PM/410/1, April 2024

उत्पाद मानुयल
कोल्ड रोल्ड पीतल शीट, पट्टी और पन्नी
IS 410 : 1977 के अनुसार

PRODUCT MANUAL FOR
Cold Rolled Brass Sheet, Strip and Foil
According to IS 410 : 1977

भारतीय मानक ब्यूरो अनुरूपता मूल्यांकन (विनियम की स्कीम-I) के तहत यह उत्पाद मानुयल प्रमाणीकरण के प्रचलन मे रीति और पारदर्शिता के सुसंगता सुनिश्चित करने के लिए सभी क्षेत्रीयशाखा कार्यालयों एवं लाइसेन्स धारियों द्वारा संदर्भ सामग्री के रूप मे उपयोग किया जाएगा। बीआईएस लाइसेन्सप्रमाण पत्र प्राप्त करने के इच्छुक भावी आवेदकों द्वारा भी इस दस्तावेज़ का उपयोग किया जा सकता है।

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.	**मानक सांख्या** **IS No.**	:	**IS 410 : 1977**
	शीर्षक **Title**	:	Specification for Cold Rolled Brass Sheet, Strip and Foil
	संशोधन संख्या **No. of amendments**	:	2
2.	**नमुनाकरण दिशा निर्देश** **Sampling Guidelines**		
a)	**कच्चा माल** **Raw material**	:	No specific requirement. *Note: This section indicates the requirements for raw material (if specified in the IS) for which compliance is to be establishedduring Grant of Licence/Change in Scope of Licence /Factory Surveillance*
b)	**समूहिकरण दिशा निर्देश** **Grouping Guidelines**	:	Please refer Annexure - A
c)	**नमूने का परिमाण** **Sample Size**	:	-1 pc of 500 mm x 500 mm for mechanical tests and 5 pcs. Of 5 cm X 5 cm for chemical tests *Note: This section indicates the quantity of the sample of the product and/or the raw material (if applicable), required to be sent to the laboratory for testing, for the purpose of Grant of Licence/Change in Scope of Licence/ Factory Surveillance (incase of market surveillance, effort may be made to procure therequired*

			quantity of product sample, as far as possible since raw material sample may not be available in market)
3.	**परीक्षण उपकरणो की सूची** **List of Test Equipment**	:	Please refer Annexure - B
4.	**निरीक्षण व परीक्षण स्कीम** **Scheme of Inspection and Testing**	:	Please refer Annexure - C
5.	**एक दिन में संभावित परीक्षण** **Possible tests in a day**	:	All tests *Note: This section is for the guidance of BIS Certification Officers/Technical Auditors of BIS Authorized Outside Surveillance Agencies (OSAs) during factory inspection to provide readyreference regarding the tests which can be witnessed during the inspection in the factory by the officer/auditor*
6.	**लाइसेन्स का कार्यक्षेत्र** **Scope of the Licence :**		
	Licence is granted to use Standard Mark as per IS 410 : 1977 with the following scope:		
	Name of the product	Cold Rolled Brass Sheet, Strip and Foil	
	Form	Sheet/Strip/Foil	
	Alloy Designation	CuZn30 / CuZn37 / CuZn40	
	Use	Telecommunication Industry/Other than Telecommunication Industry	
	Condition of Supply / Temper	O/HA/HB/HD/HE/HS	
	Size	Thickness: From …. mm upto and including … mm Width: From … mm upto and including … mm Length(in case of Sheets) : From …. mm to up to and including …. mm	

Annexure – A

Grouping Guidelines

1. IS 410:1977 covers the requirements of Cold Rolled Brass Sheet, Strip and Foil. 3 grades of Brass are covered under the standard i.e. CuZn30, CuZn37 and CuZn40 with CuZn30 being the grade having the least impurities.

2. Further, these grades can be supplied in different temper conditions as specified at cl.5.1 of IS 410:1977.

3. Mechanical Properties of these grades in different temper conditions have been specified in Table 3 for Brass to be used in Telecommunication Industries and in Table 2 for Brass to be used in Other than Telecommunication Industries.

3. Further, as per the dimensions specified in IS 3052, Width of Sheet has been specified as any width more than 300 mm. Width of Strip/Foil has been specified as any width specified by the purchaser. Thickness of Sheet and Strip has been specified as any thickness over 0.15 mm and up to 10 mm. Thickness of Foil has been specified as any thickness up to and including 0.15 mm.

4. In view of above, the following grouping guidelines shall apply for Grant of Licence (GoL)/Change in Scope of Licence (CSoL):

Form	Industry	Condition of Supply / Temper	Alloy Designation
Sheet/Strip/Foil	Telecommunication Industry/Other than Telecommunication Industries	O/HA/HB/HD/HE/HS	CuZn30
		O/HA/HB/HD/HE/HS	CuZn37
		O/HB/HD	CuZn40

5. One sample of sheet/strip of alloy designation of any size (thickness/width/length) shall be drawn and tested to cover all sizes for the alloy designation.Separate Samples for Alloy Designations in each Condition of Supply (Temper) are required to be drawn and tested.

However, if the above sample drawn is of Alloy Designation of higher purity , then the scope may cover Alloy Designation of lower purities also. (For example, If as sample is drawn from Alloy Designation of CuZn30 and found conforming, then the scope may also cover Alloy Designation CuZn37 and CuZn40).

6. In case the firm intends to cover *brass foils* in the scope of their licence, alteast one of the samples drawn above shall be of *foil*. Further, if the firm intends to cover Brass to be used in *both Telecommunication Industry and Other than Telecommunication Industry*, samples drawn above shall cover combinations of Alloy Designations and Temper Designations, used in both industries and shall be tested as per the applicable mechanical propoerties specified at Table 2 and Table 3 of IS 410:1977.

7. Scope of licence shall be restricted based on the manufacturing and testing facilities available.

8. During operation of licence, samples of each variety covered in the scope of licence, shall be tested in rotation, to the extent possible.

ANNEXURE B

LIST OF TEST EQUIPMENT

(INDICATIVE LIST, FOR GUIDANCE ONLY).

Sl No.	Test Used in with Clause Reference	Test equipment
1	Chemical Composition, Cl 6	Instrumental methods: Instruments such as Optical emission spectrometer Chemical Methods: Apparatus, Chemicals and Reagents as per IS 3685
2	Tensile Strength and Elongation, Cl 7.1.1	Universal Tensile Testing Machine, Extensometer
3	Hardness Test, 7.1.2	Vicker Hardness Tester
4	Bend Test, Cl 7.1.3	Universal Tensile Testing Machine, Mandrels of required sizes
5	Erichsen Cupping Test, Cl 7.1.4	Erichsen Cupping Test Apparatus
6	Grain Size, Cl 7.1.5	Metallurgical Microscope, Metallographic Sample Preparation Equipment
7	Dimesions and Tolerances, Cl 8	Vernier calipers, Micrometers, Flat Bench, Straight Edge, Radius Gauges, Feeler Gauges

ANNEX B

SCHEME OF INSPECTION AND TESTING

1. QUALITY ASSURANCE PLAN

1.1 It is expected that manufacturers (licensees/applicants) will implement a Quality Assurance Plan i.e. a plan of regular testing and in-process controls, designed to ensure that the product bearing the Standard Mark conforms to all requirements of the Indian Standard.

1.2 The manufacturers shall define a Quality Assurance Plan defining the control unit (i.e. lot/batch etc.) and the levels of control (i.e. the frequency and number of samples for conducting the different tests as per the Indian Standard) and submit the same to BIS Branch Office for information. The manufacturer shall comply with the same and maintain test recordsin accordance with para 2.4.

1.3 **RECOMMENDED LEVELS OF CONTROL/CONTROL UNIT**:

1.3.1 For the guidance of manufacturers, the recommended definition of control unit is the **entire quantity of the material of the same alloy designation, supply condition and thickness manufactured continuously on the same line in one go shall constitute a control unit.**

1.3.2 For the guidance of manufacturers in preparing the Quality Assurance Plan, recommended levels of control are given in **Table 1**.

1.3.3 The manufacturer shall ensure inspection and testing as per the Quality Assurance Plansubmitted by them on the whole production of the factory which is covered by this plan. Alternatively, the manufacturer has the option of adherence to the quality plan as per levels ofcontrol recommended in column 3 of Table 1.

1.4 However, all manufacturers shall ensure compliance of their products to all the requirements of the Indian Standard.

2. ENSURING COMPLIANCE THROUGH TESTING- It is expected that manufacturers (licensees/applicants) will establish a suitably equipped and staffed in house laboratory (In house testing facility) for testing at least those parameters of the Indian Standard which require routine testing for ensuring quality of the product. This includes in-process controls asmay be defined and put in place by the manufacturer and testing parameters/requirements which can only be performed in the factory.

2.1 For the guidance of manufacturers, Table 1 giving the recommended levels of control is given below. Column 2 of Table 1 indicates routine tests where test equipment is requiredin house as "R" or other tests which can be subcontracted as "S". Subcontracting is permitted to BIS recognized/empanelled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

2.2 For MSME manufacturers, the requirement of maintaining a laboratory/in-house testing facility for routine tests (indicated as "R" in Column 2 of Table 1) is also optional.

2.2.1 MSME manufacturers may utilize common cluster based facilities as per guidelinesfor the utilization of cluster based test facilities by MSMEs or the provisions of Sharing of testing facilities or get testing done from BIS recognized/empaneled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

2.3 **Large Scale manufacturers shall maintain an in-house laboratory equipped at least with test facilities for routine tests (indicated as "R" in Column 2 of Table 1)**, where different tests given in the specification shall be carried out in accordance with the method given in the specification**.** They shall also implement a calibration plan for the in-house test equipment.

2.3.1 Alternatively, in lieu of an in-house laboratory, large scale manufacturers can also utilize the provisions of Sharing of testing facilities as per the Guidelines for Grant of Licence available onBIS website www.bis.gov.in. (Under Conformity Assessment>Product Certification Process). Even for subcontracted tests, provisions for sharing of testing facilities can be utilized.

2.4 **TEST RECORDS**- The manufacturers maintaining an in-house laboratory or utilizing common cluster based facilities or shared test facilities shall maintain test records for the tests carried out to establish conformity. For the tests being subcontracted to BIS recognized/empanelled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025, test reports issued by the laboratories shall be available for inspection by BIS.

3. PACKING AND MARKING - The Standard Mark as given in the Schedule of the licence shall be incorporated legibly and indelibly on the product or on a sticker/label attached to each bundle, box or crate and on the test certificate, provided always that thematerial so marked conforms to each requirement of the specification.

3.1 Packing and Marking shall be done as per the provisions of the Indian Standard.

4. TEST CERTIFICATE – For each consignment of BIS Certified material conforming to the specification there shall be a test certificate which shall contain the Standard Mark, the lot/cast number and the corresponding test results (as given in Annexure I enclosed).

5. REJECTION - All the production which conforms to the Indian Standard and covered under the scope of this licence shall be marked with the Standard Mark. 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.

TABLE 1 (FOR GUIDANCE PURPOSE ONLY)

TEST DETAILS				Test equipment requirement R: required (or) S: Subcontracting permitted	LEVELS OF CONTROL		REMARKS
Clause	Requirements	Test Method			No. of Samples	Frequency	
		Clause	Reference				
6	Chemical Composition	6	IS 410 : 1977	R	1	Each Cast/Heat	-----
7.1.1	Tensile Test	7.1.1	IS 1608 (Part 1)	R	1	Each Control Unit	---
7.1.2	Hardness	7.1.2	IS 1501 (Part 1)	R	1	Each control Unit	----
7.1.3	Bend	7.1.3	IS 1599	R	1	Each control Unit	----
7.1.4	Erichsen Cupping Test	7.1.4	IS 410 : 1977	R	1	Each control Unit	Subject to agreement between purchaser and supplier
7.1.5	Grain Size	7.1.5	IS 410 : 1977	R	1	Each control Unit	Subject to agreement between purchaser and supplier
8	Dimensions	8	IS 410 : 1977	R	1	Firm to have adequate in-process controls to check compliance of this parameter as per the tolerances given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformit	
4.1	Freedom from Defects	4.1	IS 410 : 1977	R	1	Firm shall exercise adequate in process controls to ensure that the product shall be free from harmful defects.	

APPENDIX- I

XYZ Company

(Registered office Address and works address)

BIS STANDARD MARK

TEST CERTIFICATE FOR COLD ROLLED BRASS SHEET, STRIP AND FOIL AS PER IS 410 : 1977

TEST CERTIFICATE No._____ DATE_____

Supplied To M/s_____(Name and Address of Consignee)

It is certified that the material described below fully conforms to IS 410 : 1977. The properties of the product, as tested in accordance with the Scheme of Inspection and Testing contained in the BIS Certification Marks License No. CM/L _____ are as indicated below against each order no. etc.

(PLEASE REFER TO IS 410 : 1977 FOR DETAILS OF SPECIFICATION REQUIREMENTS)

TEST RESULTS

Order No. & Date	Control Unit/ Batch No./Qty	Size	Alloy Designation	Chemical Composition					Condition (Temper)	Mechanical Properties				Erichsen Cupping and Grain Size	Remarks
				Cu	Pb	Fe	Total Impurities	Zn		TS	El	HV	Bend		

The material supplied conforms to specified requirements of IS 410 : 1977

REMARKS

Coils/Sheets/Foils etc

(Signature)

FOR XYZ COMPANY

(For details of BIS certification please visit www.bis.gov.in)