

Laboratory **V2 Civil Diagnostics Private Limited, 153/2, Lower Ground Floor, MRB Arcade, Bagalur Main Road, IAF Post, Yelahanka, Bangalore, Karnataka**

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

Certificate Number **TC-5255**

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Last Amended on **11.01.2019**

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CHEMICAL TESTING

I.	BUILDING MATERIALS			
1.	Cement (Hydraulic Cement) OPC Cement 43 Grade, 53 Grade, PPC & PSC	Loss On Ignition	IS 4032:1985 (RA 2014)	0.1 % to 10.0 %
		Silica Content as (SiO ₂)	IS 4032:1985 (RA 2014)	15.0 % to 35.0 %
		Ferric Oxide	IS 4032:1985 (RA 2014)	0.05 % to 10.0 %
		Alumina	IS 4032:1985 (RA 2014)	3 % to 20 %
		Calcium Oxide	IS 4032:1985 (RA 2014)	30.0 % to 70.0 %
		Magnesia	IS 4032:1985 (RA 2014)	0.1 % to 10.0 %
		Sulphuric Anhydride (SO ₃)	IS 4032:1985 (RA 2014)	0.1 % to 5.0 %
	Insoluble Residue	IS 4032:1985 (RA 2014)	0.1 % to 40.0 %	
	Alkalies	IS 4032:1985 (RA 2014)		
	Sodium Oxide		0.05 % to 3.0 %	
	Potassium Oxide		0.05 % to 3.0 %	
	Chloride	IS 4032:1985 (RA 2014)	0.005 % to 3.0 %	
2.	Granulated Blast Furnace Slag	Manganese Oxide (MnO)	IS 4032:1985 (RA 2014)	0.1 % to 10.0 %
		Magnesium Oxide (MgO)	IS 4032:1985 (RA 2014)	2.0 % to 20 %
		Sulphide Sulphur (S)	IS 4032:1985 (RA 2014)	0.1 % to 5.0 %
		Insoluble Residue	IS 4032:1985 (RA 2014)	0.1 % to 15.0 %
		Chloride	IS 4032:1985 (RA 2014)	0.005 % to 2.0 %
		Loss On Ignition	IS 4032:1985 (RA 2014)	0.01 % to 10.0 %
		Silica as SiO ₂	IS 4032:1985 (RA 2014)	10.0 % to 50.0 %
		Alumina	IS 4032:1985 (RA 2014)	0.5 % to 35.0 %
		Sulphate SO ₃	IS 4032:1985 (RA 2014)	0.05 % to 5.0 %
		Calcium Oxide (CaO)	IS 4032:1985 (RA 2014)	10.0 % to 50.0 %
3.	Fly Ash	Ferric Oxide	IS 4032:1985 (RA 2014)	1 % to 8 %
		Loss On Ignition	IS 1727:1967 (RA 2013)	0.1 % to 10.0 %
		Silica	IS 1727:1967 (RA 2013)	10.0 % to 70.0 %
		Ferric Oxide	IS 1727:1967 (RA 2013)	1.0 % to 10.0 %
		Alumina	IS 1727:1967 (RA 2013)	5.0 % to 45.0 %
	Calcium Oxide	IS 1727:1967 (RA 2013)	0.1 % to 20.0 %	

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		Magnesia	IS 1727:1967 (RA 2013)	0.1 % to 10.0 %
		Sulphuric Anhydride	IS 1727:1967 (RA 2013)	0.05 % to 5.0 %
		Chloride	IS 4032:1985 (RA 2014)	0.005 % to 2.0%
4.	Fine Aggregates	Organic impurities	IS 2386 (Part 2):1963 (RA 2016)	Qualitative
5.	Coarse & Fine Aggregate	Sulphate	IS 4032:1985 (RA 2014)	0.01 % to 3.0 %
		Chloride	IS 4032:1985 (RA 2014)	0.001 % to 2.0 %
6.	Plain Carbon & Low Alloy Steel	Carbon	IS 8811:1998 (RA 2012)	0.17 % to 1.03 %
		Phosphorous	ASTM E 415:2017	0.025 % to 0.073 %
		Sulfur		0.021 % to 0.073 %
7.	Concrete	Chloride	IS 14959 (Part 2):2001 (RA 2011)	0.001 % to 2.00 %
8.	Water used for construction purpose	pH	IS 3025 (Part 11):1983 (RA 2012)	4 to 12
		Chloride	IS 3025 (Part 32):1988 (RA 2012)	5.0 mg/l to 2000.0 mg/l
		Organic Solids	IS 3025 (Part 18)):1984 (RA 2012)	1.0 mg/l to 3000.0 mg/l
		Inorganic Solids	IS 3025 (Part 18):1984 (RA 2012)	1.0 mg/l to 10000.0 mg/l
		Suspended Solids	IS 3025 (Part 17):1984 (RA 2012)	1.0 mg/l to 3000.0 mg/l
		Volume of 0.02 N H ₂ SO ₄ Required to neutralize 100ml of water sample using mixed indicator	IS 456-2000 IS 3025 (Part 23):1986 (RA 2014)	0.5 ml to 100.0 ml
		Volume of 0.02 N NaOH Required to neutralize 100ml of water sample using Phenolphthalein indicator	IS 456-2000 IS 3025 (Part 22):1986 (RA 2014)	0.1 ml to 25.0 ml
		Sulphate as SO ₃	IS 3025 (Part 24):1986 (RA 2009)	10 mg/l to 2000 mg/l

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9.	Admixture	Dry Material Content	IS 9103:1999 (RA 2013) (Annexure-E-1)	0.1 % to 60.0 %
		Ash Content	IS 9103:1999 (RA 2013) (Annexure-E-2)	1.0 % to 25.0 %
		Relative Density	IS 9103:1999 (RA 2013) (Annexure-E-3)	1.0 to 1.2
		pH	IS 9103:1999 (RA 2013) (Annexure-E-5)	4 to 12.0
		Chloride	IS 6925:1976 (RA 2013) (Annexure E-4)	0.005 % to 2.0 %

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MECHANICAL TESTING

I.	BUILDING MATERIAL			
1.	Coarse Aggregate	Specific Gravity	IS 2386 (Part 3)	1 to 4
		Bulk Density	IS 2386 (Part 3)	1 kg/L to 2 kg/L
		Sieve Analysis	IS 2386 (Part 1)	0.1 % to 100 % (4.75 mm to 125 mm)
		Water Absorption	IS 2386 (Part 3)	0.1 % to 2.5 %
		Impact Value	IS 2386 (Part 4)	5 % to 70 %
		Flakiness Index	IS 2386 (Part 1)	2 % to 50 %
		Elongation Index	IS 2386 (Part 1)	2 % to 50 %
		Crushing Value	IS 2386 (Part 4)	5 % to 50 %
2.	Fine Aggregate	10% fine Value	IS 2386 (Part 4)	40 kN to 400 kN
		Specific Gravity	IS 2386 (Part 3)	1 to 4
		Bulk Density	IS 2386 (Part 3)	1 kg/L to 3 kg/L
		Sieve Analysis	IS 2386 (Part 1)	0.1 % to 100 % (4.75 mm to 75 microns)
3.	Concrete	Water Absorption	IS 2386(Part 3)	0.1 % to 7 %
4.	Hollow & Solid Concrete Blocks	Compressive Strength	IS 516	10 N/mm ² to 80 N/mm ²
Density		IS 2185 (Part 1)	1500 kg/m ³ to 2500 kg/m ³	
Compressive Strength		IS 2185 (Part 1)	1 N/mm ² to 20 N/mm ²	
Water Absorption		IS 2185 (Part 1)	1 % to 10 %	
Dry Shrinkage		IS 2185 (Part 1)	0.001 % to 0.05 %	
5.	Hydraulic Cement (OPC/PPC/PSC)	Moisture Movement	IS 2185 (Part 1)	0.001 % to 0.05 %
		Normal Consistency	IS 4031(Part 4)	20 % to 45 %
		Initial Setting Time	IS 4031(Part 5)	30 min to 300 min
		Final Setting Time	IS 4031(Part 5)	30 min to 600 min
		Soundness (by Le-Chatlier)	IS 4031(Part 3)	0.06 mm to 10 mm
		Specific Gravity	IS 4031(Part 11)	2 to 4

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		Fineness (by Dry Sieving)	IS 4031 (Part 1)	0.2 % to 10 %
		Fineness (Blaine's Method)	IS 4031 (Part 2)	100 m ² /kg to 450 m ² /kg
6.	Bricks	Compressive Strength	IS 4031 (Part 6)	10 N/mm ² to 80 N/mm ²
		Compressive Strength	IS 3495 (Part 1)	1 N/mm ² to 15 N/mm ²
		Water Absorption	IS 3495 (Part 2)	2 % to 35 %
		Efflorescence	IS 3495 (Part 3)	Qualitative
7.	Bituminous Materials	Flash Point	IS 1209 A1	100°C to 300°C
		Penetration	IS 1203 A 3	30 mm to 100 mm
		Specific Gravity	IS 1202 A2	0.99 to 1.03
		Stripping value	IS 6241	95 % to 100 %
		Softening Point	IS 1205 A1	25 °C to 100 °C
II.	SOIL & ROCK			
1.	Soil	Moisture Content	IS 2720 (Part-2)	1 % to 30 %
		Grain Size Analysis	IS 2720 (Part-4)	0.1 % to 100 % (75 µm to 10 mm)
		Liquid Limit	IS 2720 (Part-5)	15 % to 80 %
		Plastic Limit	IS 2720 (Part-5)	5 % to 60 %
		Light Compaction	IS 2720 (Part-7)	OMC=5 % to 30 % MDD=1 g/cc to 3 g/cc
		Heavy Compaction	IS 2720 (Part-8)	OMC=5 % to 30 % MDD=1 g/cc to 3 g/cc
		CBR	IS 2720 (Part-16)	1 % to 50 %

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III.	MECHANICAL PROPERTIES OF METALS			
1.	High Strength Deformed Steel Bars & Wires for Concrete Reinforcement	Weight/Meter	IS 1786	Upto 10 kg/m
		Percentage Elongation	IS 1786	4 % to 35 %
		Ultimate Tensile strength	IS 1608	350 N/mm ² to 900 N/mm ²
		Yield Strength	IS 1608	350 N/mm ² to 900 N/mm ²
		Bend Test	IS 1786 IS 1599	Mandrel diameter in mm 16, 20, 24, 30, 32, 36, 40, 48, 50, 56, 60, 64, 70, 72, 75, 80, 84, 96, 100, 112, 120, 125, 128, 140, 150, 160, 175, 192, 200, 224, 240, 280
		Re-bend Test	IS 1786	Mandrel diameter in mm 16, 20, 24, 30, 32, 36, 40, 48, 50, 56, 60, 64, 70, 72, 75, 80, 84, 96, 100, 112, 120, 125, 128, 140, 150, 160, 175, 192, 200, 224, 240, 280

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NON-DESTRUCTIVE TESTING

I.	BUILDING MATERIALS - REINFORCED CONCRETE STRUCTURE			
1.	Reinforced Concrete Structure	Rebound Hammer Test	IS 13311 (Part 2)	10 to 80 Rebound Number
		Ultrasonic Pulse Velocity Test	IS 13311 (Part 1)	2 km/sec to 5 km/sec

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