

Laboratory Material Testing Laboratory, Ordnance Factory, Ambajhari, Nagpur, Maharashtra

Accreditation Standard ISO/IEC 17025: 2005

Discipline Chemical Testing **Issue Date** 13.03.2014

Certificate Number T-0053 **Valid Until** 12.03.2016

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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
1.	METAL & ALLOYS			
1.	Analysis of Aluminum & Aluminum Base Alloys	Analysis by Optical Emission Spectrometer	ASTM E 1251- 11	
		Si		0.05 to 15%
		Fe		0.02 to 1.50%
		Cu		0.01 to 10%
		Mn		0.006 to 2.00%
		Mg		0.02 to 6%
		Cr		0.004 to 0.66%
		Zn		0.006 to 8.0 %
		Ti		0.001 to 0.40%
		Ni		0.005 to 2.0%
		Pb		0.001 to 0.30 %
		Sn		0.001 to 0.30%
		Zr		0.03 to 0.30%
2.	Analysis of Iron Base Alloys Low Alloy Steels	Analysis by Optical Emission Spectrometer	ASTM E-415-2008	
		C		0.015 to 1.40 %
		Si		0.03 to 2.00 %
		Mn		0.03 to 2.00 %
		P		0.005 to 0.08 %
		S		0.005 to 0.08 %
		Cr		0.01 to 3.0 %
		Mo		0.002 to 1.00 %
		Ni		0.01 to 4.50 %
		Cu		0.01 to 0.70 %
		V		0.02 to 0.60 %
		Al		0.015 to 0.08 %

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	Stainless Steels	Analysis by Optical Emission Spectrometer C Si Mn P S Cr Mo Ni	ASTM E-1086-2008	0.05 to 0.30 % 0.30 to 1.60 % 0.20 to 2.00 % 0.01 to 0.04 % 0.01 to 0.04 % 8.00 to 26.00% 0.50 to 1.00 % 7.50 to 21.00 %
	Tool Steels - HSS	Analysis by Optical Emission Spectrometer C Si Mn P S Cr Mo V Co W	WS/MTL/C/29	0.40 to 1.10% 0.10 to 1.00% 0.10 to 0.80% 0.01 to 0.05 % 0.005 to 0.05% 1.0 to 6.00% 0.04 to 6.00% 0.15 to 2.00% 0.005 to 10.5% 0.01 to 24.0%
3.	Analysis of Copper & Copper Base Alloys	Analysis by Optical Emission Spectrometer Cu Zn Pb Sn P	OFAJ Work Instruction No. WS/MTL/C-02 & 04	55 to 96 % 0.008 to 45.00% 0.01 to 12.00% 0.01 to 12.00% 0.008 to 1.00%

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		Mn		0.004 to 2.00%
		Fe		0.01 to 2.0%
		Ni		0.01 to 35.00%
		Si		0.01 to 1.00%
		Sb		0.01 to 0.50%
		Bi		0.02 to 0.50%
		Al		0.002 to 8 %
		As		0.003 to 0.25 %
4.	Elements in Steel Alloys	By Atomic Absorption Spectro Photometer		
		Mn	WS/MTL/C-11	0.01 to 2 %
		Ni	WS/MTL/C-12	0.02 to 3%
		Co	WS/MTL/C-15	0.05 to 3%
		Mo	WS/MTL/C-14	0.08 to 2%
		Cr	WS/MTL/C-13	0.05 to 2%
		V	WS/MTL/C-29	0.14 to 2.5 %
5.	Elements in Aluminum Alloys	By Atomic Absorption Spectro Photometer		
		Fe	WS/MTL/C-16	0.05 to 1 %
		Cu	WS/MTL/C-17	0.05 to 6 %
		Mn	WS/MTL/C-18	0.05 to 1%
		Mg	WS/MTL/C-19	0.05 to 1 %
		Zn	WS/MTL/C-20	0.02 to 0.25%

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6.	Elements in Copper alloys	By Atomic Absorption Spectro Photometer		
		Fe	WS/MTL/C-21	0.01 to 0.3%
		Ni	WS/MTL/C-22	0.02 to 0.3%
		Pb	WS/MTL/C-23	0.02 to 3%
7.	ANALYSIS OF IRON BASE ALLOYS	WET CHEMICAL		
		Si	IS 228 Pt 8-1989 Reaffirmed -2009	0.10 to 2.0 %
		Cr	IS 228 Pt 6 - 1987 Reaffirmed -2002	0.10 to 25.00%
		Ni	IS 228 Pt 5 –1987 Reaffirmed -2002	0.10 to 20.00 %
		Mn	IS 228 Pt 2- 1987 Reaffirmed -2008	0.10 to 2.00%
8.	Analysis of Copper & Copper Base Alloys	Cu	IS 3685- 1966 Reaffirmed 2006	50.00 to 75.00 %
		Wet Chemical Analysis Pb	IS 3685-1966 Reaffirmed 2006	0.05 to 10.00 %
9.	Analysis of Carbon in steel	By LECO Analyser C	ASTM- E 1019 -11	0.01 to 3.5

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