

<b>Laboratory</b>	<b>Advanced Metallurgical Laboratory, #18 &amp; 18/1, (Old No. 118/193) Peenya 1<sup>st</sup> Stage, Tumkur Road, Peenya, Bangalore</b>		
<b>Accreditation Standard</b>	<b>ISO/IEC 17025: 2005</b>		
<b>Discipline</b>	<b>Mechanical Testing</b>	<b>Issue Date</b>	<b>26.08.2013</b>
<b>Certificate Number</b>	<b>T-1652</b>	<b>Valid Until</b>	<b>25.08.2015</b>
<b>Last Amended on</b>	<b>-</b>	<b>Page</b>	<b>1 of 2</b>

<b>S.No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
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#### **I. METAL & METAL PRODUCTS**

<b>1. Metallic Materials</b>	Tensile strength Yield Stress /0.2% Proof Stress % Elongation % Reduction in area	IS: 1608-2005, RA 2010 ASTM E8M-09 ASTM A370-12 ASME Sec IX-2010	400 kN / 0.04kN 600kN / 0.06 kN
	Hardness HBW HBW 2.5/ 187.5	IS: 1500 -2005, RA2010	Load 1.839kN(187.5Kg) 100 to 400 HBW
	Rockwell Hardness Testing	IS: 1586 -2000, RA 2010	Rockwell B & C 50 to 100 HRB 25 to 68 HRC
	Bend test	IS: 1599-1985, RA 2010 IS: 2329-2005	400 kN / 0.04kN 600kN / 0.06 kN Thickness: 1 to 35 mm Dia: 1 to 50 mm
	Charpy Impact Testing	IS: 1499-1977, RA 2009 IS: 1757-1988, RA2009	2 to 300 J LC 2 J Ambient temp and Upto -50 °C
	Izod Impact Testing	IS: 1598-1977, RA 2009	2 to 170 J LC 2 J Ambient temp
<b>2. Weld Samples</b>	Bend test	IS: 7307-1974, RA 2008 ASME SEC IX 2010	400 kN/ 0.04kN 600kN/ 0.06 kN Thickness: 1to 35 mm

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<b>3.</b>	<b>Metallographic Test</b>	Macrostructure Analysis	IS: 11371-1985, RA 2007 IS: 13015-1991, RA 2007 ASTM E 340-00 ASTM E 381-01	Visual 45X
		Microstructure analysis	IS: 7739 (Pt- 1)1975, RA 2010, IS: 7739 (Pt- 3 & 4) RA2007, IS: 7739 (Pt-5) 1976, RA2007, IS: 7739 (Pt 7, 8, 10 & 11) 1975, RA 2007, ASM Metal Hand Book Volume 9	Magnification: 50x, 100x, 200x, 500x, 1000x
		Grain size of steel	IS: 4748-2009	IS No. 1-10@ Magnification: 100x
		Inclusion rating of steel	IS: 4163-2004, RA 2010	0.5 – 5 @ Magnification: 100x
		Graphite flake Type & size	IS: 7754-1975, RA 2007	A-E, 1-8 @ Magnification: 100x
		Total case depth by microscopic method	IS: 6416-1988, RA 2007	Upto 2.0 mm
		Depth of decarb	IS: 6396-2000	
		Measurement of coating thickness by microscopic method	IS: 3203-1982, RA 2010 IS: 13677-93, RA 2010	5-200 microns @ Magnification: 100x, 200x, 500x, 1000x
		Micro Vickers hardness testing	IS: 1501-2002, RA 2007	Magnification: 100x, 400x
Case depth by hardness survey method	IS: 6416-1988, RA 2007	Upto 5.0 mm Load 100, 500,1000 gm		

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