



PM/ IS 191/ 1/ April 2020

**PRODUCT MANUAL FOR
Copper
According to IS 191:2007**

This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure coherence of practice and transparency in operation of certification under Scheme-I of Bureau of Indian Standards (Conformity Assessment) Regulations, 2018 for various products. The document may also be used by prospective applicants desirous of obtaining BIS certification licence/certificate.

1.	Product	:	IS 191:2007
	Title	:	Copper
	No. of amendments	:	1
2.	Sampling Guidelines		
a)	Raw material	:	NA
b)	Grouping Guidelines	:	One sample of any form of a given designation intended to be covered shall be drawn and tested to include the designation in applicable forms to be supplied in licence scope.
c)	Sample Size	:	3nos for mechanical tests 250g drilled for chemical tests or 5 nos. of 5X5cm 5m Annealed wire of 2mm dia for resistivity test
3.	List of Test Equipment	:	Please refer Annex - A
4.	Scheme of Inspection and Testing	:	Please refer Annex - B
5.	Possible tests in a day	:	All test
6.	Scope of the Licence :		
	Licence is granted to use Standard Mark as per IS 191:2007 with the following scope:		
	Name of the product		Copper
	Grades/Designations		Cu-CATH-1, ..
	Type		Electrolytic Cathode, ..
	Form of Refinery Shape		Cast Cake,..
	Dimensions		Thickness upto 10 mm

ANNEXURE A
TO PRODUCT MANUAL FOR
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LIST OF TEST EQUIPMENTS

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Major test equipment required to test as per requirements of Indian Standard.

Sl. No.	Test Equipment/Chemicals and Identification Numbers (Where applicable)	Tests Used in with Clause Reference
1.	Weighing balance, Scale, Micrometer, Feeler gauge, plain aluminum bar	Dimensions (5)
2.	Kelvin double bridge with knife edges, Oil bath with thermometer, Hygrometer, Muffle furnace, Analytical balance	Resistivity (9.1)
3.	Instrumental methods Optical emission spectrometer, Milling machine, Sulphur analyser,	Chemical composition (7.1)
4.	Electro analyser with Platinum electrodes(400 mesh/cm Gauze cathode with wire 0.2mm and spiral anode) of height 130mm, flattened and welded platinum-iridium, platinum-rhodium or platinum-ruthenium having dia of approximately 1.5 mm(approx.), Sulphuric acid sp.Gr 1.84, Nitric acid Sp Gr 1.42, Ethanol or Methanol - 95%, Ferric Nitrate, Ammonium Hydroxide, Ammonium Sulphate, Hot plate, Hot air oven, stop watch, urea, filter paper	Cu content by electrolytic method alternative to Difference method by instrumental analysis (7.1)
5.	Muffle furnace, Bend testing equipment	Hydrogen Embrittlement (10)

Note: The above is an indicative list for the purpose of guidance only

ANNEXURE B
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SCHEME OF INSPECTION AND TESTING

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LABORATORY - A laboratory shall be maintained which shall be suitably equipped (as per the requirement given in column 2 of Table 1) and staffed, where different tests given in the specification shall be carried out in accordance with the methods given in the specification.

1.1 The manufacturer shall prepare a calibration plan for the test equipments.

2. TEST RECORDS – The manufacturer shall maintain test records for the tests carried out to establish conformity.

3. LABELLING, MARKING– The Standard Mark as given in the Schedule of the license and Licence Number (i.e. CM/L.....) shall be incorporated, and the marking shall be done as per the provisions of the Indian Standard, provided always that the product thus marked and packed conforms to all the requirement of the specification.

4. CONTROL UNIT – Each refinery shape produced from same charge to uniform size under identical conditions shall constitute a control unit.

5. LEVELS OF CONTROL - The tests as indicated in column 1 of Table 1 and the levels of control in column 3 of Table 1, shall be carried out on the whole production of the factory which is covered by this plan and appropriate records maintained in accordance with paragraph 2 above.

5.1 All the production which conforms to the Indian Standards and covered by the licence should be marked with Standard Mark.

5.2 General requirements relating to the supply of material shall conform to IS 1387. Records of information received from purchaser as per Cl 14 of IS 191:2007 shall be maintained.

6. TEST CERTIFICATE-For each consignment of BIS Certified material conforming to IS 191:2007 there shall be a test certificate which shall contain the Standard Mark, the cast/Control Unit number and the corresponding test results (as given in Annexure-I enclosed)

7. REJECTIONS – Disposal of non-conforming product shall be done in such a way so as to ensure that there is no violation of provisions of BIS Act, 2016.

SCHEME OF INSPECTION AND TESTING

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TABLE 1: LEVELS OF CONTROL

(1)				(2)	(3)		(4)
TEST DETAILS					LEVELS OF CONTROL		REMARKS
Clause	Requirements	Test Method		Test equipment requirement R: required (or) S: Sub-contracting permitted	No. of Samples	Frequency	
		Clause	Reference				
5	Dimensions, Mass and Tolerances	5,5,1 to 5.4, Fig.1 Table-2,3	IS 191	R	Each piece	Each piece	
7	Chemical Composition	7.1, 7.2, 7.3, Table-4 11.1.1	IS 191 IS 440 Or any established Chemical/ Instr. Method. Alternatively test method in relevant ISO/IEC method may be used.	R	One	300t or part thereof of Each Control unit	See Note-3
8	Freedom from Defects	8.1, 8.2	IS 191	R	Adequate inspection on each item to ensure free from defects		
9	Resistivity Test	9.1, 9.1.1, 9.2, 9.2.1 Table-5 Annex-B	IS 191 IS 3635	R	One	Each Control Unit	
10	Hydrogen Embrittlement	10,10.1, 10.1.1 to 10.1.3 Fig.2	IS 1919	R	One	100 Pieces or part Thereof of each control unit	Applicable only for designations Cu-DHP, Cu-DPA and Cu-ATP

Note-1: Whether test equipment is required or sub-contracting is permitted in column 2 shall be decided by the Bureau and shall be mandatory. Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empaneled by the Bureau.

Note-2: The control unit and levels of control as decided by the Bureau are obligatory to which the licensee shall comply with.

Note-3: The manufacturer shall declare the established instrumental method adopted for chemical analysis, details of the reference material accompanied with test certificate used for its calibration and frequency of calibration.

ANNEXURE I
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 (Para 6 of the Scheme of Inspection and Testing)
 XYZ COPPER COMPANY
 (Registered office Address and works address)
TEST CERTIFICATE FOR Copper



TEST CERTIFICATE No. _____

DATE _____

To M/s _____

We certified that the material described below fully conforms to IS 191:2007 Chemical composition and Physical properties of the product, as tested in accordance with the Scheme of Inspection and Testing contained in the BIS Certification Marks Licence No. CM/L _____ are as indicated below against each order No.

(PLEASE REFER TO IS 191:2007 FOR DETAILS OF SPECIFICATION REQUIREMENTS)

TEST RESULTS

Order No. & Date	(Nom Size)	Control Unit No.	Grade	Tolerances	Qty in tonnes	CHEMICAL COMPOSITION										PHYSICAL PROPERTIES		Type	Remarks
						Cu+ Ag (%)	Ag %	P %	As %	Sb %	Bi %	Fe (%)	Pb (%)	S %	Total Impurities	Resistivity	Hydrogen embrittlement [#]		

[#] Applicable for Cu-DHP, Cu-DPA and Cu-ATP

REMARKS

WAGON NO.

TRUCK NO.

(It is suggested that size A4 paper be used for this test certificate)

FOR XYZ COPPER COMPANY