate Number **TC-5750 (in lieu of T-3433 & T-3434)** **Page 3 of 6**

Validity **24.05.2017 to 23.05.2019** **Last Amended on 29.05.2017**

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.	Ordinary Portland Cement and Blended Cement (OPC & PPC)	Specific Surface Area (By Blaine's Method)	IS 4031 (Part 2)	100 m ² /kg to 500 m ² /kg
		Soundness Le-chatelier	IS 4031 (Part 3)	0.5 mm to 15 mm
		Soundness Autoclave	IS 4031 (Part 3)	0.01 % to 3.0 %
		Consistency	IS 4031 (Part 4)	15 % to 50 %
		Initial Setting Time	IS 4031 (Part 5)	50 minute to 300 minute
		Final Setting Time	IS 4031 (Part 5)	100 minute to 650minute
		Compressive Strength	IS 4031 (Part 6)	10 N/mm ² to 75 N/mm ²
		Specific Gravity	IS 4031 (Part 11)	1.8 to 3.8
2.	Fly Ash	Fineness by Blaine	IS 1727	100 m ² /kg to 600 m ² /kg
		Residue 45 micron Wet Sieving	IS 1727	Upto 100 %
		Specific Gravity	IS 1727	1 to 3
		Lime Reactivity	IS 1727	2 N/mm ² to 10 N/mm ²
		Compressive Strength at 28 days	IS 1727	10 N/mm ² to 50 N/mm ²
		Soundness by Autoclave	IS 1727	0.1 to 1.0
3.	Fine Aggregate	Sieve Analysis	IS 2386 (Part 1)	1 % to 100 %
		Total Deleterious Materials	IS 2386(Part 1 & 2)	0.2 % to 8.0 %
		Specific Gravity	IS 2386 (Part 3)	1.5 to 3.0
		Water Absorption	IS 2386 (Part 3)	0.2 % to 5.0 %
		Bulk Density	IS 2386 (Part 3)	1.0 kg/l to 3.0 kg/l
4.	Coarse Aggregate	Sieve Analysis	IS 2386 (Part 1)	Upto100 %
		Water Absorption	IS 2386 (Part 3)	0.2 % to 5 %
		Specific gravity	IS 2386 (Part 3)	1.5 to 3.0
		Total Deleterious Materials	IS 2386 (Part 1 & 2)	0.2 % to 8.0 %
		Bulk Density	IS 2386 (Part 3)	1.0 kg/l to 2.0 kg/l

Nikhil Kumar
Convenor

N. Venkateswaran
Program Director

Laboratory **ARC Testing Laboratory, KH No. 42/9/4, Ground Floor, Village Badli, Delhi**

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

Certificate Number **TC-5750 (in lieu of T-3433 & T-3434)** **Page 4 of 6**

Validity **24.05.2017 to 23.05.2019** **Last Amended on 29.05.2017**

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Elongation Index	IS 2386 (Part 1)	5 % to 50 %
		Flakiness Index	IS 2386 (Part 1)	5 % to 50 %
		Crushing value	IS 2386 (Part 4)	5 % to 50 %
		Impact Value	IS 2386 (Part 4)	5 % to 50 %
		Soundness (MgSO ₄ & Na ₂ SO ₄)	IS 2386 (Part 5)	0.05 % to 20 %
		10% Fine Value	IS 2386 (Part 4)	5 ton to 50 ton
		Loss Angeles Abrasion Value	IS 2386 (Part 4)	10 % to 60 %
5.	Bricks/Precasted Blocks	Dimension Length Width Height	IS 1077	4000 mm to 5000 mm 2100 mm to 2400 mm 1300 mm to 1600mm
6.	Bricks	Water Absorption Compressive Strength Efflorescence Dimension Length Width Height	IS 3495 (Part 2) IS 3495 (Part 1) IS 3495 (Part 3) IS 2185 (Part 3)	5 % to 30 % 3 N/mm ² to 60 N/mm ² Qualitative 200 mm to 700 mm 100 mm to 400 mm 40 mm to 250 mm
7.	ACC Block	Block Density Compressive Strength Drying Shrinkage	IS 6441(Part 1) IS 6441(Part 5) IS 6441(Part 2)	300 kg/m ³ to 1000 kg/m ³ 1 N/mm ² to 10 N/mm ² 0.0005 % to 0.20 %
8.	Precast Concrete Block for Paving	Compressive Strength Water Absorption Dimension Length Width Height Abrasion Resistance (Wet & Dry) Thickness of wearing layer	IS 15658 IS 15658 IS 15658 IS 15658 IS 15658	10 N/mm ² to 70 N/mm ² 2 % to 10 % 100 mm to 400 mm 100 mm to 400mm 20 mm to 100 mm (1000 mm ³ to 20000 mm ³) /5000mm ² 2 mm to 15 mm
9.	Hardened Concrete	Compressive Strength	IS 516	5 N/mm ² to 70 N/mm ²
10.	Stone Granite/Marble	Specific Gravity Water Absorption Hardness (Mohs)	IS 1124 IS 1124 IS 13630 (Part 13)	2.50 to 3.00 0.05 to 1.5 1 to 8

Nikhil Kumar
Convenor

N. Venkateswaran
Program Director

Laboratory **ARC Testing Laboratory, KH No. 42/9/4, Ground Floor, Village Badli, Delhi**

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

Certificate Number **TC-5750 (in lieu of T-3433 & T-3434)** **Page 5 of 6**

Validity **24.05.2017 to 23.05.2019** **Last Amended on 29.05.2017**

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Dimension	IS 1130	Upto 500mm
		Compressive Strength	IS 1121(Part 1)	Upto 1500 kg/cm ²
		Durability	IS 1126	Qualitative
11.	Ceramic Tile (Glazed / Unglazed / Vitrified)	Dimension & Surface Quality	IS 13630 (Part 1)	100 mm to 1000 mm 100 mm to 500mm 3 mm to 10 mm
		Water Absorption	IS 13630 (Part 2)	0.04 % to 20 %
		MOR	IS 13630 (Part 6)	2 N/mm ² to 70 N/mm ²
		Breaking Strength	IS 13630 (Part 6)	200 N to 1500 N
		Hardness (Mohs)	IS 13630 (Part 13)	1 to 8
		Thermal Shock Resistance	IS 13630 (Part 5)	Qualitative
		Crazing Resistance	IS 13630 (Part 9)	Qualitative
		Resistance to Staining	IS 13630 (Part 8)	Qualitative
12.	Cement Concrete Tiles/Block	Resistance to Wear	IS 1237 IS 13801	1 mm to 10 mm
		Thickness of wearing layer	IS 1237 IS 13801	1 mm to 15 mm
		Wet Transverse Strength	IS 1237 IS 13801	Upto 25 N/mm ²
		Water Absorption	IS 1237 IS 13801	2 % to 15 %
		Dimension Length Width Height	IS 1237 IS 13801	200 mm to 500 mm 200 mm to 500 mm 15 mm to 50mm
13.	Bitumen	Penetration	IS 1203	5 to 300
		Softening Point	IS 1205	20 °C to 70 °C
		Ductility / Elastic Recovery	IS 1208 IS 15462	1 cm to 100 cm
		Flash & Fire Point	IS 1209	100 °C to 400 °C
II.	SOIL & ROCK			
1.	Soil	Sieve Analysis	IS 2720 (Part 4)	5 % to 100 %
		Proctor Compaction MDD	IS 2720 (Part 8)	1 g/cc to 3 g/cc
		Proctor Compaction OMC		1 % to 20 %

Nikhil Kumar
Convenor

N. Venkateswaran
Program Director

Laboratory **ARC Testing Laboratory, KH No. 42/9/4, Ground Floor, Village Badli, Delhi**

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

Certificate Number **TC-5750 (in lieu of T-3433 & T-3434)** **Page 6 of 6**

Validity **24.05.2017 to 23.05.2019** **Last Amended on 29.05.2017**

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Liquid Limit	IS 2720 (Part 5)	10 % to 50 %
		Plastic Limit	IS 2720 (Part 5)	Upto 30 %
		California Bearing Ratio	IS 2720 (Part 16)	1 % to 90 %
		Specific Gravity	IS 2720 (Part 3)	2.0 to 2.90
2.	Bentonite	Liquid Limit	IS 2720 (Part 5)	200 % to 600 %
		Sand Content	IS 6186	0.2 % to 5 %
		Density	IS 6186	0.9 to 2.0
		Swelling Index	IS 2720 (Part 40)	100 % to 800 %
		Fineness by Dry Sieve (150micron & 75 micron)	IS 6186	Upto 100
		Fineness by Wet Sieve(75 micron)	IS 6186	Upto 100
III.	MECHANICAL PROPERTIES OF METALS			
1.	TMT Bar/ TOR Steel	Tensile Strength	IS 1608	50 N/mm ² to 900 N/mm ²
		Yield Stress	IS 1608	20 N/mm ² to 800 N/mm ²
		% Elongation	IS 1608	2 % to 50 %
		Bend	IS 1599	Qualitative
		Rebend	IS 1786	Qualitative
		Mass per meter	IS 1786	0.1 kg/m to 8 kg/m
2.	Steel Tube/G.I. Pipe /M.S. Pipe	Dimension	IS 1239 (Part 1)	0.1 mm to 300 mm
		Mass per meter	IS 1239 (Part 1)	Upto 100 kg
		Tensile Strength	IS 1608	50 N/mm ² to 800 N/mm ²
		% Elongation	IS 1608	4 % to 40 %
		Flattening	IS 2328	Qualitative
3.	Structural Steel	Tensile Strength	IS 1608	50 N/mm ² to 800 N/mm ²
		Yield Stress	IS 1608	50 N/mm ² to 800 N/mm ²
		% Elongation	IS 1608	5 % to 40 %
		Bend	IS 1599	Qualitative
		Mass per meter	IS 808	Upto 100 kg/m

Nikhil Kumar
Convenor

N. Venkateswaran
Program Director