

Laboratory	Jyothi Spectro Analysis Pvt. Ltd., Plot No. A-30, APIE, Balanagar, Hyderabad, Telangana		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Mechanical Testing	Issue Date	21.07.2015
Certificate Number	T-1254	Valid Until	20.07.2017
Last Amended on	-	Page	1 of 6

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.	Ferrous & Non Ferrous Metals & Alloys Plates/Pipes/Rod/ Sheets/Flats/ Wires/Strips, Weld Samples & All Other Sections	Tensile Test- Including 0.2 % Proof Stress Elongation Reduction Area	IS 1608: 2005 ASTM-A370: 2014 ASTM B557: 2014 ASTM E8: 2013 EN 10002-1: 2010 ISO 6892-1: 2009 IS 210: 2009 & IS 617: 1994 IS 1865: 1991 (RA 2005) BS EN 1563, API 5L, BS EN 15614: 2004 Amd: 2012, AWS D-1.1: 2010, ASME (Sec IX): 2013 IS 2825: 1969 (RA 1988) IBR 2011 API 1104 (20 th Edition), API 5L (45 th Edition), GAIL Doc No: 0018-01-04-01-001 Rev 0 IS 3196 (Part 3): 2012	10 N to 1000 kN 2 % to 75 % 8 % to 75 %
2.	Welded Samples	Nick Break Test	API 1104 (20 th Edition), API 5L (45 th Edition), IBR 2011 IS 2825: 1969 (RA 1988),GAIL	Qualitative
3.	Ferrous, Non Ferrous Materials & Weld Samples	Bend Test Root Bend, Face Bend, Side Bend	IS 1599: 2012 ASTM-A370: 2014 IS 2329: 2005 ASTM E 290: 2014 IBR 2011 BS EN ISO 5173: 2010 (RA 2011) API 1104 (20 th Edition), IS 814: 2004 EN 910: 1996	Close Bend & Upto 180° (Bend Mandrel Diameters: 8,12,16,20,25,30, 33, 36, 40,50,60,70, 75, 92, 100, 120,127,144,175,247, 345 mm)

Laboratory Jyothi Spectro Analysis Pvt. Ltd., Plot No. A-30, APIE, Balanagar, Hyderabad, Telangana

Accreditation Standard ISO/IEC 17025: 2005

Discipline Mechanical Testing **Issue Date** 21.07.2015

Certificate Number T-1254 **Valid Until** 20.07.2017

Last Amended on - **Page** 2 of 6

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
4.	Metallic Wires	Wrapping Test (Wires)	ASTM A 370: 2014 IS 1755: 1983 (RA 2010)	Qualitative
5.	Cladded Samples	Shear Tests	IS 5242: 1979 IS 12982: 1991 ASTM A 263: 2012 ASTM A 264: 2011 ASTM A 265: 2012	10 N to 1000 kN
6.	Tubular Products	Flattening Test	ASTM A-530: 12 IS 2328: 2005 ASTM A 999: 2014 ASTM A 1016: 2014 ASTM A 370: 2014 ASTM B111: 2011	50 mm to 600 mm
		Flaring Test/Drift Expansion Test	IS 2335: 2005 ISO 8493: 1996 ASTM A 1016: 2014 ASTM A 370: 2014 ASTM B 153: 2011	60° Angle Flaring Tool
		Flanging Test	ASTM A 370: 2014 ASTM A 1016: 2014	Qualitative
		Crush Test / Compression Test	IS 3601: 2006 (RA 2012) ASTM A 370: 2014 IS 516: 1959 (RA 2004)	Qualitative
7.	Tube to Tube Sheets welds	Pullout Test	ASME (Sec VIII) Div.I: 2013 as per Appendix A	10 N to 1000 kN

Laboratory	Jyothi Spectro Analysis Pvt. Ltd., Plot No. A-30, APIE, Balanagar, Hyderabad, Telangana		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Mechanical Testing	Issue Date	21.07.2015
Certificate Number	T-1254	Valid Until	20.07.2017
Last Amended on	-	Page	3 of 6

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
8.	Bolts, Nuts, Screws, Studs & Washers	Proof Load Test Breaking Load Test Shear Load Wedge Load Compression Test Twist Test Permanent Set Test Permanent Load Test	IS 1367: 2002 ASTM-F 606: 2014 ASTM A 370: 2014 IS 3063: 1994 IS 12427: 2001 IS 14394: 1996	M3 to M39 10 N Load to 1000 kN (Pl , BL & Shear Fixtures- M3,M4,M5,M6,M8,M10, M12,M14,M16,M18, M20,M24,M30,M33, M36)
9.	Reinforcement Steel	Tensile Test Re Bend Test Bend Test Weight Per Meter	IS 1608: 2005 IS 1786: 2008 (RA 2012) IS 1599: 2012 IS 1786: 2008 (RA 2012)	10 N to 1000 kN (Bend Mandrel Diameters: 8,12,16,20,25,30, 33,36,40,50,60,70,75,92, 100,120,127,144,175,247, 345 mm) 0.01 kg to 7.5 kg
10.	Tower Bolts	Dimensional Test	IS 12427: 2001 Length Dimension Pitch Gauge Radial Dimension	0.01 mm to 200 mm 1 mm to 4 mm 0.01 mm to 200 mm
11.	Sheets	Erichsen Cupping Test	IS 10175: 1993	0.2 mm to 2 mm
12.	Metallic Materials	Brinell Hardness Test	IS 1500 (Part 1): 2013 ASTM E-10: 2010 BS EN ISO 6506-1: 2005 ASTM A 370: 2014	50 HBW to 700 HBW 5/250, 5/750.10/500, 10/3000 ,2.5/187.5
		Rockwell Hardness Test	IS 1586 (Part 1): 2012 ASTM E-18: 2015 ASTM A 370: 2014 ISO 6508-1: 2015	20 HRC to 100 HRC 20 HRB to 100 HRB 20 HRA to 100 HRA
		Dynamic Hardness Test	ASTM E 110: 2010	20 HV to 800 HV 10

Laboratory	Jyothi Spectro Analysis Pvt. Ltd., Plot No. A-30, APIE, Balanagar, Hyderabad, Telangana		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Mechanical Testing	Issue Date	21.07.2015
Certificate Number	T-1254	Valid Until	20.07.2017
Last Amended on	-	Page	4 of 6

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Metallic Materials	Vickers Hardness Test	IS 1501 (Part 1): 2013 ASTM E 384: 2003 EN ISO 6507-1: 2005 BS EN 1043-1: 1996	20 HV to 750 HV 10
13.	Metallic Materials & for Welded Samples	Impact (-55 °C to 100 °C) Charpy & Izod	IS 1757: 1988 (RA 2009) IS 1598: 1977 ASTM A 370: 2014 IS 1499: 1977 (RA 1982)	2 J to 300 J 2 J to 168 J
14.	Springs	Springs Load Test (Tension & Compression)	ASTM A 125: 06 (RA 2013)	10 N to 1000 kN
15.	Covered Electrodes for MMAW of C-Mn & Steel, Brazing Rods	Tensile Test (Ys,UTS,%E)	IS 814: 2001 (RA 2008) ASMS (Part C/ Sec II): 2013 IS 1608: 2005 AWS B 4.0M ASTM E8M: 2013	10 N to 1000 kN
16.	Welding Rod Electrodes	Bend Test (Butt Weld)	IS 814: 2004 (RA 2008)	Qualitative (Bend Mandrel Diameters: 8,12,16,20,25,30, 33, 36, 40,50,60,70,75,92,100, 120,127,144,175,247, 345 mm)
II. METALLOGRAPHY TEST				
1.	Ferrous & Non Ferrous Metals Alloys, Castings & Welds	Macro Etch Test	IS 11371: 1985 ASTM E 340: 2013 ASTM E 381: 2012 IS 13015: 2003 IS 12573: 2010 ASME (Sec IX): 2013 IBR 2011 AWS D1.1: 2010 BS EN 1321: 2010	Qualitative (10 X)

Laboratory Jyothi Spectro Analysis Pvt. Ltd., Plot No. A-30, APIE, Balanagar, Hyderabad, Telangana

Accreditation Standard ISO/IEC 17025: 2005

Discipline Mechanical Testing **Issue Date** 21.07.2015

Certificate Number T-1254 **Valid Until** 20.07.2017

Last Amended on - **Page** 5 of 6

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
2.	Hardened Steels	Measurement of Case Depth by Microscopic Method	IS 6416: 1988 IS 7739: 1975 ASTM E 3: 01 (RA 2011) SAE J 423: 1998	0.01 mm to 25.0 mm
3.	Ferrous & Non Ferrous Metals	Grain Size by Comparison Method	IS 4748 : 2009 ASTM E 112: 2013 ASTM B390: 2001 ISO 643: 2003	75 X, 100 X
		Grain Size by Image Analysis	ASTM E 1382: 2004 ASTM E 1181: 2008,	50 X to 500 X
		Microstructure	IS 11959: 1987 (RA 2009) Volume 9 ASM Handbook ASTM A247: 2010 IS 7754: 1975 (RA 2007) ASTM B657: 2000 ASTM E 407-2007	100 X, 200 X, 250 X, 500 X
		Determination of Volume Fraction Ferrite Content	ASTM E 562: 2011 ASTM A 800: 2014	100 X to 500 X 1 % to 8 % X
		Coating Thickness by Microscopic Method	IS 3203: 1982 (RA 2006) ASTM B 487-07 (RA 2013)	0.001 mm min Magnification 500 X
4.	Cast Irons	Nodularity	IS 7754: 1975 ASTM A 247: 2010 DIN EN 1563: 2011, ISO 945: 2008	100 X
		Nodularity by Image Analysis	ASTM E 2567: 2014	50 X to 500 X

Laboratory Jyothi Spectro Analysis Pvt. Ltd., Plot No. A-30, APIE, Balanagar, Hyderabad, Telangana

Accreditation Standard ISO/IEC 17025: 2005

Discipline Mechanical Testing **Issue Date** 21.07.2015

Certificate Number T-1254 **Valid Until** 20.07.2017

Last Amended on - **Page** 6 of 6

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
5.	Ferrous Metals	Depth of Decarburization by Microscopic Method	ASTM E 1077: 2014 IS 6396: 2000 (RA 2007) IS 1367 (Part 3): 2002	0.01 mm min (100 X)
		Detecting Presence of Intermetallic Phases (For Ferritic Steels)	ASTM A 923: 2014	Magnification 250 X to 500 X (Method A)
		Determination of Inclusion Content by Method A	DIN 50602: 1985 ASTM E 45: 2013 ASTM E 1245: 2003(2008) IS 4163: 2004	100 X Magnification
6.	Porosity Test in Cemented Carbides	Determination of Porosity	ASTM B276: 2010	1 % to 100 %
7.	Austenitic Stainless Steels	IGC Practice A	ASTM A262: 2014	250 X & 500 X
		IGC Practice E	ASTM A262: 2002a	15 h to 72 h Bend test 180° (1T)

-X-X-X-X-X-X-X-X-X-X-X-X-