

Laboratory **Quality Assurance Laboratory, Vedanta Limited, SIPCOT Industrial Complex, Madurai Bypass Road, Tuticorin, Tamil Nadu**

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

Certificate Number **TC-6634**

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Validity **06.12.2017 to 05.12.2019**

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

I.	ORES AND MINERALS			
1.	Copper Concentrate	Copper (Cu)	SCT:SMLTQA:8.2.3.029 (Based on ISO 10258:2015)	15.00 % to 80.00 %
		Sulphur (S)	SCT:SMLTQA:8.2.3.100 In House Validated Method (Based on Alfred H Knight Method)	10.00 % to 46.00 %
		Arsenic (As)	SCT:SMLTQA:8.2.3.034 SCT: SMLTQA: 8.2.3.116 In House Validated Method (Based on Manufacturers OEM by ICP)	10 mg/kg to 5000 mg/kg
		Bismuth (Bi)	SCT:SMLTQA:8.2.3.034 SCT: SMLTQA: 8.2.3.116 In House Validated Method (Based on Manufacturers OEM by ICP)	10 mg/kg to 2000 mg/kg
		Nickel (Ni)	SCT:SMLTQA:8.2.3.034 SCT: SMLTQA: 8.2.3.116 In House Validated Method (Based on Manufacturers OEM by ICP)	10 mg/kg to 7000 mg/kg
		Lead (Pb)	SCT:SMLTQA:8.2.3.034 SCT: SMLTQA: 8.2.3.116 In House Validated Method (Based on Manufacturers OEM by ICP)	10 mg/kg to 10000 mg/kg
		Antimony (Sb)	SCT:SMLTQA:8.2.3.034 SCT:SMLTQA: 8.2.3.116 In House Validated Method	10 mg/kg to 10000 mg/kg

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			(Based on Manufacturers OEM by ICP)	
		Selenium (Se)	SCT:SMLTQA:8.2.3.034 SCT: SMLTQA: 8.2.3.116 In House Validated Method (Based on Manufacturers OEM by ICP)	10 mg/Kg to 2000 mg/Kg
		Tellurium (Te)	SCT:SMLTQA:8.2.3.034 SCT:SMLTQA: 8.2.3.116 In House Validated Method (Based on Manufacturers OEM by ICP)	10 mg/Kg to 500 mg/Kg
		Zinc (Zn)	SCT:SMLTQA:8.2.3.034 SCT:SMLTQA: 8.2.3.116 In House Validated Method (Based on Manufacturers OEM by ICP)	10 mg/Kg to 120000 mg/Kg
		Chloride	SCT:SMLTQA:8.2.3:055(Based on Quantitative Inorganic analysis –I.Vogal)	50 mg/Kg to 5000 mg/Kg
		Fluoride	SCT:SMLTQA:7.6:097 (Based on AHK Method/ ION Selective Electrode – Manufacturers OEM)	50 mg/Kg to 5000 mg/Kg
2.	Copper Concentrate (High Gold)	Concentration of Gold	SCT:PMBCONC: 5.4.1:01 Ver.No:01 Revision 02 Based on ISO 10378	(5 to 150) g/1000Kg
		Silver	SCT:PMBCONC: 5.4.1:01 Ver.No:01 Revision 02 Based on ISO 10378	(30 to 1500) g/1000kg
3.	Copper Concentrate (Low Gold)	Gold	SCT:PMBCONC: 5.4.1:02 Ver.No:01 Revision 02 Based on ISO 10378	(0.5 to 5.0) g/1000kg

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		Silver	SCT:PMBCONC: 5.4.1:02 Ver.No:01 Revision 02 Based on ISO 10378	(5 to 1500) g/1000kg
4.	Copper & Its Alloys			
a.	Copper Cathode and Continuous Cast Copper Rod	Concentration of Silver (Ag)	SCT: REF QA:8.2.4:21 Revision:03 Version:01 Issue date:25.05.2017) Based on manufacturer manual by using OES-ARL 4460 spectrometer and as per ASTM B115 AND IS191 & IS 1244	6 mg/kg to 600 mg/kg
		Arsenic (As)		0.30 mg/kg to 1080 mg/kg
		Bismuth (Bi)		0.25 mg/kg to 900 mg/kg
		Iron (Fe)		0.25 mg/kg to 1200 mg/kg
		Nickel(Ni)		0.20 mg/kg to 720 mg/kg
		Lead(Pb)		0.46 mg/kg to 1080 mg/kg
		Antimony(Sb)		0.50 mg/kg to 600 mg/kg
		Selenium(Se)		0.30 mg/kg to 360 mg/kg
		Tin(Sn)		0.35 mg/kg to 2500 mg/kg
		Tellurium(Te)		0.30 mg/kg to 600 mg/kg
		Chromium(Cr)		0.30 mg/kg to 3000 mg/kg
		Manganese(Mn)		0.16 mg/kg to 720 mg/kg
		Cadmium (Cd)		0.45 mg/kg to 700 mg/kg
		Phosphorous (P)		0.80 mg/kg to 1200 mg/kg
		Silicon (Si)		0.32 mg/kg to 1400 mg/kg
		Zinc (Zn)		0.45 mg/kg to 2400 mg/kg
		Cobalt (Co)		0.21 mg/kg to 900 mg/kg
		Sulphur (S)	SCT.REF QA:8.2.4:55 Revision:03 Issue date: 25.05.2017) Based on manufacturer manual by using Sulphuranalyser LECO S-844 and as per ASTM B115 AND IS191 & IS12444	0.6 mg/kg to 3000 mg/kg
5.	Rock Phosphate	P ₂ O ₅	IS11224:1985 (REAFFIRMED 2010) A-3.2 SCT:PAPQA:8.2.4.054	28 % to 39 %

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II.	METALS & ALLOYS			
1.	Copper & Its Alloys			
a.	Copper Rod	Concentration of Oxygen	ASTM B49-16 (SCT:CCRQA:8.2.4:00) LECO RO-500 (2 no's)	12mg/kg to 1000 mg/kg
		Surface Oxide	ASTM B49-16 (SCT:CCRQA:8.2.4:00) SCR Digital Oxide Determinator	100 A° to 1000 A° °
2.	Precious Metals			
a.	Anodeslime\ Decopperised & Deselenised Slime	Concentration of Silver	SCT:PMBSLB: 5.4:02 (FIRE ASSAY METHOD)	0.3 % to 30 % 3000 mg/kg to 300000 mg/kg
		Gold	SCT:PMBSLB:5.4:02 (FIRE ASSAY METHOD)	0.2 % to 7 % 2000 mg/kg to 70000 mg/kg
		Platinum	SCT:PMBSLB: 5.4:02 (FIRE ASSAY METHOD)	5 mg/kg to 500 mg/kg
		Palladium	SCT:PMBSLB: 5.4:02 (FIRE ASSAY METHOD)	10 mg/kg to 1000 mg/kg
III.	METALLIC COATINGS & TREATMENT SOLUTIONS			
1.	Copper Electrolyte	Concentration of Copper content in Copper electrolyte	SCT.REF QA:8.2.3:02 Revision :05 Version:01 Issue date:25.05.2017) Based on Standard methods of Chemical analysis-WW Scott	0.20 gpl to 80 gpl
		Acid Content in Copper electrolyte	SCT.REF QA :8.2.3:03 Revision :01 Version:01 Issue date:25.05.2017) Acid -base titration	1.0gpl to 200 gpl

Sangeeta Negi
Convenor

N. Venkateswaran
Program Director

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		Chloride content in Copper electrolyte	SCT.REF QA:8.2.3:42 Revision :01 Version:01 Issue date:25.05.2017) Based on Manufacturer Application Bulletin using Metrohm Auto Titrator Model 794	1 mg/kg to 200 mg/kg
IV.	INDUSTRIAL AND FINE CHEMICALS			
1.	Phosphoric acid Grade-1	P ₂ O ₅	AOAC 962.02;2016 VOLUME 1;2.3.03 (C) (b) SCT:PAPQA:8.2.4.052	38 % to 48 %
2.	Phosphoric acid Grade-2	P ₂ O ₅	AOAC 962.02;2016 VOLUME 1;2.3.03 (C) (b) SCT:PAPQA:8.2.4.052	48 % to 55 %

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ELECTRICAL TESTING

I.	ELECTRICAL MATERIALS			
1.	Conductors Copper Rod	Electrical Conductivity	ASTM B193-16 (SCT:CCR QA:8.2.4:005)	98 % to 104 % IACS (2 to 12.45 mm dia)

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MECHANICAL TESTING

I.	MECHANICAL PROPERTIES OF METALS			
1.	Copper Rod	Tensile Strength	ASTM E8/E8M-15a Computerized Tensile Testing Machine STS-188, (SCT:CCRQA:8.2.4:004)	10 kN to 30 kN
		% Elongation	ASTM E8/E8M-15a Computerized Tensile Testing Machine STS-188, (SCT:CCR QA:8.2.4:004)	30 % to 45 %

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