

Laboratory **Chemical Testing Laboratory, Ordnance Factory Katni, O.F. Premises, Katni, Madhya Pradesh**

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

Certificate Number **TC-6975**

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Validity **30.08.2018 to 29.08.2020**

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
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**CHEMICAL TESTING**

<b>I. METALS &amp; ALLOYS</b>				
1.	<b>Pure Copper, Electrolytic Copper</b>	Sn	BS EN 15079	0.003 % to 1.0 %
		Pb		0.0005 % to 2.0 %
		Fe		0.0003 % to 1.0 %
		Ni		0.0002 % to 0.1 %
		As		0.0002 % to 0.05 %
		Sb		0.0005 % to 0.05 %
		Bi		0.0005 % to 0.05 %
		P		0.0001 % to 0.1 %
		Zn		0.0005 % to 0.1 %
		Se		0.0002 % to 0.05 %
		Te		0.0003 % to 0.05 %
2.	<b>Copper- Zinc alloys 70-30 Brass/63-37 Brass 60-40 Brass Lead Brass 90-10 Brass Gilding Metal</b>	Sn	BS EN 15079	0.002 % to 2.0 %
		Pb		0.002 % to 4.0 %
		Fe		0.001 % to 2.0 %
		Ni		0.001 % to 2.0 %
		As		0.001 % to 0.2 %
		Sb		0.0015 % to 0.4 %
		Bi		0.001 % to 0.05 %
		Zn		0.002 % to 4.5 %
3.	<b>Copper-Nickel-Zinc Alloys Cupro Nickel</b>	Sn	BS EN 15079	0.001 % to 2.0 %
		Pb		0.0015 % to 0.10 %
		Fe		0.001 % to 3.0 %
		Ni		0.001 % to 30 %
		As		0.005 % to 0.10 %
		Sb		0.002 % to 0.5 %
		Bi		0.0005 % to 0.2 %

**K. Siribabu**  
Convenor

**Jitendra B. Vispute**  
Program Manager

Laboratory

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		Mn		0.001 % to 2.0 %
		Zn		0.002 % to 0.50 %
4.	Zinc Base Alloy/ Mazak	Al	IS 2599	3.0 % to 4.8 %
		Cu	IS 713	0.0025 % to 2.0 %
		Mg		0.0090 % to 0.09 %
		Fe		0.020 % to 0.150 %
		Pb		0.0004 % to 0.014 %
		Sn		0.0005 % to 0.008 %
		Cd		0.0001 % to 0.014 %
		Ni		0.001 % to 0.020 %
		Tl		0.001 % to 0.008 %
		In		0.0004 % to 0.006 %

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**MECHANICAL TESTING**

I.	<b>MECHANICAL PROPERTIES OF METALS</b>			
1.	<b>Non -Ferrous Alloys</b>	Tensile Strength	IS 1608	100 N/mm <sup>2</sup> to 800 N/mm <sup>2</sup>
		Elongation	IS 1608	1 % to 80 %
		Vickers Hardness	IS 1501	40 to 130 (HV5, HV10, HV 30)
		Bend Test	IS 1599	Qualitative (Mandrel diameter in mm: 22 & 32)
		Flattening Test	IS 2328	Qualitative (20 mm to 200 mm tube diameter tube)
II.	<b>METALLOGRAPHY TEST</b>			
1.	<b>Non-Ferrous Alloys, Copper and its alloys</b>	Macro structure	IS 13484	Qualitative (Unaided eye or upto 10X)
		Micro Structure	IS 7739 (Part 4) ASM Vol. 7	Qualitative (Magnification 50 X, 100X, 200X, 500X, 1000 X)
		Grain size - Comparison method	IS 4748	Qualitative (Magnification 75 X 0.005 mm to 0.20 mm)

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**NON - DESTRUCTIVE TESTING**

<b>I.</b>	<b>METALS AND ALLOYS</b>			
<b>1.</b>	<b>Zinc Base Alloy Casting</b>	<b>Radiography -X-Ray</b>	<b>IS 2595</b>	<b>Qualitative (5 mm to 78 mm Steel or equivalent)</b>

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