

Laboratory **Nepptune Metallurgical Laboratories, 3, 'C' Wing, 1st Floor, Ashoka Vihar, XLO Point, MIDC, Ambad, Nashik, Maharashtra**
Location 1: 3, 'C' Wing, 1st Floor, Ashoka Vihar, XLO Point, MIDC, Ambad, Nashik, Maharashtra
Location 2: Gala No. W-2, Ground Floor, Ashoka Vihar, XLO Point, MIDC, Ambad, Nashik, Maharashtra

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

Certificate Number **TC-6569**

Page 1 of 6

Validity **25.07.2018 to 24.07.2020**

Last Amended on --

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

Location-1				
I.	METALS & ALLOYS			
1.	Carbon & Low Alloy Steels	Carbon (C) Silicon (Si) Manganese (Mn) Sulphur (S) Phosphorus (P) Chromium (Cr) Nickel (Ni) Molybdenum (Mo) Aluminium (Al) Copper (Cu) Vanadium (V) Lead (Pb) Boron (B)	IS 8811: RA-2018 ASTM E415-2017	0.005 % to 1.50 % 0.050 % to 2.00 % 0.050 % to 2.00 % 0.008 % to 0.50 % 0.010 % to 0.10 % 0.050 % to 5.00 % 0.050 % to 3.50 % 0.020 % to 0.60 % 0.020 % to 0.15 % 0.010 % to 0.50 % 0.005 % to 0.30 % 0.005 % to 0.50 % 0.0005 % to 0.20 %
2.	Stainless Steels	Carbon (C) Silicon (Si) Manganese (Mn) Sulphur (S) Phosphorus (P) Chromium (Cr) Nickel (Ni) Molybdenum (Mo) Copper (Cu)	IS 9879: RA-2015 ASTM E1086-14	0.005 % to 0.30 % 0.005 % to 1.00 % 0.010 % to 2.00 % 0.001 % to 0.10 % 0.002 % to 0.10 % 5.000 % to 30.00 % 5.000 % to 20.00 % 0.010 % to 3.50 % 0.010 % to 3.00 %

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3.	Tool Steels	Carbon (C)	JIS G1253:2013	0.050 % to 2.50 %
		Manganese (Mn)		0.050 % to 2.00 %
		Phosphorus (P)		0.005 % to 0.10 %
		Chromium (Cr)		0.500 % to 12.50 %
		Molybdenum (Mo)		0.050 % to 6.00 %
		Copper (Cu)		0.050 % to 0.50 %
		Vanadium (V)		0.005 % to 2.50 %
		Cobalt (Co)		0.050 % to 0.50 %
		Tungsten (W)		0.010 % to 1.00 %
4.	Copper & it's alloys	Tin (Sn)	BS EN 15079:2015	0.050 % to 5.00 %
		Lead (Pb)		0.050 % to 5.00 %
		Zinc (Zn)		0.050 % to 45.00 %
		Iron (Fe)		0.030 % to 4.50 %
		Aluminium (Al)		0.010 % to 12.50 %
		Nickel (Ni)		0.010 % to 5.00 %
		Beryllium (Be)		0.0001 % to 2.00 %
		Cobalt (Co)		0.010 % to 0.50 %
5.	Aluminum & it's alloys	Copper (Cu)	IS 11035-1984	0.05 % to 5.00 %
		Silicon (Si)	IS 7658-1975	0.05 % to 15.00 %
		Iron (Fe)		0.05 % to 1.00 %
		Manganese (Mn)		0.02 % to 1.50 %
		Nickel (Ni)		0.01 % to 0.50 %
		Zinc (Zn)		0.05 % to 1.50 %
		Magnesium (Mg)		0.05 % to 4.50 %
		Lead (Pb)		0.01 % to 2.00 %
		Titanium (Ti)		0.02 % to 0.30 %
Chromium (Cr)		0.05 % to 2.00 %		
6.	Zinc & it's	Aluminum (Al)	IS 2599 : 1983	0.01 % to 5.50 %

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Certificate Number **TC-6569**

Page 3 of 6

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	alloys	Magnesium (Mg)		0.005 % to 0.50 %
		Iron (Fe)		0.005 % to 0.50 %
		Copper (Cu)		0.01 % to 3.50 %
		Lead (Pb)		0.01 % to 1.00 %
		Cadmium (Cd)		0.002 % to 0.50 %

Battal Singh
Convenor

N. Venkateswaran
Program Manager

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Page 4 of 6

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<u>MECHANICAL TESTING</u>				
<u>Location-1</u>				
1.	MECHANICAL PROPERTIES OF METALS			
1.	Metallic Materials	Rockwell Hardness Test	IS:1586-2012 (Part 1)	20 HRA to 88 HRA 20 HRBW to 100 HRBW 20 HRC to 70 HRC
2.	steel products	Macro test	IS 13015:1991 (RA 2007) IS 11371:1985 (RA 2007)	At 10X Visual
		Non Metallic Inclusions	IS 4163:2004 (ISO 4967:1998)	100X, Types A B C D, Thin /Thick 1 to 3 Comparison method
		Total Case Depth	IS 6416:1988	At 100X 0.1mm to 3.0mm Microscopic method
		Average Grain Size	IS 4748:2009 ASTM E112:2013	ASTM no. 1 to 10 at 100X Visual Comparison method
		Microstructure Analysis	ASM Handbook vol 9 ASTM E562-11	At 50X, 100X, 450X
3.	Cast Iron Products	Determination of Graphite type & size	IS 7754:1975	At 100X Visual Microscopic Method

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Page 5 of 6

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<u>MECHANICAL TESTING</u>				
<u>Location-2</u>				
I. MECHANICAL PROPERTIES OF METALS				
1.	Metallic Materials (Steels)	Tensile Test: -	IS 1608: 2005 (RA 2017)	8 kN to 400 kN -2
		UTS	ASTM A370-17,	100 Mpa to 1800 Mpa
		Ys	ASTM E8/E8M-16a.	100 Mpa to 1500Mpa
		0.2% P.S. with Extensometer		100 Mpa to 1500Mpa
		% of Elongation		2% to 80%
2.	Metallic Materials Tubes / Pipes	Flattening Test	IS 2328: 2005 , ASTM A370-17,	Upto OD 600 mm (Qualitative)
		Drift Expanding Test	IS 2335: 2005, ASTM A370-17,	Upto OD. 150 mm Angle of Mandrel 60°
3.	Metallic Materials	Bend Test	IS 1599: 2012 (RA2017), ASTM A370-17,	Mandrel Dia. 10,20,24,30,40,60, 80mm (Qualitative)
		Brinell Hardness Test	IS 1500-2013 (Part 1).	100 HBW to 600 HBW 2.5/187.5
				100 HBW to 600 HBW 10/3000
		Charpy 'V' Notch Impact Test (25 °C to -50 °C)	IS 1757:part 1:2014	2J to 300J
		Proof Load test on Threaded Steel Fasteners-Nuts, Bolts,	IS 1367(Pt 6):1994 (ISO 898-2:1992) IS 1367(Pt 6):1994	8kN to 400 kN load LC:200N

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Page 6 of 6

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4.	Metallic Materials Welded Coupon Tests-Butt Joint	Screw & Studs	(ISO 898-2:1992)	
		Transverse Tensile test	QW 150 & QW 160 OF	8 kN to 400 kN Load
		Transverse Bend test	ASME SECTION IX – 2017	LC: 200N Mandrel Dia 40mm (Visual)
		Fracture Test	QW 180 OF ASME	Visual
		Macro Etch test	SECTION IX – 2017	Visual