

Laboratory	Divine Metallurgical Services Private Limited, 14, Gopal Industrial Estate, Odhav, Ahmedabad, Gujarat		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Mechanical Testing	Issue Date	21.01.2015
Certificate Number	T-1458	Valid Until	15.11.2016
Last Amended on	-	Page	1 of 5

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.	Metallic Material Ferrous / Non Ferrous	Tensile Test - UTS -Proof Stress -Yield Strength -Reduction In Area - % Elongation -Braking Load Test Bend Test Rebend Test of TMT Bar /Reinforcement Bar Flattening Test of Pipe & Tubes Impact Test -Charpy Impact Test (RT to -196 ⁰ C)	ASTM A:370-2012a ASTM E8 / E8M-2011 IS 1608: 2005 ISO 6892: 2009 API-1104: 2005 EN-10002-1-2005 ASME-Sec IX-2010 IS 1599: 2012 ASTM A 370-2012a ASTM E 190-92(RA 2008) ASTM E 290-2013 ASME-Sec-IX-2010 EN-910-1991 IS 1786: 2008 ASTM A 370-2012a IS 2328: 2005 ASTM A-1016-2011a ASTM A 450-2010 ASTM A 999-2012 ASTM E-23-2012c, IS 1757: 1988 (RA 2003) ASTM A370-2012a	0.1 kN to 1500 kN (3 UTM) 0.1 kN to 400 kN 0.1 kN to 600 kN 0.1 kN to 1500 kN Upto 85 % Upto 75 % Qualitative (Mandrel diameter 8, 12, 16, 18, 20, 24, 32, 35, 40, 44, 50, 55, 60, 65, 75, 80, 85, 100, 125, 160, 225, 240) mm Qualitative (Mandrel diameter 8, 12, 16, 18, 20, 24, 32, 35, 40, 44, 50, 55, 60, 65, 75, 80, 85, 100, 125, 160, 225, 240) mm Qualitative Outer Diameter 6 mm to 250 mm Upto 300 joules

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Certificate Number	T-1458	Valid Until	15.11.2016
Last Amended on	-	Page	2 of 5

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	Metallic Material Ferrous / Non Ferrous	- Izod Impact Test	IS 1598: 1977(RA 2003) ASTM E-23-2012c	Upto 170 joules
		Hardness Testing		
		-Vickers	ASTM E-384-2011	100 HV to 800 HV
		-Hardness	ASTM A-370-2012a IS 1501 Part: 2002	
		Rockwell Hardness	ASTM E-18-2012 IS 1586 (Part 1) (2012) ASTM A-370-2012a	HRB (20 to 100) HRC (20 to 70)
		Proof Load Test	ASTM A-370-2012a ASTM A-194-2012 IS 1367 (Part 6): 2005	Upto 1500 kN
		Flaring & Flanging Test Stainless Steel & Mild Steel Pipes & Tubes	ASTM A-1016-2011a ASTM A450-2010 ASTM A999-2012	Qualitative (Tubes & Pipes 6 mm to 180 mm diameter)
		Adhesion Test	ASTM B571-1997 (2013)	Qualitative
2.	Metal & Alloys	Salt Spray	ASTM B 117-2011 IS 11864: 1986 (RA 2006) ISO 9227: 2012 (e)	Qualitative
3.	Copper Alloys	Mercurous Nitrate Test	ASTM B 154-2012	Qualitative
4.	Corrosion Tests			
a.	Ferritic/ Austenitic and Duplex Stainless Steel	IGC Test	ISO-3651-2 METHOD-A (1998)	Qualitative

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Certificate Number	T-1458	Valid Until	15.11.2016
Last Amended on	-	Page	3 of 5

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b.	Austenitic Stainless Steel	IGC Test 'A'	ASTM A 262 (2010)	Qualitative
		IGC Test 'B'	ASTM A 262 (2010)	500 Milles/year Corrosion rate based on weight loss (120 hrs test)
		IGC Test 'C'	ASTM A 262 (2010)	500 Milles/year Corrosion rate based on weight loss (240 hrs test)
		IGC Test 'E'	ASTM A 262 (2010)	Qualitative
		IGC Test 'F'	ASTM A 262 (2010)	500 Milles/year Corrosion rate based on weight loss (120 hrs)
c.	Stainless Steels	Pitting & Crevice corrosion test	ASTM G 48 – 2011	Qualitative (24 hrs)
d.	Nickel-Base & Chromium bearing alloys	G 28	ASTM G 28-02(2008)	Corrosion rate based on weight loss (120 hrs)
e.	Ferritic Stainless Steels	IGC Test 'w'	ASTM A763-93 (RA 2009)	Qualitative
		IGC Test 'x'	ASTM A763-93 (RA 2009)	Qualitative
		IGC Test 'y'	ASTM A763-93 (RA 2009)	Qualitative
		IGC Test 'z'	ASTM A763-93 (RA 2009)	Qualitative
f.	Duplex Stainless Steel	IGC Test -Ferric Chloride Corrosion Test for classification of structure	ASTM A 923-2008 METHOD-C	Corrosion Rate Based on Weight Loss (24 hrs)

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Certificate Number	T-1458	Valid Until	15.11.2016
Last Amended on	-	Page	4 of 5

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h.	Austenitic Stainless Steel	Weld Decay Test (HCl)	ASTM A 249-2014	Qualitative
II	METALLOGRAPHY TEST			
1.	Metallic Materials Ferrous / Non Ferrous	Grain Size Measurement	ASTM E-112 (2012)	Grain size no.: 1 to 14 Comparison Method Intercept Method
		-Preparation of Metallographic Specimens -General Micro Structure	ASTM E-3 (2011) ASTM E-407 (2007e1) ASM Handbook Vol-9-2004	Qualitative (50 X to 1000 X)
2.	Ferrous Alloys	Microstructure of Graphite in Cast Iron	IS 7754: 1975 (RA 2003)	Form: I to VI Distribution: a to e Size: 1 to 8
		Case Depth measurement by Microscopic Method	IS 6416: 1988 (RA 2003)	0.01 mm to 0.8 mm
		Thickness of Coating (Microscopic Method)	ASTM B 487 (2002)	0.01 mm to 0.8 mm
		Macro Etch Test	ASTM E 340-00 (RA 2006) ASTM E381-01 (RA 2012)	Qualitative
		Decarburization Depth Measurement by Microscopic method	ASTM E1077-01 (RA 2005) IS 6396: 2000 (RA 2003)	0.01 mm to 0.8 mm
		Quantitative Metallography/ Volume fraction	ASTM E-562 (2011)	1% to 70 %

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Last Amended on	-	Page	5 of 5

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	Ferrous Alloys	Inclusion Rating	ASTM E-45 (2013) Method A (Worst Field), IS 4163: 2004	Upto Level 3 in steps of Type-A,B,C,D at increments of 0.5 (Qualitative)
		Detecting Inter-metallic Phase	ASTM A 923 Method A-2008	Qualitative
3.	Coatings on Ferrous & Non Ferrous materials	Coating Thickness Measurements	DIN EN ISO- 2360-2003 ASTM B 244-2009 BS 5400/3	11.3 Microns to 832 Microns
			DIN EN ISO 2178 ASTM B499-09 BS 5411/11	11.3 Microns to 832 Microns
		Weight loss of Zinc & Zinc alloy on Iron & Steel	ASTM A 90/90M-2011 IS 277: 2003 IS 6745: 1972 (RA 1994)	30 g/m ² to 1000 g/m ²
-X-X-X-X-X-X-X-X-X-X-X-X-				