Laboratory	**Geological & Metallurgical Laboratories, 105x, 3rd Main, 3rd Cross, II Stage, Yeshwanthpur Industrial Suburb, Goreguntepalya, Bangalore, Karnataka**		
Accreditation Standard	**ISO/IEC 17025: 2005**		
Discipline	**Mechanical Testing**	**Issue Date**	**05.02.2015**
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S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
I. MECHANICAL PROPERTIES OF MATERIALS				
1.	**Ferrous and non-ferrous alloys (wrought and cast products) (rounds upto 70mm dia, flats upto 65mm thick)**	Tensile test Tensile Strength 0.2% Proof Stress 0.2% Offset Yield Strength, % Elongation % Reduction in area Wt/m	IS 1608:2005 (RA 2006) IS 1786: 2008 ASTM E8/E8M: 13a ASTM A370: 14 Sec. 6: 14 EN10002-1: 2001 BS970: 1955	Upto 50 kN/ 0.0025 kN Upto 200 kN/ 0.02 kN Upto 1000 kN/ 0.05 kN % Elongation : 0.5 % to 85.0 % % Reduction in area: 2.0 % to 85.0 %
2.	**Ferrous and non-ferrous alloys and hard metals, Welded joints**	Vickers Hardness test	ASTM E384: 11 IS 1501: 2002 IS 12783: 1989 DTH-EN 1043-1	100 HV to 1100 HV 0.05 100 HV to 1100 HV 0.1 30 HV to 1000 HV 0.2 100 HV to 1000 HV 0.3 100 HV to 1000 HV 0.5 30 HV to 1000 HV 1 30 HV to 1000 HV 5 30 HV to 900 HV 10 50 HV to 700 HV 30
3.	**Ferrous and non-ferrous alloys**	Brinell Hardness test	IS 1500: 2005 ASTM A370: 14 Sec.17 ASTM E10:12	100 HBW to 500 HBW 2.5 mm/187.5 kg 30 HBW to 200 HBW 2.5 mm/62.5 kg 20 HBW to 100 HBW 2.5 mm/31.25 kg
		Rockwell hardness (HRB/HRC)	IS 1586 (Part 1): 2012 (RA 2006) ASTM A370: 14 (Sec.18) ASTM E18: 11	30 HRB to 100 HRB 20 HRC to 65 HRC

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4.	**Ferrous and non-ferrous alloys (for wrought & cast products) (on flats upto 50 mm thick, rounds upto50mm dia)**	Bend Test	IS 1599: 1985 (RA 2006) IS 1786: 2008, ASTM A370: 14 (Sec.15)	210 mm
5.	**Reinforcement steel (upto 36mm)**	Rebend test	IS:1786: 2008	Upto Dia 216 mm
6.	**Metallic wires (0.3 to 10mm dia)**	Reverse bend test	IS 1716: 1985(RA 2006)	0.3 mm to 11.0 mm
7.	**Steel tubes**	Flattening test	IS 2328: 2005, ASTM A 530M: 04a	300 mm max
		Crushing test	IS 3074: 2005 (Rev 2) (Clause 8.3)	100 mm max
		Drift expansion test	IS 2335: 2005	80 mm max
		Charpy (room temperature and low temperature upto -50^{0} C)	(Charpy U) IS 1499: 1977 (RA 2009) (Charpy V) IS 1757: 1988 (RA 2009) ASTM E 23: 12c BS EN10045: 1:1990 ASTM A 370: 14 (Sec..20,29)	Charpy : Upto 300 J/ 2 J
		Izod impact test	(Izod) IS 1598: 1977 (RA 2009)	Izod : Upto 168 J/2 J

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8.	**Welded and brazed products**	Tensile Impact Bend tests Fillet break test	ASME Sec. IX –2009 b and IS:3600 (Part 4): 1984 (RA 2006) IS:3600 (Part 3) 2009 IS:3600 (Part 2): 1985 (RA 2008) IS:3600 (Part 5): 1983 (RA2006) IS:3600 (Part 6): 1983 (RA 2008) IS:3600 (Part.7): 1985 (RA 2008) IS:3600 (Part 8): 1985 (RA 2008) DIN EN ISO 15614-1: 2008: 09	For tensile test: Upto 50 kN (0.0025 kN) Upto 200 kN (0.02 kN) Upto 1000 kN (0.05 kN) Bend test : 210 mm
9.	**Helical compression springs**	Static load test in compression	IS:7906 (Part 2): 1975 (RA 2009) (Clause7.1)	load: 100 kN max.
10.	**Steel tubes and plates**	Dimensional Inspection	IS: 4923: 1997 (RA2009) IS: 1239(Part 1): 2004 (RA 2009)	Thickness : 25 mm OD : 500 mm Weight : 60 kg
11.	**Welded wire mesh**	Dimensional Inspection	IS 1566: 1982 (RA2009)	Wire dia: 25mm Mesh dimensions: 200 mm Weight : 60kg
II. METALLOGRAPHY TEST				
1.	**Ferrous forgings, rolled products and castings, copper and aluminium alloys and welded joints**	Macrostructural analysis by visual and low magnification examination Photo-macrography	ASTM E340: 13 ASTM E 381: 01 (2006) IS 7739 : 1975 IS 13015: 1991 (RA 2007) IS 11371: 1985 (RA 2007) IS 12573: 1988 (RA 2007) IS 3600 (Part 9): 1985 (RA 2008) ASME SEC IX-2011a DIN EN-ISO 15614-1: 2008: 09 (Clause 7.4.4) DIN EN1321: 1996(E)	Upto 50x Magnification

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2.	**Ferrous, Non Ferrous**	Microstructural analysis Photo micrographs	IS 7739: 1975/76 & IS 7754 : 1975(RA 2007) IS 11959: 1987 (RA 2009) IS 3600 (Part 9): 1985 (RA 2008) ASM Vol 9: 2004 ASTM E3: 11	25 x to 1000 x
		Grain size / austenitic grain size by comparative method	IS 4748: 2009 (Clause 7.1.2) IS 4748: 1988 (Clause 8) (RA 2007) ASTM E112 13 (Clause10)	100 x
3.	**Case hardened steels**	Case depth by hardness and microscopic methods	IS 6416: 1988 (RA 2007) (Clause 5) & (Clause 8)	100 x, Upto 4 mm 0.1 mm , (microscopic) 0.05 mm (hardness method)
4.	**Steel products**	Inclusion rating, Method 'A'	IS:4163: 2004 ASTM E45: 13	100 x
		Depth of decarburized layer by Microscopic Method	IS 6396: 2000 (RA 2007) (Clause 6 and 8)	100 x, Upto 4 mm /0.01 mm (microscopic) 0.05 mm (hardness method)
5.	**Metallic/non-metallic coatings on iron base, copper base, aluminium base, etc**	Coating thickness by microscopic method	IS 3203: 1982 (Clause 3) (RA 2006) IS 101 (Part 3): 1989(Sec.2) (RA 2004) IS 5523: 1983 (RA2010) (Clause 2.2)	1000 microns / 1 micron

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6.	**Austenitic stainless steels**	Inter granular corrosion test	Practice A, of ASTM A262 : 14	250 x & 500 x
			Practice B & C of ASTM A262: 14	200 g/ 0.1 mg
			Practice E of ASTM A262: 14	1 t & 4 t/ 180º Bend
7.	**Thin surface hardened steels**	Total case depth / compound (white) layer thickness	IS 13691: 1993(RA 2007) (Clause 2.1)	0.3 mm / 1 micron

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