Laboratory		Urja Metallurgical Sei Pune, Maharashtra	Urja Metallurgical Services, J/P-15, Telco-Bhosari Road, MIDC, Bhosari, Pune, Maharashtra				
Accreditation Standard		d ISO/IEC 17025: 2005					
Dis	scipline	Mechanical Testing	Mechanical Testing T-2336		18.09.2014		
Се	rtificate Number	T-2336			17.09.2016		
Last Amended on		-	-		1 of 4		
S.No	 Product / Material of Test 	Specific Test Performed	Test Method Specification against which tests are performed	n Range Limits o	of Testing / of Detection		
I.	MECHANICAL PRO	PERTIES 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 20 HRB to 20 HRC to 767 HR 15T 29 HR 30T 30 HR 45T	88 HRA 100 HRB 70 HRC to 93 HR 15T to 82 HR 30T to 70 HR 45T		
		Vickers Hardness	IS 1501 : 2002	50 HV5 to 7 50 HV10 to 150 HV30 t	750 HV5 750 HV10 o 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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Accreditation StandardISO/IEC 17025: 20DisciplineMechanical TestinCertificate NumberT-2336		d ISO/IEC 17025: 2005					
		Mechanical Testing		Issue Date	18.09.2014 17.09.2016		
		T-2336		Valid Until			
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5.	Ferrous, Aluminum & Copper Materials	Tensile Test Ultimate Tensile Stress	IS 1608 : 2005	0 to 1000 kl	Ň		
		Yield Stress 0.2 & 0.6 % Proof Stress	ASTM A 370 - 2011	0 to 1000 kl	N		
		% Elongation		1 % to 65 %	,		
		% Reduction in area		4 % to 70 %			
		Compression Test		0 to 1000 kl	Ν		
		Drift Expansion test/ Flaring test	IS 2335 : 2005	Qualitative (Max tube C Thickness :	DD : 150 mm 10 mm)		
6.	Ferrous, Aluminum & Copper Metals	Bend Test	IS 1599 : 1985 ASTM A 370 - 2011	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			
7.	Ferrous Materials	Hardenability of steel by end quench or Jominy test	IS 3848 : 1981	20 HRC to at 30 kg loa	65 HRC d		

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Accreditation Standard		d ISO/IEC 17025: 2005	ISO/IEC 17025: 2005				
Disc	ipline	Mechanical Testing	Mechanical Testing		18.09.2014		
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S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	n Range Limits	Range of Testing / Limits of Detection		
II.	METALLOGRAPH	Y 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 (Magnificat	Qualitative (Magnification : 100X)		
		Austenite grain size in austenite SS					
		Micro structural analysis	ASM handbook Vol-09, 9 th printing March 2000	Qualitative (Magnificat	ion : 100X, 400X)		
		Non Metallic Inclusion Rating	IS 4163 : 2004 ASTM E 45 - 2010	Qualitative (Types A, E Magnificati	8, C and D on : 100X)		
		Total Case Depth Measurement by Microscopic & Micro Hardness Method	IS 6416 : 1988	0.1 mm to 3	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)			

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Discipline		Mechanical Testing	Mechanical Testing		18.09.2014		
Certificate Number		T-2336	T-2336		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 Limits	Range of Testing / Limits of Detection		
3.	Metallic Material - Ferrous & Non Ferrous	Measurement of Electroplated Coating Thickness	IS 3203 : 1982 (1998) Sec.4 - Determination of thickness by Magnetic Method IS 6012 : 1971 Determination of Thickness by Eddy Current Method	0.01 mm to	0.01 mm to 0.5 mm		
4.	Ferrous Materials	Weld Joints, Welding Fusion, Welded Joint, Macro & Dimensional Measurement of Weld joint	ISO 17639 : 2014 ISO 5817 : 2014	Qualitative			