Laboratory	**Industrial Development and Testing Laboratory, 40/107, Jay Bibi Road, Plot No. 18 & 20, Ghusuri, Howrah, West Bengal**			
Accreditation Standard	**ISO/IEC 17025: 2005**			
Discipline	**Chemical Testing**	**Issue Date**	**22.11.2014**	
Certificate Number	**T-0483**	**Valid Until**	**21.11.2016**	
Last Amended on	**-**	**Page**	**1 of 8**	

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 AND ALLOYS**			
1.	**Iron & Steels**	Carbon	IS 228 (Part 1): 1987 (RA 2008)	0.05 % to 2.50 %
		Manganese	IS 228 (Part 2): 1987 (RA 2008) SOP – OM 03.13 Issue No. 01 Issue date 02/05/13, (Rev. 0)	0.10 % to 5.00 %
		Silicon	IS 228 (Part 8): 1989 (RA 2009)	0.05 % to 2.50 %
		Sulphur	IS 228 (Part 9): 1989 (RA 2009)	0.01 % to 0.25 %
		Phosphorus	IS 228 (Part 3): 1987 (RA 2008)	0.01 % to 0.50 %
		Nickel	IS 228 (Part 5): 1987 (RA 2009)	0.10 % to 20.00 %
		Chromium	IS 228 (Part 6): 1987 (RA 2009)	0.10 % to 25.00 %
		Copper	IS 228 (Part 15): 1992 (RA 2009)	0.05 % to 2.00 %
		Molybdenum	IS 228 (Part 7): 1990 (RA 2012)	1.00 % to 3.50 %

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Last Amended on	**-**	**Page**	**2 of 8**	

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
2.	**Cast Iron**	Carbon	IS 12308 (Part 11): 1991 (RA 2006)	1.50 % to 4.50 %
		Manganese	IS 12308 (Part 10): 1991 (RA 2006)	0.10 % to 5.00 %
		Silicon	IS 12308 (Part 6): 1991 (RA 2006)	0.10 % to 6.00 %
		Phosphorus	IS 12308 (Part 5): 1991 (RA 2006)	0.01 % to 0.50 %
		Nickel	IS 12308 (Part 7): 1991 (RA 2006)	0.50 % to 2.00 %
3.	**White Metal**	Lead	IS 1409 (Sec. 7): 1959 (RA 2010)	5.00 % to 80.00 %
		Tin	IS 1409 (Sec. 4): 1959 (RA 2010)	4.50 % to 90.00 %
		Antimony	IS 1409 (Sec. 6): 1959 (RA 2010)	2.00 % to 16.00 %
		Copper	IS 1409 (Sec. 7): 1959 (RA 2010)	0.10 % to 6.00 %
4.	**Copper And Copper Alloys**	Copper	IS 7212: 1974 (RA 2010) IS 3685: 1966 (RA 2006) IS 440: 1964 (RA 2006) IS 4027 (Part 1): 1987 (RA 2006)	50.00 % to 99.98 %

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	Copper And Copper Alloys	Zinc	IS 3685: 1966 (RA 2006) IS 4027 (Part 6): 1987 (RA 2006)	0.10 % to 45.00 %
		Tin	IS 3685: 1966 (RA 2006) IS 4027 (Part 5): 1987 (RA 2006)	0.10 % to 13.00 %
		Lead	IS 3685: 1966 (RA 2006) IS 4027 (Part 1): 1987 (RA 2006) IS 440: 1964 (RA 2006)	0.10 % to 14.00 %
		Manganese	IS 3187: 1965 (RA 2006)	0.10 % to 2.00 %
		Nickel	IS 3685: 1966 (RA 2006)	0.05 % to 5.00 %
		Iron	IS 4027 (Part 8): 1991 (RA 2007)	0.05 % to 6.00 %
		Silicon	IS 3685: 1966 (RA 2006)	0.05 % to 2.50 %
		Aluminium	SOP – OM – 03 .12 Issue No. 01 Issue date 30/08/12, Rev. 0	0.10 % to 11.00 %
		Phosphorous	IS 440: 1964 (RA 2006) IS 3685: 1966 (RA 2006) IS 4027 (Part 3): 1987 (RA 2006)	0.01 % to 0.60 %

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
5.	**Aluminium & Aluminium Alloys**	Silicon	IS 504 (Part 1): 2002	0.31 % to 13.00 %
		Copper	IS 504 (Part 3): 2002	0.11 % to 2.00 %
		Manganese	IS 504 (Part 5): 2002	0.10 % to 1.50 %
		Nickel	IS 504 (Part 7): 2002	0.05 % to 4.00 %
		Zinc	IS 504 (Part 4): 2002	0.10 % to 7.00 %
		Magnesium	IS 504 (Part 6): 2002	0.11 % to 11.00 %
		Tin	IS 504 (Part 9): 2002	0.02 % to 0.10 %
		Iron	IS 504 (Part 2): 2002	0.11 % to 2.00 %
		Chromium	IS 504 (Part 8): 2002	0.10 % to 0.30 %
6.	**Zinc Coated Iron & Steel Articles**	Mass Test	IS 6745: 1972 (RA 2010)	50 g/m^2 to 1500 g/m^2
		Dip Test	IS 2633: 1986 (RA 2010)	Qualitative
7.	**Carbon & Low Alloy Steel, Silicon Manganese Steel**	Carbon	Emission Spectrometry ASTM E415 - 2008	0.01 % to 1.50 %
		Manganese	IS 8811: 1998 (RA 2012)	0.01 % to 2.50 %
		Silicon	IS 228 (Part 23): 2003	0.01 % to 2.50 %
		Sulphur	S.O.P. OM.03.14 Issue No. 01 Issue Date 20/09/13 Rev. No. 0	0.005 % to 0.15 %
		Phosphorus		0.005 % to 0.15 %

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Carbon & Low Alloy Steel, Silico Manganese Steel	Nickel	Emission Spectrometry ASTM E415 - 2008	0.01 % to 2.00 %
		Chromium	IS 8811: 1998 (RA 2012) IS 228 (Part 23): 2003	0.01 % to 3.00 %
		Molybdenum	S.O.P. OM.03.14 Issue No. 01	0.01 % to 1.00 %
		Copper	Issue Date 20/09/13 Rev. No. 0	0.01 % to 0.50 %
		Cobalt		0.001 % to 0.20 %
		Vanadium		0.005 % to 1.00 %
		Niobium		0.001 % to 0.10 %
		Aluminium		0.001 % to 0.025 %
		Nitrogen		0.001 % to 0.03 %
8.	**Cr–Cr / Ni Steels Stainless Steels/ High Alloy Steels & High Manganese Steel**	Carbon	Emission Spectrometry ASTM E 1086 - 2008	0.01 % to 2.00 %
		Manganese	IS 9879: 1998 IS 228 (Part 23): 2003	0.01 % to 14.50 %
		Silicon	S.O.P. OM.03.15 Issue No. 01	0.01 % to 2.00 %
		Sulphur	Issue Date 20/09/13 Rev. No. 0	0.001 % to 0.100 %
		Phosphorus		0.001 % to 0.150 %
		Chromium		0.001 % to 20.00 %
		Nickel		0.01 % to 12.00 %

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	Cr–Cr / Ni Steels Stainless Steels/ High Alloy Steels & High Manganese Steel	Molybdenum	Emission Spectrometry ASTM E 1086 - 2008	0.01 % to 3.00 %
		Copper	IS 9879: 1998 IS 228 (Part 23): 2003	0.01 % to 1.00 %
		Cobalt	S.O.P. OM.03.15 Issue No. 01	0.01 % to 1.00 %
		Vanadium	Issue Date 20/09/13 Rev. No. 0	0.01 % to 1.00 %
		Titanium		0.001 % to 0.50 %
		Aluminium		0.001 % to 0.30 %
		Nitrogen		0.01 % to 0.20 %
9.	**Aluminium & Aluminium Alloys**	Silicon	Emission Spectrometry ASTM E 1251 - 2011	0.01 % to 16.00 %
		Iron	IS 7658: 1975 (RA 2010) IS 11035: 1984 (RA 2010)	0.01 % to 4.00 %
		Copper	S.O.P. OM.03.16 Issue No. 01	0.01 % to 7.00 %
		Manganese	Issue Date 20/09/13 Rev. No. 0	0.003 % to 1.00 %
		Chromium		0.003 % to 0.50 %
		Nickel		0.002 % to 0.50 %
		Zinc		0.01 % to 1.00 %

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Aluminium & Aluminium Alloys	Titanium	Emission Spectrometry ASTM E 1251 - 2011	0.01 % to 0.50 %
		Lead	IS 7658: 1975 (RA 2010) IS 11035: 1984 (RA 2010)	0.002 % to 0.50 %
		Tin	S.O.P. OM.03.16 Issue No. 01	0.001 % to 0.30 %
		Magnesium	Issue Date 20/09/13 Rev. No. 0	0.001 % to 3.00 %
10.	**Copper & Copper Alloys**	Zinc	Emission Spectrometry BS EN 15079 - 2007 S.O.P. OM.03.17 Issue No. 01 Issue Date 20/09/13 Rev. No. 0	0.001 % to 45.00 %
		Lead		0.001 % to 5.00 %
		Tin		0.005 % to 5.00 %
		Phosphorus		0.005 % to 0.50 %
		Manganese		0.002 % to 1.00 %
		Iron		0.001 % to 2.00 %
		Nickel		0.001 % to 2.00 %
		Silicon		0.001 % to 0.50 %
		Arsenic		0.001 % to 0.40 %
		Antimony		0.003 % to 0.50 %
		Silver		0.001 % to 0.10 %
		Aluminium		0.001 % to 1.00 %

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Certificate Number	**T-0483**	**Valid Until**	**21.11.2016**
Last Amended on	**-**	**Page**	**8 of 8**

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	Copper & Copper Alloys	Sulphur	Emission Spectrometry BS EN 15079 - 2007	0.001 % to 0.10 %
		Magnesium	S.O.P. OM.03.17 Issue No. 01	0.005 % to 0.10 %
		Chromium	Issue Date 20/09/13 Rev. No. 0	0.001 % to 0.10 %
		Carbon		0.001 % to 0.05 %

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