

Laboratory **Dr. Uppal's Testing & Analytical laboratory Pvt. Ltd., Plot No. 240, Industrial Area, Phase-IX, S.A.S. Nagar (Mohali), Punjab**

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

Certificate Number **TC-7526 (in lieu of T-4002)**

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Validity **16.06.2018 to 15.06.2020**

Last Amended on **04.07.2018**

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. BUILDINGS MATERIALS				
1	Cement (PPC & OPC)	Loss on ignition	IS 4032-1985 (RA 2014)	0.1% to 10%
		Insoluble Matter	IS 4032-1985 (RA 2014)	0.1% to 35%
		Silica (as SiO ₂)	IS 4032-1985 (RA 2014)	10 % to 50%
		Iron Oxide (as Fe ₂ O ₃)	IS 4032-1985 (RA 2014)	0.1 % to 10%
		Alumina (As Al ₂ O ₃)	IS 4032-1985 (RA 2014)	0.1 % to 20%
		Calcium Oxide (as CaO)	IS 4032-1985 (RA 2014)	30% to 70%
		Magnesia (as MgO)	IS 4032-1985 (RA 2014)	0.1% to 10%
		Sulphuric Anhydride(as SO ₃)	IS 4032-1985 (RA 2014)	0.1% to 10%
2.	Admixture	Dry Material Content	IS 9103-1999 (RA 2013)	10% to 50%
		Ash Content	IS 9103-1999 (RA 2013)	1% % to 40%
		Relative Density	IS 9103-1999 (RA 2013)	1.0 to 2.0
		pH Value	IS 9103-1999 (RA 2013)	4 to 12
		Water Soluble Chloride	IS 6925-1973	0.002% to 5.0%
II. METALS & ALLOYS				
1.	Reinforcement Steel	Carbon (as C)	IS 228 (Part -1)-1987 (RA 2012)	0.05% to 1.5%

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		Sulphur (as S)	IS 228 (Part -9)-1987 (RA 2014)	0.01% to 0.10%
		Phosphorus (as P)	IS 228 (Part -3)-1987 (RA 2012)	0.01% to 0.10%
III.	WATER			
1.	Water For Construction	Alkalinity (Vol. of 0.02 N H ₂ SO ₄ required to neutralize 100ml sample of water using mixed indicator)	IS 3025(Part -22)-1986 (RA 2014)	0.1ml to 50 ml
		Acidity (Vol. of 0.02 N NaOH required to neutralize 100ml sample of water using phenolphthalein indicator)	IS 3025(Part-23)-1986 (RA 2014)	0.1ml to 25 ml
		Chloride (as Cl) (mg/L)	IS 3025(Part -32)-1988 (RA 2014)	1 mg/L to 2000 mg/L
		Sulphate as (SO ₄) (mg/L)	IS 3025(Part -24)-1986 (RA 2014)	1 mg/L to 2000 mg/L
		Soild (Fixed & Volatile) mg/L Organic solids (Volatile) Inorganic solids (Fixed)	IS 3025(Part -18)-1984 (RA 2017)	5 mg/L to 500 mg/L 10 mg/L to 5000 mg/L
		Suspended Solids (mg/L)	IS 3025(Part -17)-1984 (RA 2017)	10 mg/L to 2000 mg/L
		pH value	IS 3025(Part -11)-1983 (RA 2017)	1.5 to 12

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<u>MECHANICAL TESTING</u>				
I.	BUILDINGS MATERIALS			
1.	Cement (OPC/PPC)	Normal Consistency	IS 4031 (Part 4)-1988, (RA 2014)	25% to 40 %
		Initial Setting Time	IS 4031 (Part 5)-1988, (RA 2014)	30 Min. to 250 Min.
		Final Setting Time	IS 4031 (Part 5)-1988, (RA 2014)	100 Min. to 600 Min.
		Soundness : Le-Chatelier's Method	IS 4031 (Part 3)-1988, (RA 2014)	0.1mm to 10mm
		Density	IS 4031 (Part 11)-1988, (RA 2014)	2.5g/cc to 3.3g/cc
		Compressive Strength	IS 4031 (Part 6)-1988, (RA 2014)	10 N/mm ² to 80 N/mm ²
		Fineness by Blain's Method	IS 4031 (Part 2)-1996, (RA 2013)	100 m ² /kg to 500 m ² /kg
2.	Concrete	Compressive Strength	IS 516-1959, (RA 2013)	10 N/mm ² to 80 N/mm ²
		Workability by Slump	IS 1199-1959 (RA 2013)	10mm to 300mm
3.	Burnt Clay Bricks	Compressive Strength	IS 3495- (Part 1)1992 (RA 2016)	1.0 N/mm ² to 30 N/mm ²
		Water Absorption	IS 3495- (Part 2)1992 (RA 2016)	1 % to 25%

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		Efflorescence	IS 3495- (Part 3)1992 (RA 2016)	Visual Observation
		Dimensions	IS 1077-1992 (RA 2016)	4520 mm to 4680 mm 2160mm to 2240mm 1360mm to 1440mm
4.	Aggregate (coarse)	Sieve Analysis	IS 2386- (Part 1)1963 (RA 2016)	4.75 mm to 80 mm (1% to 100%)
		Bulk density	IS 2386 (Part 3)-1963 (RA 2016)	1.2 g/cc to 1.6 g/cc
		Flakiness Index	IS 2386 (Part 1)-1963 (RA 2016)	2 %to 40%
		Elongation Index	IS 2386 (Part 1)-1963 (RA 2016)	2% to 40%
		Aggregate Impact Value	IS 2386 (Part 4)-1963 (RA 2016)	1.0% to 60 %
		Aggregate Crushing Value	IS 2386 (Part 4)-1963 (RA 2016)	1.0% to 60 %
		Los Angel's Abrasion Value	IS 2386 (Part 4)-1963 (RA 2016)	1.0% to 60 %
		Specific gravity	IS 2386 (Part 3)-1963 (RA 2016)	2.5 to 3.5
		Water Absorption	IS 2386 (Part 3)-1963 (RA 2016)	0.2% to 10.0%
		Soundness (Na ₂ SO ₄)	IS 2386 (Part 5)-1963 (RA 2016)	1% to 20%

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5.	Aggregate (Fine)	Sieve Analysis	IS 2386 (Part 1)-1963 (RA 2016)	75 micron to 10 mm
		Bulk density	IS 2386 (Part 1)-1963 (RA 2016)	1.2 g/cc to 1.8 g/cc
		Specific gravity	IS 2386 (Part 3)-1963 (RA 2016)	2.5 to 3.5
		Water Absorption	IS 2386 (Part 4)-1963 (RA 2016)	0.2 % to 10 %
		Total Deleterious Material (a) Coal & Lignite (b) Clay Lumps (c) Soft Fragments (d) Silt & clay	IS 2386 (Part-2)-1963 (RA2016)	1 to 20 %
		Organic Impurities	IS 2386 (Part-2)-1963 (RA 2016)	Qualitative test
		Soundness (Na ₂ SO ₄)	IS 2386 (Part-5)-1963 (RA 2016)	1% to 20%
6.	Paver Blocks	Compressive Strength	IS 15658-2006 (RA 2017)	5 N/mm ² to 80 N/mm ²
		Water Absorption	IS 15658-2006 (RA 2017)	0.5 to 20%
		Abrasion Value	IS 15658-2006 (RA 2017)	1000 to 15000 mm ³ per 5000 mm ²
7.	Timber	Specific gravity	IS 1708-(Part- 2)1986	0.40 to 0.90
		Moisture content by oven Method	IS 11215-1991 (RA 2010)	1% to 30%

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8.	Plywood	Moisture content	IS 1734 (Part-1) -1983 (RA 2008)	1 % to 20%
		Static Bending Test Modulus of Rupture Modulus of elasticity	IS 1734 (Part-11) -1983 (RA 2008)	10 N/mm ² to 70 N/mm ² 300 N/mm ² to 10000 N/mm ²
		Water Resistance Test (Glue Adhesion Test)	IS 1734 (Part-6) -1983 (RA 2008)	Qualitative test
9.	Paving Bitumen	Softening Point	IS 1205-1978	25°C to 80°C
		Penetration (1/10mm)	IS 1203-1978	15 to100
II.	SOIL & ROCK			
1.	Soil	Liquid Limit	IS 2720- (Part 5_1985 (RA 2015)	25% to 80%
		Plastic Limit	IS 2720-(Part 5)1985 (RA 2015)	5% to 50%
		Grain Size Analysis (Sieve Analysis)	IS 2720-(Part 4)1985 (RA 2015)	75 micron to 40 mm
		Grain Size Analysis (Pipette Method)	IS 2720- (Part 4)1985 (RA 2015)	2 micron to 75 micron
		Light Compaction	IS 2720 (Part 7)-1980 (RA 2016)	MDD 1.4 g/cc to 2.4g/cc OMC :5% to 15%
		Heavy Compaction	IS 2720 (Part 8)-1983 (RA 2015)	MDD:1.5 g/cc to 2.4g/cc OMC 5% to 20%
		Specific Gravity	IS 2720 (Part 3)1980 (RA 2016)	2.3 to 2.8

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		CBR (Soaked)	IS 2720 (Part 16)-1987 (RA 2016)	1 % to 60 %
		Direct Shear Test	IS 2720 (Part 13)-1986 (RA 2015)	Angle 20° to 36° Cohesion: 0.05to 1 kg/cm ²
		Unconfined Compressive Strength	IS 2720 (Part 10) -1985 (RA 2010)	0.2 kg/cm ² to 5 kg/cm ²
		Free Swell Index	IS 2720 (Part 40)-1977 (RA 2016)	0.1% to 100%
2.	Rock	Uniaxial Compressive Strength	IS 9143-1979 (RA 2010)	0.5 MPa to 200 MPa
III.	MECHANICAL PROPERTIES OF METALS			
1.	Reinforcement Steel	Mass per meter	IS 1786-2008 (RA 2013)	0.18 kg/m to 7.25 kg/m
		Yield Stress	IS 1608-2005 (RA 2011)	100N/mm ² to 800N/mm ²
		Tensile Strength	IS 1608-2005 (RA 2011)	100N/mm ² to 800N/mm ²
		Elongation (%)	IS 1608-2005 (RA 2011)	10% to 40 %
		Bend Test	IS 1599-2012 (RA -2017)	Qualitative (Mandrel dia(mm) 16,20, 24,30,32,36,40, 48,50,60,64,75,80,84, 96,100,112,125,128, 140, 150,160,168,192)
		Re-Bend Test	IS 1786-2008 (RA 2013)	Qualitative (Mandrel dia (mm) 32,40 , 48,50,56,60,70, 72,84,96,112,120,128,1 40, 0,160,168,175,192, 196,200,224,256)

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