

Laboratory SKG Project & Engg. Pvt. Ltd., 65, VRIDC, Village Lohop Rasayani,
Tal. Khalapur, Dist. Raigad, Maharashtra

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-5999

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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.	METALS & ALLOYS			
1.	Low Alloy Steel	Carbon	IS 8811:1998	0.007% to 1.31%
		Manganese	IS 8811:1998	0.22% to 1.68%
		Silicon	IS 8811:1998	0.007% to 1.12%
		Sulphur	IS 8811:1998	0.007% to 0.058%
		Phosphorus	IS 8811:1998	0.01% to 0.12%
		Chromium	IS 8811:1998	0.017% to 1.32%
		Nickel	IS 8811:1998	0.019% to 0.81%
		Molybdenum	IS 8811:1998	0.025% to 0.60%
		Vanadium	IS 8811:1998	0.008% to 0.50%
		Copper	IS 8811:1998	0.02% to 0.43%
		Aluminum	IS 8811:1998	0.018% to 0.33%
II.	WATER			
1.	Water (for Construction purpose)	Alkalinity (Volume of 0.02 N H ₂ SO ₄ consumed to 100 ml of water sample)	IS 3025 (Part 23): 1986	0.1 ml to 50 ml
		Acidity (Volume of 0.02 N NaOH Consumed to neutralized 100 ml of water sample)	IS 3025 (Part 22): 1986 (RA 2014)	0.1 ml to 50 ml
		PH value	IS 3025 (Part 11):1983 (RA 2012)	1 to 14
		Chloride content	IS 3025 (Part 32): 1988 (RA 2014)	10.0 mg/l to 5000 mg/l
		Sulphate content (SO ₃)	IS 3025 (Part 24): 1986 (RA 2014)	1.0 mg/l to 2000 mg/l
		Inorganic Solids (Fixed Residue)	IS 3025 (Part 18): 1984 (RA 2012)	5.0 mg/l to 10000 mg/l

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		Organic Solids (Volatile Residue)	IS 3025 (Part 18): 1984 (RA 2012)	5.0 mg/l to 4000 mg/l
		Suspended Matter	IS 3025 (Part 17):1984 (RA 2012)	1.0 mg/l to 3000 mg/l
III.	BUILDING MATERIAL			
1.	(Cement Ordinary, Portland cement, Portland Pozzolanic Cement (PPC), Portland Slag Cement (PSC), GGBS	Insoluble Residue	IS 4032-1985 (RA 2009)	0.1 % to 40 %
		Loss on Ignition	IS 4032-1985(RA 2009)	0.2 % to 15 %
		Silica Content (SiO ₂)	IS 4032-1985(RA 2009)	5.0 % to 40 %
		Alumina (Al ₂ O ₃)	IS 4032-1985(RA 2009)	0.2 % to 30 %
		Ferric oxide (Fe ₂ O ₃)	IS 4032-1985(RA 2009)	0.2 % to 16%
		Calcium oxide (CaO)	IS 4032-1985(RA 2009)	5 % to 75 %
		Sulphuric Anhydride (SO ₃)	IS 4032-1985(RA 2009)	0.1 % to 10 %
		Magnesia (MgO)	IS 4032-1985(RA 2009)	0.4 % to 20 %
		Manganic Oxide (MnO)	IS 4032-1985(RA 2009)	0.01 % to 10 %
		Chloride	IS 4032-1985 (RA 2009) Amd-2	0.01% to 2.0 %
2.	Pozzolanic Material, Pulverized fuel Ash, Micro silica; Silica Fume	Loss on Ignition	IS 1727-1967(RA 2008)	0.1 % to 15 %
		Sulphuric Anhydride (SO ₃)	IS 1727-1967(RA 2008)	0.05 % to 5 %
		Silica content (SiO ₂)	IS 1727-1967(RA 2008)	20 % to 98 %
		Alumina (Al ₂ O ₃)	IS 1727:1967 (RA 2008)	5 % to 35.0 %
		Iron Oxide (Fe ₂ O ₃)	IS 1727:1967 (RA 2008)	0.2 % to 10.0 %
		Lime as CaO	IS 1727-1967(RA 2008)	0.2 % to 30 %
		Magnesia (MgO)	IS 1727-1967(RA 2008)	0.2 % to 15 %
		Chloride	IS 4032 -1985(RA 2009)	0.004 % to 2.0 %
		Moisture content	IS 15388-2003	0.03 % to 10%
3.	Admixture, Water proofing compound	Ash Content	IS 9103-1999 (RA 2013)	0.2 % to 35 %
		Dry Material Content	IS 9103-1999 (RA 2013)	1 % to 70 %
		Relative density	IS 9103-1999 (RA 2013)	0.9 to 1.5

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4.	Coarse Aggregate, Fine Aggregate	Chloride	BS EN 1744-1	0.001 % to 1.0 %
		Sulphate	BS EN 1744-1	0.001 % to 1.0 %
		Alkali Aggregate reactivity - (a) Reduction in Alkalinity (RC)	IS 2386 (Part VII): (Cl.3)	20 mmoles/l to 1000 mmoles/l
		Alkali Aggregate reactivity Silica Released (SC)	IS 2386 (Part VII): (Cl.3)	10 mmoles/l to 500 mmoles/l
		Soundness by Sodium Sulphate (Na ₂ SO ₄) - 5 cycles	IS 2386 (Part 5)	0.5 % to 50 %
		Soundness by Magnesium Sulphate (MgSO ₄) - 5 cycles	IS 2386 (Part 5)	0.5 % to 50 %

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Convenor

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<u>MECHANICAL TESTING</u>				
I.	MECHANICAL PROPERTIES OF METALS			
1.	Mild Steel, Reinforcement steel	Yield Strength	IS 1608:2013 RA 2017	200 MPa to 800 MPa
		Ultimate Tensile Strength	IS 1608:2013 RA 2017	200 MPa to 900 MPa
		% Elongation	IS 1608:2013 RA 2017	5% to 70%
		Mass/m	IS 1786: 2008 RA 2013	0.1 kg/m to 10 kg/m
		Bend Test	IS 1599: 2012 RA 2017	Mandrel Diameter: 20,24,30,32,40,50,72,80, 84, 100, 125, 140, 160, 180 mm
		Rebend Test	IS 1786: 2008 RA 2013	Mandrel Diameter: 20,24,30,32,40,50,72,80, 84, 100, 125, 140, 160, 180 mm
2.	Structural Steel	Yield Strength	IS 1608:2013 RA 2017	150 MPa to 600 MPa
		Ultimate Tensile Strength	IS 1608:2013 RA 2017	150 MPa to 700 M
		% Elongation	IS 1608:2013 RA 2017	5% to 70 %
		Bend Test	IS 1599: 2012 RA 2017	6 to 42 mm thickness
II.	BUILDING MATERIALS			
1.	Cement	Fineness by dry Sieving	IS 4031 (Part I):1998 RA 2014	1% to 20%
		Standard Consistency	IS 4031 (Part IV):1998 RA 2014	20% to 40%
		Initial and Final Setting time	IS 4031 (Part V):1998 RA 2014	20 mins to 400 mins
		Compressive Strength	IS 4031 (Part VI):1998 RA2014	5 MPa to 80 MPa

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		Soundness by Le-Chatelier apparatus	IS 4031 (Part III):1998 RA 2014	0.5 mm to 12 mm
		Density/Specific Gravity	IS 4031(Part XI):1998 RA 2009	2 to 5
2.	Concrete	Compressive Strength of Concrete cube	IS 516:1959 RA 2013	1 MPa to 85 MPa
		Compressive Strength of Concrete core	IS 516:1959 RA 2013	1 MPa to 85 MPa
		Flexural Strength of Concrete Beam	IS 516:1959 RA 2013	1 MPa to 10 MPa
		Compressive Strength of Concrete Cylinder	IS 516:1959 RA 2013	5 MPa to 70 MPa
		Rapid Chloride Ion Penetration test	ASTM C1202-17a	250 Coulombs to 8000 Coulombs
		Water Permeability	IS 3085: 1991 RA 2013	0.2 x10 ⁻⁹ m/s to 3.0 x10 ⁻⁹ m/s
		Modulus of elasticity of Concrete	ASTM C469-14	20 GPa to 80 GPa
		Accelerated Curing of Concrete for Compressive Strength	IS: 9013-1978 (RA 2013)	5 N/mm ² to 80 N/mm ²
3.	Hollow/Solid Blocks	Compressive Strength Hollow/Solid Masonry Blocks	IS 2185(Part I):2005 RA 2015	1 MPa to 20 MPa
		Water Absorption of Solid/hollow Masonry Block	IS 2185(Part I):2005 RA 2015	2% to 20%
		Measurement of dimensions of Solid/hollow masonry block	IS 2185(Part I):2005 RA 2015	50 mm to 500 mm
		Density	IS 2185 (Part I):2005 RA 2015	500 kg/ m ³ to 2500 kg/m ³
		Drying Shrinkage	IS 2185(Part I)	0.01% to 1 %
		Moisture Movement	IS 2185(Part I)	0.01% to 1 %

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4.	Burnt clay bricks	Measurement of dimensions	IS 1077:1992	100 mm to 5000 mm
		Compressive Strength of Burnt Clay Bricks	IS 3495 (Part I) 1992 RA 2013	1 MPa to 40 MPa
		Water Absorption of Burnt Clay Bricks	IS 3495 (Part II) 1992 RA 2013	5% to 40%
		Efflorescence of Burnt clay Bricks	IS 3495 (Part III) 1992 RA 2013	Qualitative
5.	Fly Ash Bricks	Compressive Strength	IS 3495 (Part I)	1 MPa to 40 MPa
		Measurement of dimensions of fly ash bricks	IS 12894	100 mm to 5000 mm
		Water absorption of fly ash `bricks	IS 3495 (Part II)	5% to 40%
		Efflorescence of fly ash Bricks	IS 12894:	Qualitative
6.	Coarse Aggregates/ Ballast /Fine Aggregates	Specific Gravity	IS 2386 (Part III):1963 RA 2016	1.5 to 4
		Water Absorption	IS 2386 (Part III):1963 RA 2016	0.01% to 20%
		Sieve Analysis	IS 2386 (Part I):1963 RA 2016	80 mm to 150 micron
		Loose Bulk Density (Loose/Rodded)	IS 2386 (Part III):1963 RA 2016	1kg/l to 3 kg/l
7.	Fine Aggregate	Particles finer than 75 micron	IS 2386 (Part I):1963 RA 2016	1% to 25 %
		Bulking	IS 2386 (Part III):1963 RA 2016	1% to 35%
8.	Coarse Aggregates/ Ballast	Aggregate Impact Value	IS 2386 (Part IV):1963 RA 2016	1% to 60%
		Aggregate Crushing Value	IS 2386 (Part IV):1963 RA 2016	1% to 60%
		Flakiness Index	IS 2386 (Part I):1963 RA 2016	1% to 55%

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		Elongation Index	IS 2386 (Part I):1963 RA 2016	1% to 55%
		Los Angeles Abrasion Value	IS 2386 (Part IV):1963 RA 2016	1% to 60%
		10% fines Value	IS 2386 (Part IV):1963 RA 2016	5T to 40T
9.	AAC Blocks	Dimensions	IS 2185 (Part III):1984 RA 2015	50 mm to 700 mm
		Density	IS 2185 (Part III):1984 RA 2015	200 kg/m ³ to 800 kg/m ³
		Moisture Content	IS 6441(Part I):1972 RA 2017	2% to 45%
		Compressive Strength	IS 6441(Part V):1972 RA 2017	1 MPa to 10 MPa
		Drying Shrinkage	IS 6441(Part II):1972 RA 2017	0.001% to 0.015%
10.	Concrete Tiles	Water Absorption	IS 1237 :2012 R A 2017 Ann E IS 13801 : 2013 Ann E	1% to 15%
		Wet Transverse Strength	IS 1237 :2012 RA 2017 Ann F IS 13801 : 2013 Ann E	1 MPa to 15 MPa
11.	Ceramic/ Vitrified Tiles	Measurement of dimensions	IS 13630: (Part I) 2006 RA 2017	50 mm to 800 mm
		Water Absorption	IS 13630: (Part II) 2006 RA 2017	0.01% to 20%
		Chemical Resistance	IS 13630: (Part VII) 2006 RA 2017	Qualitative
12.	Pozzolanic Materials/ GGBS/ Micro Silica	Fineness by Dry Sieving	IS 1727 : 1967 RA 2013	0.1% to 20%
		Setting Time	IS 1727 : 1967 RA 2013	50 mins to 400 mins
		Comparative Compressive Strength	IS 1727 : 1967 RA 2013	5 MPa to 80 MPa
		Specific gravity	IS 1727 : 1967 RA 2013	1 to 3.5
		Soundness	IS 1727 : 1967 RA 2013	1 mm to 10 mm

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		Normal Consistency	IS 1727 : 1967 RA 2013	20% to 40%
		Lime Reactivity	IS 1727 : 1967 RA 2013	4 MPa to 10 MPa
13.	Bituminous Mix	Determination of Binder Content	IRC SP 11; Appendix C	2% to 20%
	Bituminous Mix	Compressive Strength	IS 15658 : 2006 RA 2017	5 MPa to 120 MPa
		Water Absorption	IS 15658 : 2006 RA 2017	2% to 15%
		Abrasion Resistance	IS 15658 : 2006 RA 2017	10 to 30 at 5000 mm ²
		Tensile Splitting Strength	IS 15658 : 2006 RA 2017	1 MPa to 15 MPa
		Flexural Strength	IS 15658 : 2006 RA 2017	1 MPa to 15 MPa
14.	Bitumen (VG, PMB, CRMB)	Softening Point	IS 1205: 1978 RA 2014	25 °C to 150 °C
		Penetration	IS 1203: 1978 RA 2014	1 div to 350 div (1/10mm)
		Ductility	IS 1208: 1978 RA 2014	1cm to 100 cm
		Viscosity	ASTM D4402-15	300 poise to 8000 poise
		Viscosity	ASTM D4402-15	70 cSt to 1200 cSt
		Elastic recovery	IS 15462: 2004 RA 2014	1% to 100%
		Solubility in trichloro ethylene	IS 1216: 1978 RA 2014	10% to 100%
III.	SOIL & ROCK			
1.	Soil	Liquid Limit	IS 2720:(Part V) 1985 RA 2015	5% to 70%
		Plastic Limit	IS 2720:(Part V) 1985 RA 2015	1% to 30%
		Water Content-Dry Density relation by heavy Compaction	IS 2720:(Part VIII) 1983 RA 2015	OMC 2% to 20% MDD:1 g/cc to 3g/cc
		Laboratory CBR	IS 2720:(Part XVI) 1987 RA 2011	5% to 100%
		Free Swell Index	IS 2720 (Part 40:1977 RA 2011	1% to 30%
		Water Content-Dry Density relation by light Compaction	IS 2720 (Part VII) 1983 RA 2015	OMC 2% to 20% MDD:1 g/cc to 2.5g/cc

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		Dry Density of Soil by Core cutter Method	IS 2720 (Part 29): 1974 RA 2015	1 g/cc to 3 g/cc
		Dry Density of Soil by Sand Replacement Method	IS 2720 (Part 28) : 1974 RA 2015	1 g/cc to 3 g/cc
2.	Rock	Water Content	IS 13030: 1991 RA 2016	0.1% to 25%
		Wet/ Dry Density	IS 13030: 1991 RA 2016	1000 kg/m ³ to 5000 kg/m ³
		Specific Gravity	IS 13030: 1991 RA 2016	1 to 5
		Unconfined Compressive Strength	IS 9143: 1979 RA 2016	1 MPa to 250 MPa
		Point Load Strength Index	IS: 8764-1998 (RA 2014)	0 to 20 MN/m ²
3.	Building Stone	Water Absorption	IS 1124: 1974 RA 2017	0.1% to 10%
		Specific Gravity	IS 1124:1974 RA 2017	1 to 3
IV.	WOOD & WOOD PRODUCTS			
1.	Wood & Wood Products	Moisture Content of Timber	IS 1708 (Part 1) :1986 RA 2015	0.1% to 20%
		Density of Timber	IS 1708 (Part 2) :1986 RA 2015	0.2 g/cc to 1g/cc
2.	Block Board	Thickness	Is 1659:2004 RA 2014 Annex. D	10 mm to 40 mm
3.	Flush Door Shutter	Thickness	IS 4020-1998 (Part 2) RA 2013	10 mm to 40 mm
		Dimension	IS 4020-1998 (Part 2) RA 2013	100 mm to 3000 mm
		Shock Resistance Test	IS 4020-1998 (Part 8) RA 2013	Qualitative
		Slamming Test	IS 4020-1998 (Part 10) RA 2013	Qualitative
		End immersion test	IS 4020-1998 (Part 13) RA 2013	Qualitative
		Glue Adhesion test	IS 4020- 1998 (Part 15) RA 2013	Qualitative

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4.	Shuttering Plywood	Density	IS 1734 (Part 1) : 1983 RA 2013	0.40 g/cc to 1g/cc
		Resistance to dry heat	IS 1734 (Part 2) : 1983 RA 2013	Qualitative
		Adhesion of Plies	IS 1734 (Part 5) : 1983 RA 2013	Qualitative
		Water Resistance	IS 1734 (Part 6) : 1983 RA 2013	Qualitative

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NON-DESTRUCTIVE TESTING				
I.	BUILDING MATERIALS-REINFORCED CONCRETE STRUCTURES			
I.	Concrete Structures	Rebound Hammer Test	IS 13311 (Part 2) 1992 RA 2013	2 Rebound Number to 80 Rebound Number
		Ultrasonic Pulse Velocity Test	IS 13311 (Part 1) 1992 RA 2013	1 km/s to 6 km/s
		Carbonation Depth	BS 1881 (Part 201) Clause 2.22	0 to 100 mm
		Half Cell Potential	ASTM C876-91 RA 2015	(-)1 V to 1 V