

Laboratory **Quality Laboratory Services, Testing Laboratory, Plot No. B-19/1, B-Block, Autonagar, Visakhapatnam, Andhra Pradesh**

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

Certificate Number **TC-6858**

Page 1 of 4

Validity **07.02.2018 to 06.02.2020**

Last Amended on **26.04.2018**

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

I.	WATER			
1.	Drinking Water	Turbidity	IS 3025 (Part 10)	0.1 NTU to 5.0 NTU
		pH Value	IS 3025 (Part 11)	4.0 to 10.0
		Total Dissolved Solids	IS 3025 (Part 16)	25 mg/L to 900 mg/L
		Total Hardness as CaCO ₃	IS 3025 (Part 21)	1 mg/L to 700 mg/L
		Total Alkalinity as CaCO ₃	IS 3025 (Part 23)	5 mg/L to 500 mg/L
		Sulphates as SO ₄	IS 3025 (Part 24)	5 mg/L to 400 mg/L
		Chlorides as Cl	IS 3025 (Part 32)	5 mg/L to 500 mg/L
		Fluorides as F	IS 3025 (Part 60)	0.1 mg/L to 1.0 mg/L
		Iron as Fe	IS 3025 (Part 53)	0.15 mg/L to 1.0 mg/L
2.	Construction Water	Organic Solids	IS 3025 (Part 18)	20 mg/L to 300 mg/L
		Inorganic Solids	IS 3025 (Part 18)	20 mg/L to 2000 mg/L
		Suspended Solids	IS 3025 (Part 17)	20 mg/L to 3000 mg/L
		pH Value	IS 3025 (Part 11)	6.0 to 8.50
		Acidity	IS 456	0.1 ml to 10 ml
		Alkanity	IS 456	5 ml to 30 ml
		Sulphates as SO ₄	IS 3025 (Part 24)	10 mg/L to 400 mg/L
		Chlorides as Cl	IS 3025 (Part 32)	5 mg/L to 500 mg/L
II.	METALS & ALLOYS			
1.	Low Alloy Steels	Carbon	IS 228 (Part 1)	0.05% to 0.5%
		Phosphorous	IS 228 (Part 3)	0.005% to 0.05%
		Silicon	IS 228 (Part 9)	0.05% to 1.0%
		Sulphur	IS 228 (Part 9)	0.01%to 0.05%
		Manganese	IS 228 (Part 2)	0.1% to 1.5%
			IS 12046	
		Chromium	IS 228 (Part 6)	1.0% to 20.0%
		Nickel	IS 12122	1.0% to 11.0%
		Molybdenum	IS 12042	0.5% to 3.0%

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Page 2 of 4

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III.	BUILDING MATERIALS			
1.	Cement	Loss on Ignition	IS 4032	0.1% to 12%
		Magnesium Oxide	IS 4032	0.1% to 10%
		Sulphuric Anhydride	IS 4032	0.1% to 5%
		Insoluble Residue	IS 4032	0.01% to 45%
		Silicon Dioxide	IS 4032	16.0% to 26%
		Aluminum Oxide	IS 4032	0.2% to 10%
		Iron Oxide	IS 4032	1.0% to 10%
		Calcium Oxide	IS 4032	55.0% to 70%
		Sulphide Sulphur	IS 4032	0.1% to 3%
		Chlorides	IS 4032	0.001% to 1%

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Page 3 of 4

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MECHANICAL TESTING

I. BUILDING MATERIALS				
1.	Coarse Aggregate	Sieve analysis	IS 2386 (Part I)	4.75 mm to 80 mm
		Flakiness Index	IS 2386 (Part I)	1% to 70%
		Elongation Index	IS 2386 (Part I)	1% to 70%
		Specific Gravity	IS 2386 (Part III)	2 to 4
		Bulk Density	IS 2386 (Part III)	1.0 kg/l to 2.0 kg/l
		Impact Value	IS 2386 (Part IV)	1% to 50%
2.	Fine Aggregate	Sieve analysis	IS 2386 (Part I)	0.15 mm to 10 mm
		Silt Content	IS 2386 (Part II)	0.10% to 20%
		Bulk Density	IS 2386 (Part III)	1.0 kg/l to 2.0 kg/l
		Specific gravity	IS 2386 (Part III)	2 to 4
		Bulking	IS 2386 (Part III)	5% to 50%
3.	Cubes & Cores	Compressive Strength	IS 516	5 N/mm ² to 80 N/mm ²
4.	Bitumen Mix	Bitumen Content	ASTM D 2172	0.1% to 25%
5.	Burnt Clay Bricks/ Fly Ash Bricks	Compressive Strength	IS 3495 (Part I)	1 N/mm ² to 40 N/mm ²
		Water Absorption	IS 3495 (Part II)	1% to 40%
6.	Cement	Fineness (Blaines Method)	IS 4031 (Part 2)	150 m ² /kg to 500 m ² /kg
		Soundness (Le-Chatlier)	IS 4031 (Part 3)	0.1 mm to 10 mm
		Normal Consistency	IS 4031 (Part 4)	25% to 35%
		Initial setting time	IS 4031 (Part 5)	30 min to 300 min
		Final setting time	IS 4031 (Part 5)	100 min to 600 min
		Compressive strength	IS 4031 (Part 6)	10 MPa to 80 MPa
II. MECHANICAL PROPERTIES OF METALS				
1.	Ferrous Metals, Reinforced Steel Bars	Tensile Strength	IS 1608	100 N/mm ² to 1500 N/mm ²
		Yield Strength	IS 1608	150 N/mm ² to 1200 N/mm ²
		% Elongation	IS 1608	2% to 60%

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Page 4 of 4

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		Bend Test	IS 1599	Qualitative (Mandrel Diameter: 5 mm, 10 mm, 15 mm, 20 mm, 24 mm, 32 mm, 36 mm, 40 mm, 44 mm, 50 mm, 60 mm & 80 mm)
2.	Reinforced Steel Bars	Rebend Test	IS 1786	Qualitative (Mandrel Diameter: 5 mm, 10 mm, 15 mm, 20 mm, 24 mm, 32 mm, 36 mm, 40 mm, 44 mm, 50 mm, 60 mm & 80 mm)
		Weight per Meter	IS 1786	0.085 kg/m to 10.5 kg/m
3.	Ferrous Metals	Rockwell Hardness Test	IS 1586	HRC 20 to 75 HRB 30 to 100
4.		Steel Tubes	Flattening Test	IS 2328
5.	Welded Plates & Pipes	Transverse Tensile	ASME Sec-IX-2015	100 N/mm ² to 1500 N/mm ²
		Face Bend	ASME Sec-IX-2015	Qualitative (Mandrel Diameter: 5 mm, 10 mm, 15 mm, 20 mm, 24 mm, 32 mm, 36 mm, 40 mm, 44 mm, 50 mm, 60 mm & 80 mm)
		Root Bend		
		Side Bend		
III.	SOIL AND ROCK			
1.	Soil	Grain size analysis	IS 2720 (Part 4)	75 µm to 4.75 mm
		Liquid Limit	IS 2720 (Part 5)	10% to 100%
		Plastic Limit	IS 2720 (Part 5)	10% to 50%
		Light Compaction	IS 2720 (Part 7)	1.0 g/cm ³ to 2.50 g/cm ³
		Heavy Compaction	IS 2720 (Part 8)	2% to 30.0%
		California Bearing Ratio	IS 2720 (Part 16)	1% to 70%
		Differential Free Swell Index	IS 2720 (Part 40)	10% to 50%

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