

Laboratory	Metlab Engineering Services Private Limited, No.100/3, 1st Floor, Block-T, 3rd Avenue, Annanagar West, Chennai, Tamil Nadu		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Mechanical Testing	Issue Date	14.10.2015
Certificate Number	T-2668	Valid Until	20.07.2017
Last Amended on	29.10.2015	Page	1 of 4

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
I.	METALLOGRAPHY TEST			
1.	Ferrous & Non – Ferrous Materials	Microstructure	ASM Hand book Vol. 09 - Metallography & Microstructure ASTM E407: 2007	50 x, 100 x, 200 x, 250 x, 400 x ,500 x & 1000 x
2.	Ferrous & Non – Ferrous Materials	Volume Fraction	ASTM E 562: 2011	50 x, 100 x, 200 x, 250 x, 400 x,500 x &1000 x
3.	Ferrous Materials	Non-Metallic Inclusion Rating by Method “ A”	IS 4163: 2004 ASTM E1245-03 (RA 2008) ASTM E45: 2013	A,B,C & D : (0 to 3)/ 100 x
4.	Ferrous & Non Ferrous Materials	Average Grain Size by Comparison Method , Planimetric Method & Intercept Method	IS 4748: 2009 ASTM E 112: 2013 ASTM E1382: 97 (RA 2010) JIS G 0551: 1998 ISO 643: 2003	75 x/ 100 x
5.	Carbon and Alloy steels	Depth of Decarburization by Microscopic method	IS 6396: 2000 (RA 2012) / ASTM E 1077: 2014 EN ISO 3887: 2003 ISO 2639: 2002	0.01 mm to 10 mm / (50 x, 100 x, 200 x , 250 x, 400 x, 500 x & 1000 x)
6.	Metallic Coatings on Steel and alloys	Microscopical Examination of cross section for measuring Metallic Coating Thickness	IS 3203: 1982 (RA 2012) ASTM B 487: 1985 (RA 2007) ISO 1463: 2003	50 x, 100 x, 200 x, 250x, 400 x & 500 x / (0.1 mm to 10 mm)
7.	Carbon and Alloy steels	Total Case depth by Microscopic method Effective Case depth by micro hardness indentations	IS 6416: 1988 (RA 2012) SAE J 423: 1983 ISO 2639: 2002 ISO 3754: 1976	0.01 mm to 10 mm / (100 x, 200 x, 250 x, 400 x &500 x) 150 ~ 1000 HV 0.2 , HV 0.5 & HV 1 / 500 x

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8.	Ferrous & Non Ferrous Materials	Micro Hardness Test	ASTM E 384: 2011 ISO 6507-1: 2005 ISO 4516: 2002 IS 1501: 2002 (RA 2012) IS 1501 (Part 2): 2013	150 ~ 1000 HV 0.2 , HV 0.5 & HV 1 /500 x
9.	Cast Iron	Microstructure , Determination of form, distribution, and size of the graphite in gray iron , Determination of Nodularity and Size of Nodules in Nodular cast Iron. Tempered Carbon in Malleable Cast Iron	IS 7754: 1975 (RA 2012) ASTM A 247: 2010 IS 14329: 1995 ASTM A 2564: 2014 ISO 945-1: 2008	100 x , 200 x, 250 x, 400 x, 500 x & 1000 x
10.	Ferrous & Non - Ferrous Metals and Alloys	Macro Etch test	IS 11371: 1985 (RA 2012) IS 13015: 1991 (RA 2012) ASME (Sec IX): 2013 ASTM E 381-01 ASTM E340: 2015	Visual – 5 x, 10 x, 20 x & 40 x
11.	Duplex Austenitic/ Ferritic Stainless Steels	Method -A –NaOH Acid Etch test Method –C- Ferric Chloride test	ASTM A 923: 2014	400 x &500 x Weight Loss – 1~ 500 MPY
12.	Wrought , Nickel Rich - Chromium Bearing Alloys& Ferritic Austenitic Stainless Steel (Duplex Steel)	Method - A-Ferric sulfate-Sulfuric acid Test Method - B-Mixed acid-Oxidating Salt Test	ASTM G-28: 2002 (RA 2008)	Weight Loss – 1~ 500 MPY Weight Loss – 1~ 500 MPY

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S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
13.	Ferritic , Austenitic & Ferritic - Austenitic Stainless Steel (Duplex Steel)	Method - A-16% Sulfuric Acid – Copper Sulphate Test Method - B-35% Sulfuric Acid – Copper Sulphate Test Method - C – 40% Sulfuric Acid – Copper Sulphate Test Nitric Acid Medium Test	ISO 3651 (Part 2): 1998 ISO 3651 (Part 1): 1998	Visual (180° Bend / 1T) Visual (180° Bend / 1T) Visual (180° Bend / 1T) Weight Loss – 1~ 500 MPY
14.	Stainless Steels & Related Alloys	Method-A- Ferric Chloride - Pitting corrosion Test Method-B - Ferric Chloride Crevice corrosion Test Method –C & E - Critical Pitting Temperature Test	ASTM G-48: 2011	Weight Loss – 1~ 500 MPY Weight Loss – 1~ 500 MPY Weight Loss – 1~ 500 MPY Weight Loss – 1~ 500 MPY
15.	Austenitic Stainless Steels	IGC Practice -A -Oxalic Acid Etch test IGC Practice E-Copper –copper sulphate 16 % sulphuric acid test IGC Practice F-Copper –copper sulphate 50 % sulphuric acid test IGC Practice -B -Ferric sulphate-Sulphuric Acid test IGC Practice C -Nitric acid Test	ASTM A 262: 2015 IS 10461 (Part 2): 1994 (RA 2012) IS 10461 (Part 1): 1994 (RA 2012)	250 x & 500 x Visual (180° Bend / 1T) Visual (180° Bend / 1T) upto 2 mm sample thickness only Weight Loss – 1~ 500 MPY Weight Loss – 1~ 500 MPY

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16.	Ferritic Stainless Steels	Practice -W - Oxalic Acid Etch test Practice - Z-Copper –copper sulphate 16 % sulphuric acid test Practice -X – Ferric sulfate - sulphuric acid Practice -Y -Copper –copper sulphate 50 % sulphuric acid	ASTM A 763: 2015	250 x & 500 x Visual (180° Bend / 1T) Weight Loss – 1~ 500 MPY Weight Loss – 1~ 500 MPY
17.	Electro Plated / Coated / Painted - Ferrous / Non Ferrous Products	Neutral Salt Spray Test Copper Accelerated Acetic Acid Salt Spray Test	ASTM B-117: 2011 ISO 9227: 2012 IS 9844: 1989 (RA 2012) IS 101 (Part 6/Sec I): 1988 (RA 2012) ASTM B 368-09 (2014) IS 5528: 1985 (RA 2012) IS 6910: 1985 (RA 2012)	Qualitative Visual
18.	Metallic Materials	Rockwell Hardness Test: HRA Scale HRB Scale HRC Scale	IS 1586: 2000 (RA 2012) IS 1586: 2012(Part 1) 2012 ASTM E18: 2014 ISO 6508-1: 2005	45 HRA to 88 HRA 60 HRB to 99 HRB 20 HRC to 70 HRC
19.	Zinc Coated Product	Mass of Zinc Coating	IS 6745: 1972 (RA 2012)	10 ~ 500 GSM

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