

Laboratory **Bhoj Geotech Laboratory, A-7, Sakshi Bunglow, Mahakali Society,  
E-8, Trilanga, Bhopal, Madhya Pradesh**

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

Certificate Number **TC-7590 (in lieu of T-4012)**

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Validity **16.06.2018 to 15.06.2020**

Last Amended on **14.12.2018**

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
<b>CHEMICAL TESTING</b>				
1.	<b>METALS &amp; ALLOYS</b>			
1.	<b>Low Carbon, Medium Carbon Steel</b>	Carbon	IS 228 (Part-1) 1987 RA 2018	0.1% to 0.50 %
		Sulphur	IS 228 (Part -9) 1989 RA 2014	0.01% to 0.045%
		Phosphorus	IS 228 (Part -3) 1987 RA 2018	0.01% to 0.045%
		Manganese	IS 228 (Part -2) 1987 RA 2018	0.10% to 1.0%
2.	<b>Metallic Coatings</b>	Mass of Zinc Coating ( )	IS 6745: 1972 RA 1994	10 g/m <sup>2</sup> to 1000 g/m <sup>2</sup>
		Uniformity of Zinc Coating	IS 2633: 1986 RA 2006	Qualitative
		Electroplated Zinc Coating Thickness	IS 1573: 1986 RA 2016	0.5 micron to 250 micron

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<b><u>ELECTRICAL TESTING</u></b>				
<b>I.</b>	<b>TRANSMISSION LINE EQUIPMENT &amp; ACCESSORIES</b>			
<b>1.</b>	<b>CONDUCTOR</b>			
<b>1.</b>	<b>Aluminium Conductors, overhead Transmission Purposes:</b>	Dimensional Measurement	IS 398 (Part.1&Part.2) (CI-13.2)1996,RA 2002 IS 398 (Part.4) 1994, RA 2004	1.0 mm-150mm
<b>2)</b>	<b>Aluminium Stranded Conductors</b>			
	<b>Aluminium Conductors, Galvanized Steel Reinforced</b>	Tensile Strength / Breaking Load Test	IS 398 (Part.1 & Part.2) (CI-13.3)1996,RA 2002 IS 398 (Part.4)1994, RA 2004 IS 398 (Part.5)1992, RA 2002	1 kN-25 kN
<b>3)</b>	<b>Aluminium Alloy Stranded Conductors</b>	Resistance Test	IS 398(Part.1&Part.2) (CI-13.6)1996,RA 2002 IS 398(Part.4)1994, RA 2004	0.05mΩ to 19.99 mΩ
		Lay Ratio	IS 398(Part.1&Part.2) (CI- 10.2, 10.3 & 13.2) 1996,RA 2002 IS 398(Part.4)1994, RA 2004	1 to 50
		Wrapping Test	IS 398(Part.1&Part.2) (CI- 13.5)1996,RA 2002 IS 398 (Part.4)1994, RA 2004	Qualitative

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		Elongation Test	IS 398(Part.1&Part.2) (CI-13.3) 1996,RA 2002 IS 398(Part.4)1994, RA 2004	1 kN to 25 kN
<b>2</b>	<b>Insulators</b>	Dimension	IEC: 61109: 2008	1mm to 300mm
	<b>a) Pin Insulator (Upto 33KV)</b>	Tensile Strength	IEC: 61109: 2008	10 kN to 800 kN
	<b>b) Disc Insulator (upto 33KV)</b>	Load Test	IEC: 61109: 2008	10 kN to 800 kN
		Dry Power Frquency Voltage Test	IEC: 61109: 2008	1 kV to 100 kV
<b>3</b>	<b>Lightning Arrester Upto 11KV</b>	Dimension	IEC: 60099 (Part-4) 2014	1 mm to 300mm
		Dry Power Frquency Voltage Test		1 kV to 100kV

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<b><u>MECHANICAL TESTING</u></b>				
<b>I.</b>	<b>METALS &amp; METALLIC PROPERTIES</b>			
1.	<b>High Strength Deformed /Galvanizing Steel Bars /Rolled Steel</b>	Cross Section Area	IS 1608: 2005, RA 2013	28.26 mm <sup>2</sup> to 495 mm <sup>2</sup>
		Mass per Meter	IS 1786:2008, RA 2013	0.1 kg/m to 9.5 kg/m
		Tensile Strength	IS 1608: 2005, RA 2013	100 N/mm <sup>2</sup> to 800 N/mm <sup>2</sup> (Upto 20 mm TMT bar)
		Yield Stress	IS 1608: 2005, RA 2013	100 N/mm <sup>2</sup> to 800 N/mm <sup>2</sup> (Upto 20 mm TMT bar)
		Elongation	IS 1608: 2005, RA 2013	10 % to 40 %
		Bend Test	IS 1599: 1985, RA 2012	Mandrel Diameter in mm (24, 30, 32, 36, 40, 48, 64, 66.80, 100, 125, 128, 160)
		Rebend Test	IS 1786:2008, RA 2012	Mandrel Diameter in mm (40, 50, 84, 112, 140, 175, 224)
<b>II.</b>	<b>BUILDING MATERIALS</b>			
1.	<b>Brick Clay/ Fly Ash Bricks</b>	Compressive Strength	IS 3495(Part-1) 1992, RA 2011	2.0 N/mm <sup>2</sup> to 15 N/mm <sup>2</sup>
		Water Absorption	IS 3495(Part-2) 1992, RA 2011	1 % to 35 %
		Efflorescence	IS 3495(Part-3) 1992, RA 2011	Qualitative
		Dimension	IS 1077: 1992, RA 2011	Length:4500 mm to 4700 mm Width: 2000 mm to 2300 mm Height: 1200 mm to 1500 mm

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2.	<b>Cement Testing (OPC/PPC/PSC)</b> <b>Cement Testing (OPC/PPC/PSC)</b>	Standard Consistency	IS 4031 (Part-4)1988, RA 2005	20 % to 40 %
		Initial Setting Time	IS 4031 (Part-5)1988, RA 2005	30 Minute to 300 Minute
		Final Setting Time	IS 4031 (Part-5)1988, RA 2005	100 Minute to 600 Minute
		Soundness by Le-chatelier method	IS 4031 (Part-3)1988, RA 2005	0.1 mm to 10mm
3.	<b>Coarse Aggregate</b>	Sieve Analysis	IS 2386 (Part -1) 1963 RA 2011	4.75 micron to 80 mm
		Flakiness Index	IS 2386 (Part -1) 1963 RA 2011	2 % to 40 %
		Elongation Index	IS 2386 (Part -1) 1963 RA 2011	2 % to 40 %
		Crushing Value	IS 2386 (Part -4) 1963 RA 2011	1 % to 60 %
		Impact Value	IS 2386 (Part -4) 1963 RA 2011	1 % to 60 %
		Specific Gravity	IS 2386 (Part -3) 1963 RA 2011	2.5 to 3.5
		Water Absorption	IS 2386 (Part -3) 1963 RA 2011	0.1 % to 5%
		Bulk Density	IS 2386 (Part -3) 1963 RA 2011	0.1 g/cc to 3 g/cc
4.	<b>Fine Aggregate</b>	Sieve Analysis	IS 2386 (Part -1) 1963 RA 2011	75 micron to 10 mm
		Specific Gravity	IS 2386 (Part -3) 1963 RA 2011	2.5 to 3.5
		Water Absorption	IS 2386 (Part -3) 1963 RA 2011	0.1 % to 5%
		Specific Gravity	IS 2386(Part-3)-1963, RA 2002 Clause No.-2	2.0 to 4.0

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		Bulk Density	IS 2386 (Part-3)- 1963, RA 2002 Clause No.-2	1 g/cc to 3 g/cc
5.	Concrete	Slump (Fresh Concrete)	IS 1199:1959 RA 2004	Upto 200 mm
6.	Concrete Paver Block	Compress Strength	IS 15658-2006 RA 2011	5 MPa to 80 MPa
		Water Absorption	IS 15658-2006 RA 2011	1 % to 25 %
		Dimensions	IS 15658-2006 RA 2011	50 mm to 300 mm
7.	Hardened Concrete	Compress Strength	IS 516	1000 MPa
III.	SOIL & ROCK			
1.	Soil	Liquid limit Plastic limit	IS 2720 (Part-5)1985, RA 2006	LL: 20 % to 80 % PL: 5 % to 60 %
		Moisture Content	IS 2720 (Part-5)1973, RA 2006	Upto 50 %
		Light Compaction	IS 2720 (Part-7)1980, RA 2005	MDD:1.0 g/cc to 2.5 g/cc OMC:1.0 % to 20 %
		Heavy Compaction	IS 2720 (Part-7)1980, RA 2002	MDD:1.0 g/cc to 2.5 g/cc OMC:1.0 % to 20 %
		California Bearing Ratio (CBR)Test	IS 2720 (Part-7)1987, RA 2002	1.0 % to 80.0 %
2.	Rock	Compress Strength	IS 9143:1947	10 kg/cm <sup>2</sup> to 1500 kg/cm <sup>2</sup>