

Laboratory **ME Testing & Calibration Laboratory, Harbanswala, Shimla By-Pass, Telpur Chowk, Dehradun, Uttarakhand**

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

Certificate Number **TC-6575**

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Validity **29.11.2017 to 28.11.2019**

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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### CHEMICAL TESTING

I.	BUILDING MATERIALS			
		Silica (SiO <sub>2</sub> )	IS 4032	1.0% to 35%
		Alumina (as Al <sub>2</sub> O <sub>3</sub> )	IS 4032	1.0% to 15%
		Iron Oxide (as Fe <sub>2</sub> O <sub>3</sub> )	IS 4032	0.1% to 5%
		Sulphuric Anhydride (as SO <sub>3</sub> )	IS 4032	0.1% to 5%
		Chloride (as Cl)	IS 4032	0.01% to 1%
		Calcium Oxide (as CaO)	IS 4032	5% to 70%
		Magnesia (as MgO)	IS 4032	0.1% to 10%
		Insoluble residue	IS 4032	2.0% to 50%
		Loss on Ignition	IS 4032	0.5% to 30%
		Silica content ( SiO <sub>2</sub> )	IS 1727	25% to 70%
		Alumina (as Al <sub>2</sub> O <sub>3</sub> )	IS 1727	1% to 25%
		Iron Oxide (as Fe <sub>2</sub> O <sub>3</sub> )	IS 1727	0.1% to 15%
		Sulphuric Trioxide (as SO <sub>3</sub> )	IS 1727	0.1% to 5%
		Magnesia (as MgO)	IS 1727	0.10% to 10%
		Loss on Ignition	IS 1727	1.0% to 50%
		Dry Material Content	IS 9103	1.0% to 50%
		Ash content	IS 9103	1.0% to 20%
		Relative Density	IS 9103	1.0% to 2.0
		Chloride Content	IS 6925	0.002% to 2.0%
		pH value	IS 9103	2 to 12
II.	METALS & ALLOYS			
		Carbon (as C)	IS 228 (Part 1)	0.1% to 1%
		Sulphur (as S)	IS 228 (Part 9)	0.01% to 0.5%
		Phosphorous (as P)	IS 228 (Part 3)	0.01% to 0.5%
		Manganese (as Mn)	IS 228 (Part 2)	0.1% to 2%
		Silicon (as Si)	IS 228 (Part 8)	0.1% to 1.0%

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III.	<b>WATER</b>			
		Alkalinity (ml of 0.02N H <sub>2</sub> SO <sub>4</sub> consumed to neutralize 100ml of water using Mixed indicator)	IS 3025 (Part 23)	0.1 ml to 50 ml
		Acidity (ml of 0.02N NaOH consumed to neutralize 100ml of water using Phenolphthalein as indicator)	IS 3025 (Part 22)	0.1 ml to 5 ml
		pH value	IS 3025 (Part 11)	4 to 12
		Chloride content as Cl	IS 3025 (Part 32)	05 mg/l to 5000 mg/l
		Sulphate content as SO <sub>3</sub>	IS 3025 (Part 24) (Turbidity Method)	5 mg/l to 2000 mg/l
		Inorganic Solids	IS 3025 (Part 18)	10 mg/l to 10000 mg/l
		Organic Solids	IS 3025 (Part 18)	10 mg/l to 10000 mg/l
		Total Suspended Solids	IS 3025 (Part 17)	10 mg/l to 500 mg/l
		pH Value	IS 3025 (Part 11)	2 to 12
		Sodium as Na	IS 3025 (Part 45)	1 mg/l to 1000 mg/l
		Chloride as Cl	IS 3025 (Part 32)	2 mg/l to 5000 mg/l
		Fluoride as F	IS 3025 (Part 60)	0.05 mg/l to 10 mg/l
		Total Dissolved Solids	IS 3025 (Part 16)	2 mg/l to 10000 mg/l
		Hardness as CaCO <sub>3</sub>	IS 3025 (Part 21)	2 mg/l to 5000 mg/l
		Calcium as Ca	IS 3025 (Part 40)	2 mg/l to 500 mg/l
		Iron as Fe	IS 3025 (Part 53)	0.1 mg/l to 10 mg/l
		Magnesium as Mg	IS 3025 (Part 46)	2 mg/l to 500 mg/l
		Potassium as K	IS 3025 (Part 45)	1 mg/l to 200 mg/l
		Sulphate as SO <sub>4</sub>	IS 3025 (Part 24) (Turbidity Method)	0.1 mg/l to 1000 mg/l
		Odour	IS 3025 (Part 5)	Qualitative

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**MECHANICAL TESTING**

I.	BUILDING MATERIALS			
		Sieve Analysis	IS 2386 (Part 1)	75 microns to 4.75 mm
		Silt Content	IS 2386 (Part 1)	0.1% to 10%
		Water absorption	IS 2386 (Part 3)	0.1% to 10%
		Specific Gravity	IS 2386 (Part 3)	2 to 4
		Bulk Density	IS 2386 (Part 3)	1.2 kg/L to 2.5 kg/L
		Sieve Analysis	IS 2386 (Part 1)	4.75 mm to 80 mm
		Water absorption	IS 2386 (Part 3)	0.1% to 10%
		Specific Gravity	IS 2386 (Part 3)	2 to 4
		Flakiness Index	IS 2386 (Part 1)	1% to 50%
		Elongation Index	IS 2386 (Part 1)	1% to 50%
		Crushing Value	IS 2386 (Part 4)	1% to 50%
		Impact Value	IS 2386 (Part 4)	1% to 50%
3.	<b>Hardened Concrete</b>	Compressive Strength	IS 516-1959	10 N/mm <sup>2</sup> to 80 N/mm <sup>2</sup>
		Compressive Strength	IS 3495 (Part 1)	3.5 N/mm <sup>2</sup> to 30 N/mm <sup>2</sup>
		Water Absorption	IS 3495 (Part 2)	1% to 35%
		Compressive Strength	IS 15658	10 N/mm <sup>2</sup> to 75 N/mm <sup>2</sup>
		Water Absorption	IS 15658	1% to 25%
		Normal Consistency	IS 4031 (Part 4)	20% to 40%
		Initial Setting Time	IS 4031 (Part 5)	30 min to 300 min

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		Final Setting Time	IS 4031 (Part 5)	100 min to 600 min
		Fineness by Blain's air permeability	IS 4031 (Part 2)	150 m <sup>2</sup> /kg to 700 m <sup>2</sup> /kg
		Soundness By Le Chatelier Method	IS 4031 (Part 3)	0.1 mm to 10 mm
		Compressive Strength	IS 4031 (Part 6)	10 N/mm <sup>2</sup> to 80 N/mm <sup>2</sup>
		Density	IS 4031 (Part 11)	1.5 g/cm <sup>3</sup> to 3.3 g/cm <sup>3</sup>
<b>II.</b>	<b>MECHANICAL PROPERTIES OF METALS</b>			
		Ultimate Tensile Strength	IS 1608	100 N/mm <sup>2</sup> to 700 N/mm <sup>2</sup>
		Yield Stress	IS 1608	100 N/mm <sup>2</sup> to 700 N/mm <sup>2</sup>
		Elongation	IS 1608	5% to 50%
		Mass per meter	IS 1786	upto 20 kg/m
<b>III.</b>	<b>SOIL &amp; ROCK</b>			
		Grain Size Analysis	IS 2720 (Part 4)	4.75mm to 75 μm
		Liquid Limit	IS 2720 (Part 5)	20% to 80%
		Plastic Limit	IS 2720 (Part 5)	10% to 40%
		Free Swell Index	IS 2720 (Part 40)	1% to 90%
		Specific Gravity	IS 2720 (Part 3/Sec-1 & 2)	1.0 to 3.0
		Light Compaction Maximum Dry Density Optimum Moisture Content	IS 2720 (Part 7)	1.0 g/cm <sup>3</sup> to 3.00 g/cm <sup>3</sup> 1% to 25%
		Heavy Compaction Maximum Dry Density Optimum Moisture Content	IS 2720 (Part 8)	1.0 g/cm <sup>3</sup> to 3.00 g/cm <sup>3</sup> 1% to 20%