

Laboratory	Urja Metallurgical Services, J/P-15, Telco-Bhosari Road, MIDC, Bhosari, Pune, Maharashtra		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Mechanical Testing	Issue Date	18.09.2014
Certificate Number	T-2336	Valid Until	17.09.2016
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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, Aluminum & Copper Materials	Brinell Hardness	IS 1500 : 2005	96 HBW to 450 HBW 30 HBW to 450 HBW
		Rockwell & Rockwell Superficial Hardness	IS 1586 : 2000	20 HRA to 88 HRA 20 HRB to 100 HRB 20 HRC to 70 HRC 67 HR 15T to 93 HR 15T 29 HR 30T to 82 HR 30T 30 HR 45T to 70 HR 45T
		Vickers Hardness	IS 1501 : 2002	50 HV5 to 750 HV5 50 HV10 to 750 HV10 150 HV30 to 750 HV30
2.	Metallic Materials	Erichsen Cupping Test	IS 10175 : 1993	0.5 mm to 2 mm
3.	Ferrous Materials	Impact Test - Charpy (V & U Notch) 35° C to sub-zero temp. (-50° C)	IS 1757 : 1988 IS 1499 : 1977 ASTM A 370 - 2011 ASTM E 23	0 to 300 J
4.	Metallic Tubes	Flattening Test	IS 2328 : 2005	Qualitative (1000 kN 6 mm to 500 mm OD)

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5.	Ferrous, Aluminum & Copper Materials	Tensile Test	IS 1608 : 2005	0 to 1000 kN
		Ultimate Tensile Stress		
		Yield Stress	ASTM A 370 - 2011	0 to 1000 kN
		0.2 & 0.6 % Proof Stress		
		% Elongation		
		% Reduction in area		4 % to 70 %
Compression Test		0 to 1000 kN		
	Drift Expansion test/ Flaring test	IS 2335 : 2005	Qualitative (Max tube OD : 150 mm Thickness : 10 mm)	
6.	Ferrous, Aluminum & Copper Metals	Bend Test	IS 1599 : 1985	Qualitative Mandrel Dia : (5, 6, 7, 8, 10, 12, 14, 15, 16, 18, 20, 24, 28, 30, 32, 36, 40, 42, 44, 48, 50, 54, 56, 60, 66, 75, 80, 84, 90, 96, 100, 120, 150) mm
			ASTM A 370 - 2011	
7.	Ferrous Materials	Hardenability of steel by end quench or Jominy test	IS 3848 : 1981	20 HRC to 65 HRC at 30 kg load

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II. METALLOGRAPHY TEST				
1.	Steels	Grain Size Ferritic grain size	ASTM E 112 - 2010	Qualitative (1 to 9)
		Austenite grain size in hardened & tempered Steel	IS 4748 : 2009	Qualitative (Magnification : 100X)
		Austenite grain size in austenite SS		
		Micro structural analysis	ASM handbook Vol-09, 9 th printing March 2000	Qualitative (Magnification : 100X, 400X)
		Non Metallic Inclusion Rating	IS 4163 : 2004 ASTM E 45 - 2010	Qualitative (Types A, B, C and D Magnification : 100X)
		Total Case Depth Measurement by Microscopic & Micro Hardness Method	IS 6416 : 1988	0.1 mm to 3 mm
		Measuring Decarburized Depth of Steel by Microscopic & Micro Hardness Method	IS 6396 : 2000	0.05 mm to 0.5 mm
2.	Ferrous, Aluminum & Copper Materials	Micro Hardness Test	IS 1501 : 2002 ASTM A 370 - 2011	Upto 1000 HV1 (1 HV1) Upto 1000 HV0.5 (1 HV0.3) Upto 900 HV0.2 (1 HV0.2)

