

Laboratory Accurate Metal Test Services, 140, Tejendra Ind. Estate, Cross Road, Odhav, Ahmedabad, Gujarat

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-6342 (in lieu of T-2066 & T-2067)

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Validity 29.09.2017 to 28.09.2019

Last Amended on 19.11.2018

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. METAL & ALLOYS				
1.	Low Alloy Steel Carbon Steel	C	ASTM E 415 IS 8811	0.030% to 1.100%
		Si		0.030% to 2.000%
		Mn		0.100% to 2.50%
		P		0.003% to 0.080%
		S		0.002% to 0.07 %
		Cr		0.050% to 1.50%
		Ni		0.050% to 3.30%
		Mo		0.015% to 0.600%
		Al		0.002% to 0.100%
		Cu		0.050% to 0.400%
		V		0.005% to 0.500%
		N		0.008% to 0.15%
		2.		Stainless steel
Si	0.200% to 1.250%			
Mn	0.300% to 2.000%			
P	0.005% to 0.100%			
S	0.005% to 0.100%			
Cr	5.00% to 26.000%			
Ni	4.50% to 22.000%			
Mo	0.050% to 3.300%			
Cu	0.050% to 1.000%			
Ti	0.050% to 1.250%			
Co	0.050% to 0.250%			
N	0.03% to 0.25%			

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3.	Cast Iron SG Iron	C	IS 15338	2.500% to 4.000%
		Si		1.000% to 3.000%
		Mn		0.050% to 1.200%
		P		0.040% to 0.200%
		S		0.009% to 0.150%
		Cr		0.050% to 1.200%
		Ni		0.050% to 1.500%
		Mo		0.050% to 0.300%
		Cu		0.050% to 0.300%
		Mg		0.040% to 0.075%
4.	Aluminium Alloys	Cu	ASTM E 1251	0.001% to 5.00%
		Mg		0.01% to 2.50%
		Si		0.01% to 18.00%
		Fe		0.05% to 1.50%
		Mn		0.01% to 0.80%
		Ni		0.01% to 4.00%
		Zn		0.01% to 3.50%
		Pb		0.01% to 0.20%
		Sn		0.03% to 0.20%
		Ti		0.01% to 0.20%
	Copper & Copper Alloys	Cr	BSEN 15079	0.01% to 0.40%
		V		0.01% to 0.20%
		Sn		0.001% to 14.00%
		Pb		0.001% to 17.00%
		Zn		0.001% to 40.00%
		Ni		0.001% to 12.00%
		Fe		0.001% to 6.00%
		Al		0.001% to 12.00%
		Sb		0.001% to 0.10%

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		As		0.001 % to 0.06 %
		Bi		0.001 % to 0.75%
		Si		0.001% to 0.60%
		P		0.001% to 0.60%
		Mn		0.001% to 1.00%
	Zinc Coated iron and Steel Products	Mass of Zinc Coating	IS: 6745 ASTM A 90	50 g/m ² to 2000 g/m ²
	Metals & Alloys	PMI Testing Fe, Cu, Ni, Ti, Co, Zn, W, Cr base alloys	ASTM E 1916, ASTM E 1476	Qualitative

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MECHANICAL TESTING

I. MECHANICAL PROPRIETIES OF METALS				
1.	Ferrous & Non-Ferrous Metals	Tensile strength	IS 1608,	6 kN to 600 kN
		Elongation	IS 1786,	5% to 70%
		Yield stress	ASTM A370,	6 kN to 600 kN
		0.2% Proof Stress	ASME Section IX,	6 kN to 600 kN
		Reduction area	IS 3600, Part 3, IS 3600 Part 4, IS 2825	20% to 75%
		Rockwell Hardness	IS 1586 Part-1	55 HRBW to 98 HRBW 21 HRC to 65 HRC
		Brinell Hardness	IS 1500 Part-1	95.5 HBW to 653 HBW (10mm/ 3000kgf), 95.5 HBW to 229 HBW (5/ 750)
		Bend Test	IS 1599, IS 1786, ASME Section IX, ASTM A 370, IS 3600 Part- 5, IS 3600 Part- 6	Qualitative (Mandrel diameter : 8, 12, 16, 20, 24, 28, 30, 34, 42, 48, 60, 74, 80, 90, 100 & 120 mm)
2.	Reinforced TMT Bar	Re-bend test	IS 1786	
3.	Ferrous and Weld Metals	Charpy "V" Notch Impact Test	IS 1757 Part 1, IS 3600 Part-2	2J to 300 J Ambient to (-)196 °C

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4.	Ferrous Tubes, pipes	Flattening & Flaring	IS 2328, IS 2335, ASTM A 1016, ASTM A 999, ASTM A 370, IS 3589	Qualitative (Outer diameter:10 mm to 400 mm, Cone Angle, 60°, 90° & 120°)
6.	Metallic Material-Nuts	Proof Load M8, M10, M12, M16, M20, M24	IS 1367 Part-6, ASTM A192M	Qualitative
7.	Metallic Material-Bolts (Full Size & Machined Test Pieces)	Tensile Strength M8, M10, M12, M14, M16, M18, M20, M22, M24 (Coarse Thread)	IS 1367 Part 3	Qualitative
8.	Double Twisted Hexagonal Wire Mesh Gabions	Tensile Strength, kN/m Dimension Mesh Wire Diameter	IS 16014: 2012, (RA 2017)	10 kN/m to 60 kN/m 50 mm to 150 mm 1 mm to 8 mm
9.	Welded Wire Mesh	Shear Strength for Weld Dimension Mesh Wire Diameter	IS 4948: 2002 (RA 2017) IS 432 (Part 1):1982 IS 432 (Part 2):1982	1kN to 50 kN 5 mm to 200 mm 1 mm to 8 mm
10	GI Wire	Adhesion Test	IS 4826 :1979 (RA 2001)	Qualitative
ii.	METALLOGRAPHY TEST			
1.	SG Iron	Nodule Type, Size & Distribution, Matrix (Pearlite / Ferrite)	IS 7754, IS 1865	Qualitative (100X, 250X, 500X & 1000X)
2.	Ferrous and Weld Metals	Macro Test Nick Break Test	ASME Section IX,	Qualitative

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		Fracture Test	IS 7307 Part-1, IS 3600 Part-8, IS 3600 Part 9	
3.	Carbon Steel, Alloy Steel & Stainless Steel	Grain Size	ASTM E 112	Qualitative (ASTM No.1 to 10 at 100X)
4.	Cast Iron & Steel	Micro Structure	ASTM E 407 e1, ASM Handbook Volume-09	Qualitative (100X, 250X, 500X & 1000X)
III. BUILDING MATERIALS				
1.	Coarse Aggregate	Sieve analysis/Gradation	IS 2386 (Part-1):1963 (RA 2016)	63mm to 2.36mm
		Specific gravity	IS 2386 (Part-3):1963 (RA 2016)	1.00 to 4.00
		Water absorption	(RA 2016)	0.1 % to 5 %
		Flakiness index	IS 2386 (Part-1):1963 (RA 2016)	1.00 % to 70.00 %
		Elongation index	(RA 2016)	1.00 % to 70.00 %
		Aggregate impact value	IS 2386 (Part-4):1963, (RA 2016)	1 % to 50 %
		Aggregate crushing value	(RA 2016)	1 % to 50 %
		Los angeles abrasion value		1 % to 50 %
2.	Fine Aggregate (Sand)	Fineness modulus by gradation (0.063 to 4.75 mm)	IS 2386 (Part-1):1963, (RA 2016)	10mm to 150µm
		Specific gravity	IS 2386 (Part-3):1963 (RA 2016)	1.00 to 4.00
		Water absorption	(RA 2016)	0.1 % to 5 %
		Material Finer than 75 micron	IS 2386 (Part-1):1963, (RA 2016)	0.1 % to 25 %

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3.	Bricks	Dimension	IS 1077:1992 (RA 2016)	1 mm to 5000 mm
		Compressive strength	IS 3495 (Part-1):1992 (RA 2016)	1 N/mm ² to 55 N/mm ²
		Water absorption	IS 3495 (Part-2):1992 (RA 2016)	1.0 % to 50.0 %
		Efflorescence	IS 3495 (Part-3):1992 (RA 2016)	Visual assessment
4.	Bitumen	Softening Point	IS 1205:1978, (RA 2009)	5 °C to 100 °C
		Penetration	IS 1203:1978, (RA 2009)	1 to 400 (1/10 mm)
		Ductility	IS 1208:1978, (RA 2009)	1.0 cm to 100 cm
		Specific gravity	IS 1202:1978, (RA 2009)	0.990 to 2
		Loss on heating	IS 1212:1978, (RA 2009)	0.1 % to 100 %
5.	Bituminous mix	Marshall Stability	ASTM D 6927:2015	0.1 kN to 25 kN
		Flow Test	ASTM D 6927:2015	0.01 mm to 6.0 mm
6.	Concrete/ Paver block	Compacted density of mix	ASTM D 2726:2014	1.00 g/cm ³ to 4.00 g/cm ³
		Compressive strength	IS 15658:2006, (RA 2016)	5 N/mm ² to 85 N/mm ²
		Water absorption	IS 15658:2006, (RA 2016)	0.1 % to 25.0 %
7.	Cement	Consistency	IS 4031 (Part-4):1988 (RA 2014)	20 % to 40 %
		Initial setting time	IS 4031 (Part-5):1988, (RA 2014)	5 min. to 300 min.
		Final setting time	IS 4031 (Part-5):1988, (RA 2014)	5 min. to 600 min.
		Compressive strength	IS 4031 (Part-6):1988, (RA 2014)	10 N/mm ² to 80 N/mm ²
		Soundness by Le-chatelier methods	IS 4031 (Part-3):1988, (RA 2014)	0.5 mm to 10 mm
		Fineness by blaine air permeability	IS 4031 (Part-2):1999, (RA 2013)	150 m ² /kg to 600 m ² /kg

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8.	Hardened concrete-concrete cubes and beam	Compressive Strength	IS 516:1959 (RA 2013)	10 N/mm ² to 85 N/mm ²
		Flexural strength of beam	IS 516:1959 (RA 2013)	1 N/mm ² to 15 N/mm ²
9.	Fresh concrete	Slump test	IS 1199:2005 RA 2008	1 mm to 300 mm
IV.	SOIL & ROCKS			
1.	Soil	Gradation [Grain size analysis) (0.063/0.075 to 125.0 mm)]	IS 2720 (Part-4):1985, (RA 2015)	125mm to 75µm
		Liquid Limit (Cone penetrometer)	IS 2720 (Part-5):1985, (RA 2015)	15 % to 150 %
		Plastic Limit		
		Light Compaction	IS 2720 (Part-7):1980, (RA 2011)	MDD 1.2 g/cc to 2.50 g/cc OMC 0.1 % to 30.0 %
		Heavy compaction	IS 2720 (Part-8):1983 (RA 2015)	MDD 1.40g/cc to 2.90g/cc OMC 3.0 % to 30.0 %
		California Bearing Ratio	IS 2720 (Part-16):1985, (RA 2011)	1 % to 60 %
		Direct shear	IS 2720 (Part-13):1985, (RA 2011)	C = 0.02 kg/cm ² to 1.0 kg/cm ² Φ = 20 ° to 50 °
		Specific gravity	IS 2720 (Part-3), Section-1 and 2:1980, (RA 2011)	0.50 to 3.0
		Consolidation Test	IS 2720 (Part-15):1965, (RA 2016)	0.1 kg/cm ² to 8 kg/cm ²
	Shrinkage Limit	IS 2720 (Part-6):1972, (RA 2011)	5 % to 20 %	

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