

Laboratory **Indiana Test, Calibration And Certification Services (A Division of Indiana Ferro Alloys), D-151, Industrial Area Phase-VII, Mohali, Punjab**

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

Discipline **Chemical Testing** **Issue Dated. 09.07.2015**

Certificate Number **T-2589** **Valid Until 08.07.2017**

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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
I. METALS & ALLOYS				
1.	Carbon & Low Alloy Steels	Carbon (C)	IS:8811:1998 ASTM E415:2014	0.024 % to 1.31 %
		Silicon (Si)	TI(OES)-02 Issue 01 Dated 01.03.2012 Rev 00	0.004 % to 2.0 %
		Manganese (Mn)		0.047 % to 1.80 %
		Phosphorus (P)		0.004 % to 0.12 %
		Sulphur (S)		0.003 % to 0.069 %
		Copper (Cu)		0.02 % to 0.69 %
		Nickel (Ni)		0.02 % to 4.13 %
		Chromium (Cr)		0.0146 % to 3.03 %
		Molybdenum (Mo)		0.02 % to 1.0 %
		Aluminium (Al)		0.0002 % to 0.16 %
		Vanadium (V)		0.0088 % to 0.49 %
		Titanium (Ti)		0.01 % to 0.073 %
		Tungsten (W)		0.01 % to 0.3 %
		Cobalt (Co)		0.004 % to 0.21 %
Boron (B)		0.0007 % to 0.0028 %		
Niobium (Nb)		0.004 % to 0.078 %		
Tin (Sn)		0.0067 % to 0.094 %		

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3.	Cast Iron	Carbon (C)	ASTM E1999: 2011 TI(OES)-02 Issue 01 Dated 01.03.2012 Rev 00	2.0 % to 3.21 %
		Silicon (Si)		0.5 % to 2.47 %
		Manganese (Mn)		0.047 % to 0.68 %
		Phosphorus (P)		0.004 % to 0.06 %
		Sulphur (S)		0.003 % to 0.025 %
		Copper (Cu)		0.02 % to 0.56 %
		Nickel (Ni)		0.02 % to 0.28 %
		Chromium (Cr)		0.0146 % to 0.117 %
		Molybdenum (Mo)		0.02 % to 0.21 %
		Aluminium (Al)		0.0002 % to 0.16 %
		Vanadium (V)		0.0088 % to 0.49 %
		Titanium (Ti)		0.01 % to 0.073 %
		Cobalt (Co)		0.0042 % to 0.10 %
Tin (Sn)	0.0067 % to 0.58 %			
4.	Stainless Steel	Carbon (C)	IS 9879: 1998 ASTM E1086: 2014 TI(OES)-02 Issue 01 Dated 01.03.2012 Rev 00	0.010 % to 0.57 %
		Silicon (Si)		0.21 % to 1.41 %
		Manganese (Mn)		0.20 % to 22.92 %
		Phosphorus (P)		0.005 % to 0.054 %

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Convenor

N. Venkateswaran
Program Manager

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	Stainless Steel	Sulphur (S)	IS 9879: 1998 ASTM E1086: 2014	0.002 % to 0.30 %
		Copper (Cu)	TI(OES)-02 Issue 01 Dated 01.03.2012 Rev 00	0.009 % to 1.94 %
		Nickel (Ni)		0.11 % to 32.0 %
		Chromium (Cr)		5.0 % to 25.75 %
		Molybdenum (Mo)		0.01 % to 5.0 %
		Aluminium (Al)		0.005 % to 0.026 %
		Vanadium (V)		0.0346 % to 0.293 %
		Titanium (Ti)		0.002 % to 0.40 %
		Tungsten (W)		0.01 % to 0.40 %
		Cobalt (Co)		0.018 % to 0.22 %
		Boron (B)		0.0006 % to 0.0039 %
		Niobium (Nb)		0.004 % to 2.25 %
		Tin (Sn)		0.007 % to 0.015 %
5.	Aluminium & Aluminium Alloys	Silicon (Si)	ASTM E-1251: 2011 TI(OES)-03 Issue 01 Dated 01.03.2012 Rev 00	0.007 % to 28.9 %
		Ferrous (Fe)		0.007 % to 2.54 %
		Copper (Cu)		0.0041 % to 12.2 %
		Manganese (Mn)		0.0033 % to 1.2 %
		Magnesium (Mg)		0.004 % to 13.97 %

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	Aluminium & Aluminium Alloys	Chromium (Cr)	ASTM E-1251: 2011 TI(OES)-03 Issue 01 Dated 01.03.2012 Rev 00	0.0017 % to 0.258 %
		Nickel (Ni)		0.0032 % to 4.98 %
		Zinc (Zn)		0.0034 % to 5.02 %
		Lead (Pb)		0.0006 % to 0.879 %
		Tin (Sn)		0.0024 % to 0.138 %
6. Copper & Copper Alloys		Titanium (Ti)	BS EN15079: 2007 TI(OES)-04 Issue 01 Dated 01.03.2012 Rev 00	0.0163 % to 0.587 %
		Tin (Sn)		0.003 % to 11.01 %
		Lead (Pb)		0.002 % to 21.76 %
		Zinc (Zn)		0.005 % to 44.04 %
		Ferrous (Fe)		0.006 % to 17.28 %
		Nickel (Ni)		0.0025 % to 30.61 %
		Aluminium (Al)		0.0004 % to 3.91 %
		Silicon (Si)		0.002 % to 0.132 %
		Arsenic (As)		0.0024 % to 0.087 %
		Manganese (Mn)		0.0013 % to 2.97 %
		Bismuth (Bi)		0.001 % to 0.103 %
		Phosphorus (P)		0.00072 % to 0.057 %
		Silver (Ag)		0.01 % to 0.03 %

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7.	Zinc & Zinc Alloys	Lead (Pb)	TI(OES)-01 Issue 01 Dated 01.03.2012 Rev 00	0.0046 % to 2.87 %
		Aluminium (Al)		0.068 % to 23.5 %
		Cadmium (Cd)		0.0014 % to 0.638 %
		Ferrous (Fe)		0.007 % to 0.12 %
		Tin (Sn)		0.0012 % to 2.38 %
		Copper (Cu)		0.0052 % to 2.97 %
		Nickel (Ni)		0.0014 % to 0.043 %
		Magnesium (Mg)		0.0143 % at 0.179 %

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