

Laboratory Quality Assurance Laboratory, Vedanta Limited, Sterlite Copper, 1/1/2, Village Chinchpada, Silvassa, Dadra & Nagar Haveli

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-7892 (in lieu of T-0576, T-0577, T-0578) **Page 1 of 4**

Validity 04.10.2018 to 03.10.2020 **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

I. METALS & ALLOYS				
1.	Copper Cathodes and Wire Rods	Chemical Composition		
		Sulphur (S)	Sulphur Analyzer Manual, SOP# WI-QC-FPI-03 Dated 10.05.2018, ASTM B115-2010 (RA2016) Method B	3 mg/kg to 20 mg/kg
		Silver (Ag)	DC Arc Manual, WI-QC-FPI-16 Dated 10.05.2018	0.5 mg/kg to 25 mg/kg
		Arsenic (As)		0.5 mg/kg to 5 mg/kg
		Bismuth (Bi)		0.1 mg/kg to 3 mg/kg
		Iron (Fe)		1.0 mg/kg to 10 mg/kg
		Nickel (Ni)		1.0 mg/kg to 10 mg/kg
		Lead (Pb)		0.2 mg/kg to 10 mg/kg
		Antimony (Sb)		0.5 mg/kg to 10 mg/kg
		Selenium (Se)		0.4 mg/kg to 3 mg/kg
		Tin (Sn)		0.2 mg/kg to 10 mg/kg
		Tellurium (Te)		0.4 mg/kg to 3 mg/kg
	Oxygen (O ₂)	Based on Oxygen Determinator Leco Manual & SOP#WI-QC-01dated 01.05.2018, ASTM B49-2017,	10 mg/kg to 1000 mg/kg	
2.	Copper Rods	Surface Oxide	Surface Oxide Determinator Manual ASTM B49-2017 (Section 13.5)	100 Å to 2000 Å

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II.	INDUSTRIAL & FINE CHEMICALS			
1.	Electrolyte	Concentration Copper	Iodometric Titration, Based on Vogel's Textbook of Quantitative Chemical Analysis, Fifth Edition, 1989. SOP# WI-QC-IPI-01 Dated 10.05.18	1.0 g/l to 80 g/l
		Acid	Acid – Base Titration, Based on Vogel's Textbook of Quantitative Chemical Analysis, Fifth Edition, 1989. SOP# WI-QC-IPI-02 Dated 10.05.18	1.0 g/l to 300 g/l
		Chloride	Manufacturer Application bulletin/Potentiometer Titration. SOP # WI-QC-IPI-03 Dated 10.05.18	3 mg/kg to 2000 mg/kg

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<u>ELECTRICAL TESTING</u>				
I.	ELECTRICAL MATERIALS			
1.	Conductors	Resistivity of Electrical Conductor Material	ASTM B193-2016	1 mΩ to 20 mΩ 95 % IACS to 103 % IACS

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<u>MECHANICAL TESTING</u>				
I.	MECHANICAL PROPERTIES OF METALS			
1.	Copper Rods & Copper Wire	Tensile Strength	ASTM E8/E8m -2016a ASTM B49-2017,	50 MPa to 400 MPa (5 kN to 50 kN)
		% Elongation	WI/QC/09 dated 01.05.18,	10 % to 80%
		Diameter	WI/QC/03 dated 01.05.18	1.5 mm to 25 mm