

Laboratory **AMSTEEL Castings Pvt. Ltd., Plot No. 35A, SIPCOT Industrial Complex, Phase-1, Hosur, Tamil Nadu**

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

Certificate Number **TC-6997**

Page 1 of 4

Validity **05.03.2018 to 04.03.2020**

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.	Ferrous Alloys Plain Carbon & Low Alloy Steel	C	IS:8811	0.01% to 1.40%
		Mn	ASTM E415	0.04 % to 1.70%
		Si		0.05% to 1.90%
		S		0.001% to 0.080%
		P		0.008% to 0.080%
		Cr		0.050% to 5.50%
		Ni		0.030% to 4.60%
		Cu		0.010% to 0.76%
		Mo		0.001% to 1.5%
		W		0.10% to 0.30%
		V		0.001% to 0.50%
		Nb		0.003% to 0.10%
		Ti		0.05 % to 0.15%
		Al		0.005% to 0.50%
		B		0.001%to 0.003%
Co		0.003% to 0.25%		
Sn		0.001% to 0.13%		
2.	Ferrous Alloys Stainless & Duplex Steel	C	IS: 9879	0.007% to 0.80%
		Mn	ASTM E1086	0.1% to 2.50%
		Si		0.1% to 1.3%
		S		0.001% to 0.035%
		P		0.006% to 0.055%
		Cr		4.00% to 28.00%
		Ni		0.20% to 37.00%
		Cu		0.02% to 5.0%
		Mo		0.10% to 7.0%
		W		0.01% to 6.5%
V		0.01% to 1.20%		

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Page 2 of 4

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		Nb		0.005 % to 1.2%
		Ti		0.001 % to 0.60%
		Al		0.001% to 0.050%
		B		0.0001% to 0.005%
		N		0.01% to 0.32%
		Co		0.01% to 0.20%
		Sn		0.001% to 0.02%
3.	Nickel Base Alloy	C	ASTM E 3047	0.001% to 0.25%
		Mn		0.10% to 1.3%
		Si		0.02% to 1.2%
		S		0.0001% to 0.03%
		P		0.001% to 0.03%
		Cr		0.01% to 24%
		Cu		0.01% to 37.0%
		Mo		0.01% to 33.0%
		W		0.01% to 5.25%
		V		0.01% to 0.50%
		Nb		0.01% to 4.5%
		Ti		0.01% to 1.0%
		Al		0.01% to 0.40%
		Co		0.01% to 1.1%
		N		0.001% to 0.02%
		Fe		1.0% to 35.0%

Iti Saxena
Convener

Alok Jain
Program Director

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Page 3 of 4

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<u>MECHANICAL TESTING</u>				
I.	MECHANICAL PROPERTIES OF METALS			
1.	Ferrous Alloys Plain Carbon & Low Alloy Steel,Stainless Steel,Duplex Stainless steel & Nickel base alloys	Tensile Test at RT Tensile Strength Yield Stress (0.2% Offset) 0.2% Proof Stress 1% Proof Stress % Elongation % Reduction in Area	IS 1608 ASTM E 8 ASTM A 370 ISO 6892-1	05 kN to 350 kN
		Bend Test	IS 1599 ISO 7438 ASTM A 370	Qualitative (Mandrel Diameter 6,12,24 & 40 mm)
		Charpy Impact – V Notch	IS 1757	2 J to 240 J Ambient
		Charpy Impact – U Notch	IS 1499 ASTM E 23	Temperature to -196°C
		Brinell Hardness	IS 1500-1 ISO 6506-1 ASTM A 370 ASTM E 10	HBW 10/3000 100 - 400 HBW
		Vickers Hardness	ISO 6507-1 ASTM E 92	HV 10 HV150- HV400

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Page 4 of 4

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II.	METALLOGRAPHY TEST			
1.	Ferrous Alloys Carbon, LAS, Stainless steel and Ni base Low Carbon steel Stainless & Duplex Stainless Steel	Macro Examination	IS:7739 Part-5	Qualitative (10x, 20x)
Sodium hydroxide Etch Test (Method A)		ASTM A 923	Qualitative (400X , 500X)	
Microstructure Examination		ASM Handbook Volume 9	Qualitative (100X, 200X, 500X)	
Grain Size (Comparison Method)		IS 4748 ASTM E112 ISO 643	ASTM No.1 to 10	
Ferrite Estimation		ASTM E 562 (Manual Point Count)	15 to 100	
Intergranular – Corrosion Test Practice A Practice B Practice E Practice F		ASTM A 262	250X, 500X 1 to 60 Mils/Year 180°/ 1T 1 to 60 Mils/Year	
Method A		EN ISO 3651-2	90° / 1T	
Pitting Corrosion Test		ASTM G 48 (Method A) ASTM A 923 – 2014 (Method C)	0.5 to 4 g/m ² 1 to 10 mdd	