



उत्पाद मैनुअल
शीत-कम टिनमिल उत्पाद - इलेक्ट्रोलाइटिक क्रोमियम / क्रोमियम
ऑक्साइड - कोटेड स्टील
IS 12591:2018 के अनुसार
PRODUCT MANUAL FOR
Cold-Reduced Tinmill Products —Electrolytic Chromium /
Chromium Oxide — Coated Steel according to IS
12591:2018

भारतीय मानक ब्यूरो (अनुरूपता मूल्यांकन) विनियम 2018 की स्कीम-I के तहत यह उत्पाद मैनुअल प्रमाणीकरण की संचालन रीति में सुसंगतता और पारदर्शिता सुनिश्चित करने के लिए सभी क्षेत्रीय/शाखा कार्यालयों एवं लाइसेंस धारियों द्वारा संदर्भ सामग्री के रूप में उपयोग किया जाएगा। बीआईएस लाइसेंस/प्रमाण 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.	उत्पाद Product	:	IS 12591:2018
	शीर्षक Title	:	Cold-Reduced Tinmill Products — Electrolytic Chromium / Chromium Oxide — Coated Steel
	संशोधन संख्या No. of amendments	:	0
2.	नमूनाकरण दिशानिर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	No specific requirement
b)	समूहिकरण दिशानिर्देश	:	Please refer Annex-A

	Grouping Guidelines		
c)	नमूने का परिमाण Sample Size	:	4 x 500mm
3.	परीक्षण उपकरणों की सूची List of Test Equipment	:	Please refer Annex – B
4.	निरीक्षण व परीक्षण स्कीम Scheme of Inspection and Testing	:	Please refer Annex – C
5.	एक दिन में संभावित परीक्षण Possible tests in a day	:	All tests can be done in a day
6.	लाइसेन्स का कार्यक्षेत्र /Scope of the Licence:		
	Licence is granted to use Standard Mark as per IS 12591:2018 with the following scope:		
	Name of the product	Cold-Reduced Tinmill Products — Electrolytic Chromium / Chromium Oxide — Coated Steel	
	Designation	T49, T53, T55, T57, T59, T61, T65, T71, T72, T73, T75, T76, TS200, TS230, TS245, TS260, TS275, TS290, TS340, TS480, TS520, TS550, TS 580, TS620 TH230, TH245, TH260, TH275, TH300, TH330, TH350, TH385, TH400, TH415, TH435, TH450, TH480, TH520, TH550, TH580, TH620, TH650.	
	Thickness range	mm upto and includingmm	
	Width range	mm upto and includingmm	
	Finish	Bright/ Fine Stone/ Stone/ Matt	

BUREAU OF INDIAN STANDARDS
Manak Bhawan, 9, Bahadur Shah Zafar Marg, New Delhi – 110002

Annex-A

Grouping Guidelines for Cold-Reduced Tinmill Products – Electrolytic Chromium / Chromium Oxide – Coated Steel as per IS 12591:2018

Grouping has been done on the basis of mechanical properties and degree of cold working for designations defined on hardness values and on the basis of proof strength for designations defined on tensile properties as under:

Group	Product	Designations covered in the group
1	Designations of Single cold-reduced ECCS classified on basis of hardness values (HR30Tm)	T49, T53, T55, T57, T59, T61, T65
2	Designations of Double Cold-reduced ECCS classified on basis of hardness values (HR30Tm)	T71, T72, T73, T75, T76
3	Designations of Single/Double Cold-reduced ECCS classified on tensile property and requiring Batch Annealing (BA)	TS200, TS230, TS245, TS260, TS275, TS290, TS340, TS480, TS520, TS550, TS 580, TS620
4	Designations of Single/Double Cold-reduced ECCS classified on tensile property and requiring Continuous Annealing (CA)	TH230, TH245, TH260, TH275, TH300, TH330, TH350, TH385, TH400, TH415, TH435, TH450, TH480, TH520, TH550, TH580, TH620, TH650.

In case of GOL/inclusion for group-1 or group-2, one sample of any thickness but of higher hardness shall be drawn and tested to cover all the designations of the product within the group.

2) In case of GOL/inclusion for groups-3 & 4, one sample each of higher proof strength and of lower proof strength shall be drawn and tested to cover all the designations of the product within the group. The samples drawn shall be of any thickness.

3) For testing of imperfections and tolerances on Dimensions and shapes such as feather edge, width, length, edge camber, out of squareness (for sheets), Joints within a coil one sample of any size, of each group intends to be covered in the licence may be tested in the factory. Separate samples are not required to be tested for physical parameters for each size/designation.

However, while considering inclusion of a new variety (designation), licensee shall submit factory test report for physical parameters if the physical parameters are different from the ones already tested.

4) While drawing samples for independent testing, applicable declaration as per cl. 7.1(Annex-C), 7.2 and 7.3 of IS 12591:2018 may be obtained and reflected in the test request appropriately.

5) If the samples drawn passes, licence may be granted/inclusion be done for the Designations of the Group. However, it shall be ensured that the firm is having all necessary manufacturing capabilities and testing facilities for the Designations against the range of thickness, range of width, finish and type of annealing intended to be included in the licence.

6) During the operation of license, BO shall ensure that all Grades & Designations covered in the license are drawn for independent testing on rotation over a period of time.

Annex-B

List of Test Equipment

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

S. No.	Test used in with Clause Reference	Test Equipment
1.	Surface Roughness, Cl. 7.0	Roughness tester
2.	Oil film weight, Cl. 7.4	Oil film weight measuring apparatus
3.	Metallic Chromium and Chromium in the oxide, Cl. 8.0	Spectrophotometer
4.	Total Chromium, Cl. 8.0	Metallic Chromium coating analyser
5.	Hardness, Cl. 9.2	Rockwell hardness tester
6.	Proof strength, Cl. 9.3	Springback tester or Tensile testing machine
7.	Thickness and Feather edge, Cl. 10.2.1 & 10.2.2	Micrometer
8.	Width & Length, Cl. 10.3 & Cl. 10.4.2	Digital Vernier
9.	Camber, Edge waviness and Centre fullness, Cl. 10.5, 10.7.1 & 10.7.3	Wedge scale/ filler gauge, Flat horizontal surface/table with rigid flat board
10.	Out of squareness, Cl. 10.6	Measuring Table
11.	Measurement of Bow, Cl. 10.7.2	Rigid vertical surface/measuring fixture board and steel scale
12.	Measurement of weights, Cl. 16.2	Weighing scale

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

**SCHEME OF INSPECTION AND TESTING
FOR CERTIFICATION OF COLD-REDUCED TINMILL PRODUCTS --
ELECTROLYTIC CHROMIUM / CHROMIUM OXIDE — COATED STEEL
According to IS 12591:2018**

1. **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 and implement calibration plan for the test equipment.
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 on each roll and on the packaging, and the marking shall be done as per the provisions of the Indian Standard, provided always that the product thus marked conforms to all the requirement of the specification.
4. **CONTROL UNIT** – For the purpose of this scheme, a control unit shall be taken as a single coil of one cast plated together under uniform conditions of production, produced in a day.
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.
6. **TEST CERTIFICATE** - For each consignment of BIS Certified material conforming to IS 12591:2018 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. Any rejected material which is potentially re-saleable be sheared or cut or deformed in such a manner that it cannot be used for any other purpose except re-melting. A separate record shall be maintained giving information on quantity and cast number/coil number/control unit number, as applicable, relating to all such rejections/defective/sub-standard material of the production not conforming to the requirements of the Specification and the method of its disposal. Such material shall in no case be stored together with that conforming to the Specification

SCHEME OF INSPECTION AND TESTING
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(1)				(2)	(3)		(4)
Test details					Levels of Control		
Clause	Requirements	Test Method		Test Equipment requirement R: Required or S-Sub contracting permitted	No. of samples	Frequency	Remarks
		Clause	Reference				
7	Chemical composition	Choice of suitable physical or chemical analytical method for the analysis shall be at the discretion of the manufacturer. In case of dispute, the method for analysis used shall be agreed taking into account the relevant existing Indian Standards					
	Cast Analysis	7.1, Annex -C	IS 12591:2018	R	One	Each cast	Applicable for manufacturers having steel making facilities. The Chemical composition as declared by the manufacturer .
	Product Analysis	-do-	-do-	R	One	Each cast	Applicable for manufacturers without steel making facilities. However, no testing is required, if non-alloy quality steel used is ISI marked
7.3	Finish	7.3	IS 12591:2018 IS 15263	S	One	Each Coil/Packag e of sheets	As mutually agreed to between manufacturer and purchaser
7.4	Oiling	7.4	IS 12591:2018	S	Requirements, Test method and Frequency, etc as agreed to between manufacturer and purchaser		
7.5	Imperfection	7.5.1,	IS 12591:2018	R	Adequate inspection in the line of		

	s	7.5.2 & 3.5			production and in the stacks to ensure freedom from defects.		
8	Chromium/Chromium in oxide coating mass	8, 12, 13.1, Table-2	IS 12591:2018	R	One	Each Control unit	
9	Mechanical properties						
	Hardness requirement	9.2, 13.2, Table A.1, A.2	IS 12591:2018 IS 1586 (Part 1)	R	One	Each Control unit	
	Tensile property requirement	9.3, Annex -D, 13.3, Table-B.1	IS 12591:2018 IS 1608 (Part 1)	R	One	Each Control unit	
10	Tolerances on Dimensions & Shape	10.1, 10.2, 10.3, 10.4, 10.5, 10.6, 10.7, 14.4	IS 12591:2018	R	Adequate measurement to ensure each coil/package of sheets will conform to the various requirements and specified tolerances and records shall be maintained.		
11	Joint within a coil	11.1 to 11.4	IS 12591:2018	R	Adequate measurement to ensure that coils conform to various requirements and specified tolerances.		

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: Levels of control given in column 3 are only recommendatory in nature. The manufacturer may define the control unit/batch/lot and submit his own levels of control in column 3 with proper justification for approval by BO Head.

ANNEXURE I

(Para 6 of the Scheme of Inspection and Testing)
XYZ IRON AND STEEL COMPANY
(Registered office Address and works address)

BIS
STANDARD
MARK

TEST CERTIFICATE FOR COLD-REDUCED TINMILL PRODUCTS--ELECTROLYTIC CHROMIUM/CHROMIUM OXIDE-COATED STEEL

According to IS 12591:2018

TEST CERTIFICATE No. _____

DATE _____

To M/s _____

We certified that the material described below fully conforms to 12591:2018, for Physical properties of the product and with Chemical composition as declared below, 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 12591:2018 FOR DETAILS OF SPECIFICATION REQUIREMENTS)

TEST RESULTS

Order No. & Date	(nom Size)	Control Unit No.	designation	Quantity in tonnes	CHEMICAL COMPOSITION					Dimensional Tolerances						Mechanical properties		Mm. /max avg of coating	Surface finish
					C %	S %	P %	Si %	Mn %	thickness	width	length	Edge camber	flatness	Out of square ness	Proof stress	hard ness		

REMARKS

WAGON NO.

TRUCK NO.

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

FOR XYZ IRON AND STEEL COMPANY