

<b>Laboratory</b>	<b>Metal Power Analytical (I) Pvt. Ltd., A1/A47, Raj Industrial Complex, Military Road, Marol-Maroshi, Andheri (E), Mumbai, Maharashtra</b>		
<b>Accreditation Standard</b>	<b>ISO/IEC 17025: 2005</b>		
<b>Discipline</b>	<b>Chemical Testing</b>	<b>Issue Date</b>	<b>05.02.2016</b>
<b>Certificate Number</b>	<b>T-2645</b>	<b>Valid Until</b>	<b>04.02.2018</b>
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<b>S. No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
<b>I.</b>	<b>METALS &amp; ALLOYS</b>			
<b>A.</b>	<b>Wet Chemical Analysis</b>			
<b>1.</b>	<b>Ferrous Based Alloys</b>	Mn	IS 228 (Part 2): 1987	0.15 % to 1.50 %
		Cr	MPA/LAB/SOP/003 15.12.2012	0.1 % to 26.0 %
		Ni	IS 228 (Part 5): 1987 (RA 1997)	0.1 % to 45.0 %
		P	IS 228 (Part 3): 1987 (RA 2002) ASTM E 350-95: 2012 ASTM E 351-93: 2013 ASTM E 352-93: 2006 ASTM E 353-93: 2006	0.010 % to 0.1 % 0.020 % to 0.1 % 0.02 % to 0.1 % 0.01 % to 0.05 % 0.02 % to 0.1 %
		Mo	MPA/LAB/SOP/006 15.12.2012	2.0 % to 6.0 %
		Si	IS 228 (Part 8): 1987 ASTM E 350-95: 2012 ASTM E 351-93: 2013 ASTM E 352-93: 2006 ASTM E 353-93: 2006 ASTM E 354-93: 2006	0.05 % to 3.50 % 0.05 % to 3.50 % 0.1 % to 2.50 % 0.2 % to 1.0 % 0.2 % to 1.00 % 0.05 % to 4.0 %
<b>2.</b>	<b>Copper Alloys</b>	Sn	MPA/LAB/SOP/035 15.12.2012	0.7 % to 10.0 %
		Pb	MPA/LAB/SOP/025 15.12.2012	0.1 % to 10.0 %
		Cu	MPA/LAB/SOP/025 15.12.2012	50.0 % to 99.99 %

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3.	Aluminium Alloys	Si	MPA/LAB/SOP/034 15.12.2012	0.5 % to 18.00 %
<b>B. Atomic Absorption Spectrometer</b>				
1.	Ferrous Based Alloys	Mn	ASTM E350-95: 2012 MPA/LAB/SOP/014 15.12.2012	0.010 % to 2.0 %
		Ni	MPA/LAB/SOP/016 15.12.2012	0.01 % to 12.0 %
		Cu	ASTM E350-95: 2012	0.004 % to 0.4 %
			MPA/LAB/SOP/015 15.12.2012	0.004 % to 0.4 %
		Co	MPA/LAB/SOP/017 15.12.2012	0.01 % to 0.70 %
		Mo	MPA/LAB/SOP/018 15.12.2012	0.25 % to 3.0 %
	Cr	ASTM E350-95: 2012 ASTM E351-95: 2013 ASTM E352-95: 2005 ASTM E353-95: 2005	0.01 % to 1.0 %	
2.	Copper Alloys	Pb	ASTM E478-08	0.10 % to 1.0 %
		Fe	MPA/LAB/SOP/029 15.12.2012	0.040 % to 1.0 %
		Ni	MPA/LAB/SOP/030 15.12.2012	0.003 % to 1.0 %

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	Copper Alloys	Zn	ASTM E478-08	0.02 % to 2.00 %
		Mn	MPA/LAB/SOP/032 15.12.2012	0.005 % to 2.0 %
3.	Aluminium Alloys	Fe	ASTM E34-94: 2002	0.02 % to 2.00 %
		Cu		0.01 % to 3.00 %
		Ni		0.01 % to 3.00 %
		Cr		0.01 % to 1.00 %
		Zn		0.003 % to 3.0 %
		Pb		0.002 % to 0.24 %
<b>C. Combustion Analysis By CA Analyzer</b>				
1.	Iron Steel	C	ASTM E 1019: 2011	0.010 % to 4.20 %
		S	ASTM E 1019: 2011	0.001 % to 0.35 %
<b>D. Optical Emission Spectrometer</b>				
1.	Ferrous Based Alloys (Low Alloy Steel)	Si	ASTM E415-2014 IS 8811: 1998 (RA 2006)	0.01 % to 1.20 %
		C		0.01 % to 1.35 %
		Mn		0.15 % to 1.70 %
		P		0.005 % to 0.1 %
		S		0.006 % to 0.10 %

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	<b>Ferrous Based Alloys (Low Alloy Steel)</b>	Cr	ASTM E415-2014 IS 8811: 1998 (RA 2006)	0.05 % to 3.00 %
		Mo		0.01 % to 1.0 %
		Ni		0.02 % to 4.13 %
		V		0.01 % to 0.50 %
		Al		0.01 % to 0.15 %
		Co		0.008 % to 0.20 %
		Cu		0.015 % to 0.5 %
		N		0.004 % to 0.0155 %
2.	<b>Ferrous Based Alloys (Stainless Steel)</b>	Si	ASTM E1086: 2014 IS 9879: 1998	0.21 % to 1.41 %
		C		0.01 % to 0.30 %
		Mn		0.23 % to 1.70 %
		P		0.005 % to 0.037 %
		S		0.003 % to 0.065 %
		Cr		9.0 % to 25.0 %
		Mo		0.05 % to 3.00 %
		Ni		5.0 % to 15 %
	Cu	0.05 % to 0.30 %		

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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
3.	Ferrous Based Alloys (Cast Iron)	C	ASTM E1999-99: 2011	1.91 % to 3.50 %
		Si		0.45 % to 2.09 %
		Mn		0.13 % to 1.8 %
		P		0.010 % to 0.39 %
		S		0.007 % to 0.08 %
		Cr		0.021 % to 2.0 %
		Mo		0.006 % to 0.47 %
		Ni		0.02 % to 2.0 %
		Cu		0.012 % to 0.75 %
		V		0.023 % to 0.22 %
		Sn		0.006 % to 0.14 %
4.	Aluminium Alloys	Si	ASTM E1251: 2011	0.10 % to 16 %
		Fe		0.20 % to 0.5 %
		Mn		0.007 % to 1.2 %
		Cu		0.006 % to 5.5 %
		Mg		0.05 % to 5.4 %
		Ti		0.001 % to 0.12 %

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	Aluminium Alloys	Be	ASTM E1251: 2011	0.0008 % to 0.027 %
		Bi		0.03 % to 0.13 %
		Cr		0.001 % to 0.23 %
		Pb		0.04 % to 0.6 %
		Ni		0.005 % to 1.85 %
		Sn		0.03 % to 0.26 %
		Zn		0.002 % to 5.7 %
		Zr		0.001 % to 0.08 %
		Sr		0.001 % to 0.005 %
5.	Nickel Based Alloys	C	MPA/LAB/SOP/47 01.06.2015	0.007 % to 0.30 %
		Si		0.05 % to 4.20 %
		Mn		0.1 % to 3.20 %
		Al		0.030 % to 3.20 %
		Co		0.009 % to 1.0 %
		Cr		0.008 % to 30.00 %
		Mo		0.003 % to 6.0 %
		Fe		0.1 % to 45.00 %
	V	0.003 % to 0.80 %		

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	<b>Nickel Based Alloys</b>	Cu	MPA/LAB/SOP/47 01.06.2015	0.001 % to 35.00 %
		Mg		0.0002 % to 0.25 %
		Ti		0.005 % to 1.5 %
		Zr		0.010 % to 0.040 %
6.	<b>Copper Based Alloys</b>	Sb	MPA/LAB/SOP/48 01.06.2015	0.001 % to 2.0 %
		As		0.001 % to 1.2 %
		S		0.001 % to 0.15 %
		P		0.001 % to 1.0 %
		Si		0.001 % to 1.0 %
		Al		0.001 % to 14.00 %
		Ni		0.003 % to 32.00 %
		Fe		0.001 % to 5.0 %
		Zn		0.002 % to 40.00 %
		Pb		0.005 % to 15.00 %
		Sn		0.002 % to 20.00 %
		Mn		0.001 % to 3.00 %
	Co	0.002 % to 0.15 %		
	Cr	0.02 % to 2.70 %		

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	Copper Based Alloys	Ti	MPA/LAB/SOP/48 01.06.2015	0.01 % to 0.25 %
		Mg		0.001 % to 0.1 %
7.	Zinc Alloy	Pb	MPA/LAB/SOP/49 01.06.2015	0.002 % to 1.0 %
		Mg		0.003 % to 0.15 %
		Al		0.0015 % to 6.0 %
		Cu		0.002 % to 2.0 %
		Si		0.003 % to 0.02 %
		Mn		0.001 % to 0.025 %
		Ni		0.001 % to 0.030 %
		Fe		0.001 % to 0.065 %
		Sb		0.001 % to 0.01 %
		Cd		0.001 % to 0.20 %
		Sn		0.001 % to 0.25 %
		Cr		0.001 % to 0.065 %
		Bi		0.002 % to 0.020 %
	Ti	0.001 % to 0.015 %		

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