

Laboratory Hertz Testing and Training Centre, D-47, Panchratna Industrial Estate, Vatva GIDC, Vatva, Ahmedabad, Gujarat

Accreditation Standard ISO/IEC 17025: 2017

Certificate Number TC-6387

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Validity 08.08.2019 to 05.09.2020

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

I.	METALS AND ALLOYS			
1.	Low Alloy and Plain Carbon Steel	C	ASTM E 415	0.10 % to 1.0 %
		Si	IS 8811	0.20 % to 0.85 %
		Mn		0.45 % to 1.80 %
		P		0.005 % to 0.0065 %
		S		0.001 % to 0.050 %
		Mo		0.01 % to 1.25 %
		Ni		0.03 % to 3.25 %
		Cu		0.06 % to 0.15 %
		V		0.004 % to 0.50 %
		Al		0.020 % to 0.14 %
		Cr		0.20 % to 3.80 %
2.	Stainless Steel	N	JIS G 1253	0.002 % to 0.020 %
		C	ASTM E 1086	0.010 % to 0.25 %
		Si	IS 9879	0.35 % to 0.65 %
		Mn		0.60 % to 1.75 %
		P		0.01 % to 0.065 %
		S		0.0005 % to 0.040 %
		Cr		11.00 % to 26.00 %
		Mo		0.25 % to 7.00 %
		Ni		0.70 % to 20.00 %
		Cu		0.020 % to 1.50 %
		B	JIS G 1253	0.001 % to 0.05 %
Ti		0.001 % to 0.50 %		
V		0.030 % to 0.30 %		
3.	Cast Iron	N		0.01 % to 0.15 %
		C	ASTM E1999	3.00 % to 3.80 %
		Si	IS 15338	1.00 % to 2.25 %
		Mn		0.09 % to 0.50 %
		P		0.09 % to 0.30 %

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		S		0.008 % to 0.08 %
		Cr		0.02 % to 0.30 %
		Mo		0.002 % to 0.040 %
		Ni		0.09 % to 1.35 %
		Cu		0.01 % to 0.80 %
		Al		0.004 % to 0.020 %
		Sn		0.015% to 0.060 %
		V		0.020% to 0.10 %
		W	JIS G 1253	0.004% to 0.01 %
		Mg		0.03% to 0.08 %
4.	Aluminum & Aluminum Based Alloys	Si	ASTM E1251	0.10% to 13.50 %
		Fe		0.10% to 3.00 %
		Cu		0.20% to 5.00 %
		Mn		0.10% to 0.70 %
		Mg		0.004% to 1.00 %
		Ni		0.02% to 0.14 %
		Zn		0.10% to 2.30 %
		Ti		0.01% to 0.20 %
		Sn		0.007% to 0.015 %
		Cr		0.05% to 0.125 %
5.	Copper & Copper Based Alloys	Zn	BS EN 15079	0.080% to 35.00 %
		Pb		0.20% to 5.25 %
		Sn		0.20% to 2.60 %
		P		0.002% to 0.017 %
		Mn		0.0006% to 0.17 %
		Fe		0.02% to 0.50 %
		Ni		0.05% to 1.60 %
		Si		0.001% to 0.45 %
		Al		0.001% to 9.0 %
	Sb		0.009% to 0.012 %	

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MECHANICAL TESTING

I.	MECHANICAL PROPERTIES OF METALS			
1.	Metallic Material & Weld in Metals	Tensile Test		
		Ultimate Tensile Strength	ASTM E8/E8M IS 1608	1 kN to 100 kN
		Yield Stress (0.2% / 1.0% Proof Stress)	ASTM A 370 ASME Sec IX ISO 6892-1	20 kN to 1000 kN
		% Elongation	ISO 4136	5 % to 80 %
		% Area reduction	ISO 5178	5% to 80%
		Bend Test	IS 1599 ASME Sec IX ASTM A 370 ASTM E 190 ASTM E 290/IS1786	Mandrel diameter: 8, 10, 12, 16, 20, 22, 24, 30, 32, 36, 40, 44, 50, 56 mm
		Rockwell Hardness Test	ASTM A-370 ASTM E 18 IS 1586 (Part 1 & 3)	20 HRB to 100 HRB 20 HRC to 70 HRC 72 HR15T to 93 HR15T 39 HR30T to 83 HR30T 10 HR45T to 70 HR45T
		Brinell Hardness Test	ASTM A 370 ASTM E 10 IS 1500 (Part 1 & 4)	95.5 to 600 HBW 2.5/187.5
		Vickers Hardness Test	IS 1501 Part 1 ASTM E 384 ASTM A 370/ASTM E92	90 HV5 to 1000 HV5 90 HV10 to 1000 HV10
		Charpy impact Test (50 to -80 °C & -196 °C)	IS 1757: Part 1 EN ISO 148-1	2 J to 240 J (KV2)
2.	Metallic Material Tubes & Pipes	Flattening Test	ASTM A 370; IS 2328 BS EN ISO 8492 ASTMA999/A999M ASTM A1016/ A1016 M	Tubes & Pipes: OD: 6 mm to 250 mm

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		Flaring Test and Flange Test	ASTM A1016/ A1016 M ASTM A 370-17a, BS EN ISO 8494 BS EN ISO 8493 IS 2335	Tubes & Pipes: OD- 6 mm to 250 mm
II.	METALLOGRAPHY TEST			
1.	Carbon Steel, Low Alloy Steel, Stainless Steel, and weld in Metals	Grain Size Measurement	IS 4748; ASTM E 112 ASM Handbook Vol-9	Grain size No. 1 to 10 Magnification: 100X
		Microstructure	ASTM E 407 ASM Handbook Vol-9	Magnification: 50X, 100X , 200X , 500X , 1000X
		Macro Etch test	ASTM E 340; ASME Sec IX	Magnification: 10X-20X
		Inclusion rating	ASTM E 45; IS 4163	Magnification: 100X
2.	Cast Iron	Graphite Structure and Matrix	IS 7754; IS 1865 ASTM A247	Magnification: 100X
III.	CORROSION TESTS			
1.	Austenitic Stainless Steel	IGC Test Practice 'A'	ASTM A 262	Magnification: 100X-1000X
		IGC Test Practice 'B'		1 to 500 Milles/year (120 hrs test)
		IGC Test Practice 'C'		5 to 500 Milles/year (240 hrs test)
		IGC Test Method 'E'		Magnification: 5X-20X
2.	Duplex Stainless Steel	Detrimental Intermetallic Phase - Method 'C'	ASTM A 923	1 to 10 mdd
		Detrimental Intermetallic Phase - Method 'A'		Magnification: 500X

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NON - DESTRUCTIVE TESTING

I.	METAL & ALLOYS			
1.	Ferrous Tube & Pipe Weld	Ultrasonic Testing (Contact Method)	ASME Sec. V Article 23 SA 213	Qualitative (Wall thickness 3 mm to 50 mm) Ø > 2 inch.
			ASME Sec. V Article 23 SA 273	
2.	Ferrous Plate	Ultrasonic Testing (Contact Method)	ASME Sec. V Article SA 435, SA 577, SA 578 IS 11630	Qualitative (Wall thickness 10mm to 300 mm)
3.	Ferrous Forging	Ultrasonic Testing (Contact Method)	ASME Sec. V Article 23 SA 388 ASME Section V Article 23 SA 745	Qualitative (Thickness 5 mm to 600 mm)
4.	Ferrous Weldments	Ultrasonic Testing (Contact Method)	ASME Section V Article 4 & 5 AWS D 1.1	Qualitative (Thickness 3 mm to 50 mm)
5.	Ferrous Casting	Ultrasonic Testing (Contact Method)	ASME Section V Article 23 SA 609	Qualitative (Thickness 5 mm to 500 mm)
6.	Ferrous , Non Ferrous	Thickness Measurement (Contact Method)	ASME Section V Article 23 SE 797	1 mm to 200 mm > Ø20 mm
7.	Ferromagnetic Materials- Weldments, Casting, Forging, Pipe	Magnetic Particle Test (Yoke) (Visible & Fluorescent)	ASME Sec V Article 7 ASME Sec V Article 25 SE 709	Qualitative From surface & sub-surface to 3 mm depth
		Magnetic Particle Test (Prod & Coil) (Visible & Fluorescent)		From surface to 4 mm depth.
8.	Non-Porous Materials, Ferrous	Liquid Penetrant Examination	ASME Sec V Article 6 ASME Sec V Article 24	Qualitative (Flaws open to surface)

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	& Non-Ferrous - Plate, Pipe, Weldments Casting	(Visible & Fluorescent)	SE 165	
9.	Ferrous Casting	Radiography Using Gamma Rays (Ir - 92)	ASME Sec V Article 2 & 22 ASME B 16.34	Qualitative (Thickness 4 mm to 70 mm)
10.	Weldments	Radiography Using Gamma Rays (Ir - 92)	ASME Sec V Article 2 & 22	Qualitative (Thickness 4 mm to 70 mm)
11.	Ferromagnetic and Non-Ferromagnetic	Eddy Current Testing (Tube testing)	ASME Section V : Article 8 ASME Section XI: Appendix 4	Qualitative (Tubes 12.7 mm to 50.8 mm ID and wall thickness 0.71 to 3.4 mm) (Only straight portion)