

Laboratory **KDM Engineers (India) Private Limited, Plot No. 401, Sri Ramana Colony, Karmanghat Saroornagar (M), Hyderabad, Telangana**

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

Certificate Number **TC-6470**

Page 1 of 8

Validity **11.03.2018 to 10.03.2020**

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 MATERIAL			
1.	Cement (OPC/PPC/PSC) Slag	Insoluble Residue	IS: 4032 – 1985 (Reaffirmed 2014)	0.1% to 40%
		Loss on Ignition	IS: 4032 – 1985 (Reaffirmed 2014)	0.1% to 8%
		Silica Content (As SiO ₂)	IS : 4032 – 1985 (Reaffirmed 2014)	15 % to 40%
		Alumina (Al ₂ O ₃)	IS : 4032 – 1985 (Reaffirmed 2014) Cl. 4.6.2	4.0% to 15%
		Ferric oxide (Fe ₂ O ₃)	IS : 4032 – 1985 (Reaffirmed 2014) Cl. 4.5.2	0.1% to 6%
		Calcium oxide (CaO)	IS: 4032 – 1985 (Reaffirmed 2014) Cl 4.7.2	45% to 75%
		Sulphuric Anhydride (SO ₃)	IS: 4032 – 1985 (Reaffirmed 2014)	0.1% to 1.5%
		Magnesia (MgO)	IS : 4032 – 1985 (Reaffirmed 2014) Cl. 4.8.2	0.5% to 10%
		Sulphide sulphur (S)	IS: 4032 – 1985 (Reaffirmed 2014)	0.1% to 1%
		Manganic Oxide (Mno)	IS: 4032 – 1985 (Reaffirmed 2014)	0.1% to 5.5%
		Alkalies as Na ₂ O	IS: 4032 – 1985 (Reaffirmed 2014) / NCB-MS-13-2010	0.10% to 1%
		Chlorides as Cl	IS: 4032-1985 (Reaffirmed 2014) Cl. No. 4.13	0.01% to 0.1%

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Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-6470

Page 2 of 8

Validity 11.03.2018 to 10.03.2020

Last Amended on --

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2.	Admixture	Chloride Content	IS : 6925-1973 (Reaffirmed-2004)	0.001% to 2.0%
		Ash Content	IS : 9103 – 1999 (Reaffirmed 2004)	0.03% to 35%
		pH	IS : 9103 – 1999 (Reaffirmed 2004)	4 to 12
		Dry Material Content	IS : 9103 – 1999 (Reaffirmed 2004)	0.1 % to 60%
		Relative density	IS : 9103 – 1999 (Reaffirmed 2004)	1.000 to 1.300
3.	Flyash / Silica Fume	Loss on Ignition	IS : 1727-1967 (Reaffirmed 2004)	0.10 % to 30%
		Silica content (SiO ₂)	IS : 1727-1967 (Reaffirmed 2004)	25 % to 70%
		Mixed oxides Fe ₂ O ₃ + Al ₂ O ₃	IS : 1727-1967 (Reaffirmed 2004)	10 % to 50%
		Lime as CaO	IS : 1727 (Reaffirmed 2004)	0.1 % to 40%
		Sulphuric Anhydride (SO ₃)	IS : 1727 (Reaffirmed 2004)	0.1 % to 5%
		Magnesia (MgO)	IS : 1727 (Reaffirmed 2004)	0.10 % to 10%
4.	Water (Construction)	Alkalinity	IS 3025– Part 23-1986 (Reaffirmed 2003) IS : 456 -2000	0.1 ml to 50 ml
		Acidity	IS 3025- Part 22-1986 (Reaffirmed 2009) IS : 456 - 2000	0.1 ml to 5 ml
		pH value	IS 3025- Part 11-1964 (Reaffirmed 2006)	4 to 12
		Chloride content	IS 3025 – 1964 Part 32 (Reaffirmed 1999)	5 mg/l to 5000 mg/l

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Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-6470

Page 3 of 8

Validity 11.03.2018 to 10.03.2020

Last Amended on --

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		Sulphate content as SO ₃	IS 3025 – 1986 Part 24 (Reaffirmed 2003)	5 mg/l to 2000 mg/l
		Inorganic Solids	IS 3025 – 1984 Part 18 (Reaffirmed 2002)	10 mg/l to 10000 mg/l
		Organic Solids	IS 3025 – 1984 Part 15 (Reaffirmed 2003)	1 mg/l to 4000 mg/l
		Suspended Matter	IS 3025 – 1964 Part 17 (Reaffirmed 2006)	1 mg/l to 1000 mg/l
5.	Aggregate	Chlorides as Cl	IS 4032-1985 (RA 2014)	Upto 0.5%
		Sulphate Content	IS 4032-1985 (RA 2014)	0.1% to 1%
		Alkali Aggregate Reactivity i) Reduction in Alkalinity of 1.0 N NaOH RC ii) Silica Dissolved SC	IS: 2386-1963 Part VII (Reaffirmed 2012)	2.5 milli.mole to 200 milli.mole
6.	Bitumen/ Bitumen Emulsion	Specific gravity	IS 1202 – 1978 Reaffirmed 2004	0.90 to 1.20
		Residue by Evaporation	IS: 8887-2004	25% to 70%

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

Certificate Number **TC-6470**

Page 4 of 8

Validity **11.03.2018 to 10.03.2020**

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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MECHANICAL TESTING

I.	BUILDING MATERIALS			
1.	Aggregate (Fine)	Sieve Analysis	IS:2386 part 1 – 1963 Reaffirmed – 2016	150 μ to 4.75 mm
		% Finer than 75μ	IS:2386 part 1 – 1963 Reaffirmed - 2016	0.1% to 10%
		Water absorption	IS:2386 part 3 – 1963 Reaffirmed – 2016	0.1% to 10%
		Specific Gravity	IS:2386 part 3 – 1963 Reaffirmed – 2016	2 to 4
		Soundness	IS: 2386 Part 5-1963 (Reaffirmed 2016)	1% to 25%
		Bulk Density	IS 2386 – 1963, Part – 3, Reaffirmed 2016	1.2 kg/l to 2.5 kg/l
2.	Aggregate (Coarse)	Sieve Analysis	IS:2386 part 1 – 1963 Reaffirmed – 2016	4.75mm to 80 mm.
		Water absorption	IS:2386 part 3 – 1963 Reaffirmed – 2016	0.1% to 10%
		Specific Gravity	IS:2386 part 3 – 1963 Reaffirmed – 2016	2 to 4
		Flakiness Index	IS:2386 part 1 – 1963 Reaffirmed – 2016	1% to 50%
		Elongation Index	IS:2386 part 1 – 1963 Reaffirmed - 2016	1% to 50%
		Crushing Value	IS:2386 part 4 – 1963 Reaffirmed – 2016	1% to 50%
		Impact Value	IS:2386 part 4 – 1963 Reaffirmed – 2016	1% to 50%
		Stripping Value	IS: 6241-1971 (Reaffirmed 2013)	20% to 100%

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Accreditation Standard ISO/IEC 17025: 2005

Certificate Number

TC-6470

Page 5 of 8

Validity

11.03.2018 to 10.03.2020

Last Amended on --

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		Soundness	IS: 2386 Part 5-1963 (Reaffirmed 2016)	1% to 25%
		10% Fines Value	IS: 2386 Part 4-1963 (Reaffirmed 2016)	50 kN to 200 kN
		Bulk Density	IS 2386 – 1963, Part – 3, Reaffirmed 2016	1.2 kg/l to 2.5 kg/l
3.	Cement OPC/PPC/PSC	Normal Consistency	IS:4031 part 4 – 1988 Reaffirmed – 2014	20% to 40%
		Setting Time Initial	IS:4031 part 5 – 1988 Reaffirmed – 2014	30 minute to 300 minute
		Setting Time Final	IS:4031 part 5 – 1988 Reaffirmed - 2014	100 minute to 600 minute
		Fineness by Blain's air permeability	IS:4031 part 2 – 1999 Reaffirmed - 2013	200 m ² /kg to 500 m ² /kg
		Soundness By LeChattelier Method	IS:4031 part 3 – 1988 Reaffirmed - 2014	0.1 mm to 10 mm
		Soundness (by autoclave)	IS:4031 part 3 – 1988 Reaffirmed - 2014	0.01% to 2.0%
		Compressive Strength	IS:4031 part 6 –1988 Reaffirmed - 2014	10 N/mm ² to 80 N/mm ²
		Density	IS:4031 part 11 – 1988 Reaffirmed - 2014	2.8 g/cm ³ to 3.3 g/cm ³
4.	Fly Ash	Fineness by Blain's air permeability	IS : 1727-1967 (Reaffirmed 2008)	200 m ² /kg to 500 m ² /kg
		Comparative compressive strength	IS : 1727-1967 (Reaffirmed 2008)	50% to 100%
		Soundness (by autoclave)	IS : 1727-1967 (Reaffirmed 2008)	0.01% to 2.0%
		Specific gravity	IS : 1727-1967 (Reaffirmed 2008)	1 g/cm ³ to 3 g/cm ³
		Retained on 45 Microns sieve	IS : 1727-1967 (Reaffirmed 2008)	1% to 50%
5.	Concrete (Cube & Core)	Compressive Strength	IS:516-1959 Reaffirmed – 2013	10 N/mm ² to 88 N/mm ²

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Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-6470

Page 6 of 8

Validity 11.03.2018 to 10.03.2020

Last Amended on --

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6.	Burnt Clay Bricks / Flyash Bricks / Flyash Lime Bricks	Compressive Strength	IS:3495 (Part 1)-1992 Reaffirmed 2016	1 N/mm ² to 30 N/mm ²
		Water Absorption	IS:3495 (Part 2)-1992 Reaffirmed 2016	1% to 35%
7.	Hollow & Solid Concrete Block / Hollow and Solid light weight concrete Blocks	Dimension	IS : 2185 – 1988 (Reaffirmed 2016)	
		Length		200 mm to 450mm
		Width		100 mm to 200mm
		Height		100 mm to 250mm
		Water Absorption	IS:2185 part 1-2005 (RA 2016) IS:2185 part 2-1983 (RA 2016)	1% to 50%
		Compressive Strength	IS:2185 part 1-2005 (RA 2016) IS:2185 part 2-1983 (RA 2016)	1 N/mm ² to 35 N/mm ²
8.	Bituminous Emulsion	Residue on 600 microns	IS: 8887-2014	0.01% to 2%
		Viscosity by Saybolt Furol Viscometer	IS: 3117-2004	10 second to 150 second
9.	Bitumen	Penetration	IS 1203 – 1978 Reaffirmed 2004	10 to 100 (1/10 th of mm)
		Ductility	IS 1208 – 1978 Reaffirmed 2004	5 cm to 100 cm
		Flash Point	IS 1206 – 1978 Reaffirmed 2004	200 °C to 300 °C
		Softening Point	IS 1205 – 1978 Reaffirmed 2004	35 °C to 100 °C
10.	Micro Silica	Compressive strength Percent as control sample	IS : 1727-1967 (Reaffirmed 2008)	50% to 100%
		Retained on 45 Microns sieve	IS : 1727-1967 (Reaffirmed 2008)	1% to 50%

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Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-6470

Page 7 of 8

Validity 11.03.2018 to 10.03.2020

Last Amended on --

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II.	SOIL & ROCK			
1.	Soil / GSB / WMM	Grain size Analysis	IS 2720 (Part 4) – 1985 Reaffirmed – 2015	2 mm to 75 μ
		Liquid Limit	IS 2720 (Part 5) – 1985 Reaffirmed – 2016	20 % to 80%
		Plastic Limit	IS 2720 (Part 5) – 1985 Reaffirmed – 2016	10% to 40%
		Free Swell Index	IS 2720 (Part 40) – 1977 Reaffirmed – 2016	1% to 90%
		Specific Gravity	IS 2720 (Part-3/Sec-1 & 2) – 1980 Reaffirmed – 2016	1.0 to 3.0
		Light Compaction	IS 2720 (Part 7) – 1980 , Reaffirmed – 2016	
		Maximum Dry Density		1.0 g/cm ³ to 3.00 g/cm ³
		Optimum Moisture Content		1% to 25%
		Heavy Compaction	IS 2720 (Part 8) – 1983 , Reaffirmed – 2015	
		Maximum Dry Density		1.0 g/cm ³ to 3.00 g/cm ³
		Optimum Moisture Content		1 % to 20 %
		California Bearing Ratio	IS 2720 (Part 16) – 1987, Reaffirmed – 2016	1% to 100%
		Direct Shear Test	IS 2720 (Part 13) – 1986, Reaffirmed – 2015	C=Upto 1 kg/cm ² $\phi=5^0$ to 40 ⁰
		Moisture Content	IS 2720 (Part 2) – 1973 , Reaffirmed – 2015	0.1 % to 35 %
III.	MECHANICAL PROPERTIES OF METALS			
1.	Reinforcement / Structural Steel	Ultimate Tensile Strength	IS : 1608 – 2005 Reaffirmed 2011	100 N/mm ² to 700 N/mm ²
		Yield Stress/ 0.2% Proof Stress	IS : 1608 – 2005 Reaffirmed 2011	100 N/mm ² to 700 N/mm ²
		Elongation	IS: 1608-2005 Reaffirmed 2011	5% to 50%

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Certificate Number TC-6470

Page 8 of 8

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		Mass per meter	IS : 1786 –2008 Reaffirmed 2013	0.1 kg/m to 20 kg/m
		Bend Test	IS : 1599 – 2012	Qualitative Mandrel Diameter (8, 10, 12, 16, 18, 22, 24, 28, 32, 40, 48, 56, 60, 64, 80, 84, 100, 112, 125, 140, 160) in mm
		Re-Bend Test	IS : 1786 –2008 Reaffirmed 2013	Qualitative Mandrel Diameter (16, 18, 22, 24, 28, 32, 40, 48, 56, 60, 64, 80, 84, 100, 112, 125, 140, 160, 175, 195, 225) inmm

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