

Laboratory **Sri Ranganathar Industries Pvt. Ltd., 12/45, Thadagam Road,
Edayarpalayam, Coimbatore, Tamil Nadu**

Accreditation Standard **ISO/IEC 17025: 2005**

Certificate Number **TC-7638 (in lieu of T-3112, T-3113)**

Page 1 of 4

Validity **18.09.2018 to 17.09.2020**

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
-----	----------------------------	-------------------------	---	--

CHEMICAL TESTING

I.	METALS & ALLOYS			
1.	Carbon & Low Alloy Steel	Carbon	Optical Emission vacuum Spectrometric Analysis ASTM E 415- 17 / IS 8811-1998 (2012)	0.017 % to 0.49 %
		Silicon		0.15 % to 1.20 %
		Manganese		0.10 % to 1.50 %
		Sulfur		0.005 % to 0.045 %
		Phosphorus		0.005 % to 0.045 %
		Chromium		0.02 % to 6.00 %
		Nickel		0.010 % to 5.0 %
		Molybdenum		0.001 % to 1.20 %
		Copper		0.008 % to 0.69 %
		Vanadium		0.003 % to 0.44 %
		Aluminium		0.003 % to 0.15 %
		Cobalt		0.006 % to 0.05 %
		Lead		0.0002 % to 0.02 %
		Tin		0.001 % to 0.02 %
		Niobium		0.001 % to 0.104 %
Tungsten	0.001 % to 0.10 %			
Titanium	0.0004 % to 0.06 %			
2.	Stainless Steel	Carbon	Optical Emission vacuum Spectrometric Analysis ASTM E 1086- 14 / IS 9879-1998 Procedure No SRI/OES/01/WI-96 Issue No.01 Dt.07.02.2018	0.010 % to 0.3 %
		Silicon		0.100 % to 2.0 %
		Manganese		0.100 % to 2.0 %
		Sulfur		0.001 % to 0.045 %
		Phosphorus		0.003 % to 0.045 %
		Chromium		5.00 % to 26.0 %
		Nickel		0.24 % to 35.0 %
		Molybdenum		0.005 % to 7.0 %
		Copper		0.020 % to 4.00 %
		Vanadium		0.02 % to 0.58 %

Vivek Vardhan
Convenor

Alok Jain
Program Manager

Laboratory Sri Ranganathar Industries Pvt. Ltd., 12/45, Thadagam Road,
Edayarpalayam, Coimbatore, Tamil Nadu

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7638 (in lieu of T-3112, T-3113)

Page 2 of 4

Validity 18.09.2018 to 17.09.2020

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
		Tungsten		0.040 % to 1.0 %
		Niobium		0.005 % to 1.50 %
		Nitrogen		0.030 % to 0.35 %
		Titanium		0.001 % to 1.00 %
		Cobalt		0.010 % to 0.20 %
		Aluminium		0.004 % to 0.12 %
3.	Nickel Alloy	Carbon	ASTM E3047-16/ Procedure No.	0.005 % to 0.45 %
		Silicon	SRI/OES/02/WI-96	0.028 % to 2.00 %
		Manganese	Issue no. 01 Dt. 07.02.2018	0.10 % to 1.50 %
		Sulfur		0.002 % to 0.05 %
		Phosphorus		0.002 % to 0.03 %
		Chromium		0.10 % to 24.00 %
		Molybdenum		0.50 % to 35.00 %
		Copper		0.007 % to 35.0 %
		Vanadium		0.001 % to 0.50 %
		Tungsten		0.005% to 5.25 %
		Niobium		0.020 % to 5.75 %
		Iron		0.13 % to 23.00 %
		Titanium		0.010 % to 2.00 %
		Aluminium		0.010 % to 0.20 %
		Cobalt		0.020 % to 2.00 %
		Magnesium		0.001 % to 0.05 %

Vivek Vardhan
Convenor

Alok Jain
Program Manager

Laboratory **Sri Ranganathar Industries Pvt. Ltd., 12/45, Thadagam Road, Edayarpalayam, Coimbatore, Tamil Nadu**

Accreditation Standard **ISO/IEC 17025: 2005**

Certificate Number **TC-7638 (in lieu of T-3112, T-3113)**

Page 3 of 4

Validity **18.09.2018 to 17.09.2020**

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
MECHANICAL TESTING				
I.	MECHANICAL PROPERTIE OF METALS			
1.	Ferrous alloys & Nickel Alloys & Semi finished	Tensile strength Yield strength/ 0.2%Proof stress %Elongation % Reduction Area	ASTM A 370-2017/ ASME SA370 - 2017 ASTM E 8/8M - 2016a ISO 6892-1: 2016 JIS Z2241: 2011	4 kN to 600kN 10kN to 360kN 5% to 85%
2.	Steel plates bar and & welds	Bend Test	ASTM A 370-2017/ ASME Sec IX - 2017	Mandrel Diameter 6,13,20,25,26,30,40 & 60 mm (up to 600 kN, Max 20mm tk)
		Impact Test Charpy 'V' notch	IS 1757 [Part 1]- 2014 ISO 148 -1 : 2016 ASTM A 370 - 2017	Up to 240 J Ambient Temperature & sub zero to -196 °C
3.	Ferrous and non ferrous alloys	Brinell Hardness Test	IS 1500 [Part 1]- 2013 ASTM A 370 - 2017 ASTM E10 - 2017 ISO 6506-1: 2014	120 to 450 HBW 10/3000
		Rockwell Hardness Test	IS 1586 [Part I] –2012 ASTM E 18 - 2017 ASTM A370 - 2017 ISO 6508-1: 2016	50 to100 HRBW 20 to 70 HRC
II.	METALLOGRAPHY TEST			
1.	Ferrous and non-ferrous alloys	Macro examination Micro examination	ASTME340-2015 (stainless steel-weldment & castings) ASM HANDBOOK VOLUME.09.Ed:2004 (stainless steel/Steel-micro structure)	Qualitative (10 X , 20 X) (50 X to 1000 X)

Laboratory Sri Ranganathar Industries Pvt. Ltd., 12/45, Thadagam Road,
Edayarpalayam, Coimbatore, Tamil Nadu

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7638 (in lieu of T-3112, T-3113)

Page 4 of 4

Validity 18.09.2018 to 17.09.2020

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
2.	Stainless Steels	Volume fraction of phase	ASTM E 562-2011 by microstructure	Quantitative (2 to 75 %)
		Inter-granular corrosion	ASTM A 262-2015 Practice 'A' ASTM A 923-2014 Method 'A'	Qualitative (250X , 500X) (400X , 500X)
		Inter-granular corrosion	EN ISO 3651-2:1998 Method 'A' ASTM A 262-2015 Practice 'E'	Qualitative 90° / up to 4t (mandrel dia) 180°/1t (mandrel dia)
3.	Steels	Inclusion rating	ASTM E 45-2013 By comparison Method	Quantitative Rating (0.5 to 3)
		Grain size measurement	ASTM E 112 -2013 By comparison Method	Quantitative ASTM Grain size 1 to 8
<u>CORROSION BY MASS</u>				
1.	Stainless steels	Inter-granular corrosion test	ASTM A 262-2015 Practice B Practice C	Qualitative 0.0001 g to 250 g 0.0001 g to 250 g
2.	Duplex Stainless steels	Pitting Corrosion Test/ Ferric Chloride Test	ASTM G 48-2011 (Reapproved 2015) Method A Method E	Qualitative 0.0001 g to 250 g
			ASTM A 923 -2014 Method C	0.0001 g to 250 g
3.	Nickel rich Chromium Bearing alloys	Inter-granular corrosion test	ASTM G 28 -2002 (Re approved 2015) Method A	Qualitative 0.0001 g to 250 g