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उत्पाद मैन्युअल
यांत्रिक, सामान्य अभियांत्रिकी और सजावटी उदेष्यों के लिए रूपित वेल्डेड कार्बन इस्पात वर्गाकार और आयताकार खोखले खंड - विशिष्ट
IS 18573: 2024 के अनुसार

Product Manual for
Cold Formed Welded Carbon Steel Square and Rectangular Hollow Sections for Mechanical, General Engineering and Decorative Purposes- Specification According to IS 18573: 2024

विभिन्न उत्पादों के लिए भारतीय मानक ब्यूरो (अनुरूपता मूल्यांकन) विनियम, 2018 की योजना- I के तहत प्रमाणन के संचालन में एकरूपता और पारदर्शिता के लिए इस उत्पाद मैनुअल का उपयोग सभी क्षेत्रीय / शाखा कार्यालयों और लाइसेंसधारियों द्वारा संदर्भ सामग्री के रूप में किया जाएगा। दस्तावेज़ का उपयोग बीआईएस प्रमाणन प्राप्त करने के इच्छुक संभावित आवेदकों द्वारा भी किया जा सकता है।

This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure uniformity 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.

1.	**भारतीय मानक संख्या** **IS No.**	:	IS 18573:2024
	शीर्षक **Title**	:	Cold Formed Welded Carbon Steel Square and Rectangular Hollow Sections for Mechanical, General Engineering and Decorative Purposes
	संशोधनों की संख्या **No. of amendments**	:	01
2.	**नमूना दिशानिर्देश** **Sampling Guidelines**		
a)	**कच्चा माल** **Raw material**	:	Unless specified by the purchaser, hot-rolled or cold-rolled steel sheets or strips of any suitable grade to IS 10748, IS 513, or any other equivalent specification may be used for manufacturing the square and rectangular section of above mentioned grades. In case of Hot Dip Galvanized Sections, Zinc used for Coating shall conform to IS 209.

			In case of Pre-Galvanized Sections, Zinc Coating of Galvanized Sheet or Strip shall conform to the requirements of Coatings specified in IS 277 excluding the coating of Weld Portion. **Note: This section indicates the requirements for raw material (if specified in the IS) for which compliance is to be established during Grant of Licence/Change in Scope of Licence/Factory Surveillance.**
b)	**समूहीकरण दिशानिर्देश Grouping Guidelines**	:	**Please refer Annex-A**
c)	**नमूने का परिमाण Sample Quantity**	:	Mechanical Test: 1 meter Chemical test: 5 pcs of 5cm x 5cm **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 (in case of market surveillance, effort may be made to procure the required quantity of product sample, as far as possible since raw material sample may not be available in market)**
d)	**परीक्षण अनुरोध में घोषित किए जाने वाले पैरामीटर Parameters to be Declared in Test Request**	:	Type/Size, Grade Designation, Surface Protection, Raw Material Grade, Killing method, Addition of Micro Alloys. Note: Apart from the above, any other requirements/parameters may also be declared as per the standard, as applicable.
3.	**परीक्षण उपकरणों की सूची List of Test Equipment**	:	Please refer to Annex- B
4.	**निरीक्षण और परीक्षण की स्कीम Scheme of Inspection and Testing**	:	Please refer to Annex- C
5.	**एक दिन में संभावित परीक्षण Possible tests in a day**		
	All Tests can be carried out in a day **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 ready reference regarding the tests which can be witnessed during the inspection in the factory by the officer/auditor.**		
6.	**लाइसेंस का दायरा /Scope of the Licence:**		
	IS 18573:2024 के अनुसार मानक मुहर का उपयोग करने के लिए लाइसेंस निम्नलिखित कार्यक्षेत्र के लिए प्रदान किया जाता है “Licence is granted to use Standard Mark as per IS 18573:2024 with the following scope:		

7.	**उत्पाद का नाम** **Name of the product**	Cold Formed Welded Carbon Steel Square and Rectangular Hollow Sections for Mechanical, General Engineering and Decorative Purposes
	Type/Size	Welded (WT) Square/Rectangular Sections of Depth x Width from …..mm x ….. mm to up to and including …. mm x …. mm, Thickness from ….mm to up to and including …. mm
	Grade Designation	Yst 160, Yst 210, Yst 240, Yst 310, Yst 355
	Surface Protection	Uncoated/Hot Dip Galvanized/Pre-Galvanized

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

ANNEX-A
TO PRODUCT MANUAL FOR
Cold Formed Welded Carbon Steel Square and Rectangular Hollow Sections for Mechanical, General Engineering and Decorative Purposes According to IS 18573:2024

GROUPING GUIDELINES

(a) IS 18573:2024 covers the requirements for cold formed square and rectangular welded hollow sections for mechanical, general engineering and decorative purposes. These sections have graded as Yst 160, YSt 210, YSt 240, YSt 310, YSt 355 depending on the yield strength of the hollow steel section (See Table 2).

(b) These sections can be supplied in standard sizes as specified in Table 3 and Table 4. Further, any other size and thickness not mentioned under Table 3 and Table 4 can also be supplied based upon mutual agreement between the manufacturer and purchaser.

(c) Square and Rectangular Sections shall be supplied uncoated or with manufacturer`s standard mill protective coating. Further, Square and Rectangular Sections may either be Hot Dip Galvanized or Pre-Galvanized Steel Sheet or Strip can also be used for manufacture of Hollow Sections.

(d) The sections covered under IS 18573:2024 may be divided into four groups for drawing samples:

Group	Depth of Section (D)	Number of Samples
1	Up to & including 38 mm	One sample of any Section (i.e. square/rectangular) of any thickness and any Grade shall be drawn and tested to cover all sizes within the Group for that section and Grade.
2	Greater than 38 mm & upto & including 63.5 mm	-do-
3	Greater than 63.5 mm & upto & including 100 mm	-do-
4	Greater than 100 mm	-do-

(e) If manufacturer intends to cover both Sections (Square and Rectangular) in the scope, the samples drawn of different sizes from the above Groups shall be such that samples of both Sections (Square and Rectangular) are drawn and tested.

(f) If manufacturer intends to cover different Grades (among Yst 160, YSt 210, YSt 240, YSt 310, YSt 355) in the scope, the samples drawn of different sizes from the above Groups shall be such that samples of all Grades, intended to be covered in the licence, are drawn and tested.

(g) If Hot Dip Galvanized Sections are required to be covered in the scope of the licence, the manufacturer shall declare the specific requirement for galvanizing and mass of Zinc coating as per agreement between the purchaser or as per manufacturer`s standard. In such cases, samples of Hot Dip Galvanized Sections shall be drawn, from each Group, and tested for all requirements of the standard including the requirements of Uniformity of Zinc Coating as per IS 2633 and for the galvanizing requirements declared by the manufacturer. If Hot Dip

Galvanized Sections are drawn and tested, Uncoated Sections may also be covered in the scope of the licence.

(h) If Sections are manufactured from Pre-Galvanized Sheet/Strip, Separate Samples, from each Group, shall be drawn and tested for all requirements of the standard including the requirements of Zinc Coating as per IS 277. In such Cases, manufacturer shall also be required to declare and demonstrate the method of coating of Weld Section at the time of inspection.

(i) Scope of the licence shall be restricted based on the manufacturing and testing facilities available.

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

ANNEX – B

LIST OF TEST EQUIPMENTS
(INDICATIVE LIST, FOR GUIDANCE ONLY)

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

Sl. No.	**Tests Used in with Clause Reference**	**Test Equipment/Chemicals and Identification Numbers (Where applicable)**
1.	Chemical Composition, Ladle Analysis, Product Analysis, cl.4.1,cl.4.2., cl.4.3.	Device for instrumental chemical analysis such as Optical Spectrometer with all requisite channels, certified reference materials etc. OR Equipment, Apparatus and reagents as per as per the relevant parts of IS 228 in case of analysis as per IS 228
2.	Tensile Test, Cl 15	Universal Testing Machine (UTM) as per IS 1608 (Part 1), class 1 accuracy or better.
3.	Straightness, Length, Dimensions and Properties, Measurement of Size and Shape, Dimensions and Tolerances, cl.7,9,10,11, 12	i) Vernier caliper gauge or any other suitable device ii) Steel scale iii) Micrometer (screw) gauge or other suitable device iv) Feeler gauges, Go/No-Go gauges v) Spirit Level and horizontal flat surface vi) Cord
4.	Surface Protection, cl.13.	Mass of Zinc Coating (IS 277): Solvent Naptha, Trichloroethylene or any other suitable organic solvent, Alcohol, Antimony Trioxide, Antimony Trichloride, Conc, Hydrochloric Acid, Weighing Balance, Soft Cotton cloth Uniformity of Zinc Coating (IS 2633): Ether, Trichloroethylene, Carbon Tetrachloride, Acohol, Cotton Cloth, Ammonium Hydroxide, Distilled Water, Copper Sulphate, Hot Plate, Glasswares,
5.	Weight, Cl. 8, Cl.12 and Table 3 and Table 4	Platform balance or any other suitable instrument

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

ANNEX- C
SCHEME OF INSPECTION AND TESTING

1. QUALITY ASSURANCE PLAN

1.1 It is expected that during operation of BIS licence, manufacturers will implement a Quality Assurance Plan (QAP) 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 (QAP) defining the control unit (i.e. lot/batch etc.), the levels of control (i.e. the frequency and number of samples for conducting the different tests as per the Indian Standard) and declare the arrangement for testing i.e. whether in-house or subcontracting/sharing for each applicable test and submit the same to BIS Branch Office for information. The manufacturer shall comply with the QAP and maintain test records in accordance with para 2.1.

1.3 RECOMMENDED LEVELS OF CONTROL/CONTROL UNIT:

1.3.1 For the guidance of manufacturers, the recommended definition of control unit is: Hollow Sections (black/galvanized/pre-galvanized) of the same size, grade and manufactured from the same cast of raw material 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. Manufacturer has the discretion of declaring their own levels of control or accept the levels of control given in this document.

1.3.3 The manufacturer shall ensure inspection and testing as per the Quality Assurance Plan submitted by them on the whole production of the factory which is covered by this plan.

2. ENSURING COMPLIANCE THROUGH TESTING- manufacturers shall ensure compliance of their products to all the requirements of the Indian Standard for which they may have in-house test facilities. However, there is no obligation to maintain in-house laboratory. Licensee may use alternative arrangements for tests of the production as per the declared QAP. Various alternatives are available for operation of BIS certification as given below and the relevant guidelines for availing such relaxations by the manufacturers, as amended from time to time, are to be referred:

i) Shared testing resources like common facility,
ii) Cluster based testing facility,
iii) Sub-contracting to outside laboratories which may either be:
    a) BIS recognised/empanelled laboratories, or
    b) Any accredited laboratory as per ISO/IEC 17025

2.1 TEST RECORDS- The manufacturers shall maintain test records for the tests carried out (either in-house or at a sub-contracted or at shared test facility) to establish conformity of the product to the Standard for operation of licence. For the tests being subcontracted or conducted at a shared test facility, test results issued by the laboratories or test facilities, shall be made available for inspection by BIS.

3. PACKING AND MARKING - The Standard Mark as given in the Schedule of the license and Licence Number (i.e. CM/L…) shall be embossed or marked at a suitable place on the outside surface of the hollow sections or on a label attached to a bundle of sections provided always that the material so marked conform to requirements of the specification.

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

3.2 Additional Marking requirements: Additionally, the following shall also be marked on each Package of the material:

a) "For BIS certification details please visit www.bis.gov.in"
b) Any other requirement not specified in the Indian Standard

4. TEST CERTIFICATE – For each consignment of BIS Certified material conforming to IS 18573:2024 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).

5. REJECTION - 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
(Recommended Levels of Control by BIS- For Guidance Only)

(1)				(3)		(4)
TEST DETAILS				**LEVELS OF CONTROL**		**REMARKS**
Clause	**Requirements**	**Test Method**		**No. of Samples**	**Frequency**	
		Clause	**Reference**			
4.1	Ladle Analysis	4.1	IS 228 or any other established instrumental/chemical methods	One	Each Heat	Applicable for primary producers only
4.2	Material	4.2	IS 18573	Unless specified by the purchaser, hot-rolled or cold-rolled steel sheets or strips of any suitable grade to IS 10748, IS 513, or any other equivalent specification may be used for manufacturing the square and rectangular section of above mentioned grades.		
4.3	Product Analysis	4.3	IS 228 or any other established instrumental/chemical methods	One	Each Cast	Applicable for manufacturers not having steel making facilities and are procuring Hot Rolled/ Cold Rolled Steel Sheets/Strips from outside for manufacturing into Hollow Sections. No further testing if the Hot Rolled/ Cold Rolled Steel Sheets/Strips procured are ISI marked and are received with Test Certificate.
6	Workmanship	6	IS 18573	Firm shall exercise adequate in-process controls to ensure that the material is free from harmful defects.		

7, 8, 9, 10, 11.1, 11.2, 11.3, 11.4, 11.5,11.6 11.7,12, Table 3, Table 4	Measurement of Size and Shape, Dimensions and Tolerances:- Straightness, Outside Dimension, Thickness, Concavity/Convexity Squareness of Sides, External Corner Radius ,Twist, Length, Weight	7, 8, 9, 10, 11.1, 11.2, 11.3, 11.4, 11.5,11.6 11.7,12, Table 3, Table 4	IS 18573	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 conformity.		
13	Surface Protection (Hot Dip Galvanized/Pre-Galvanized)	13	IS 18573 IS 2633 IS 277	—	—	In case of Hot Dip Galvanized Sections, Zinc used for Coating shall conform to IS 209. No further testing in case Zinc Ingots are received with Test Certificate indicating conformity. In case of Pre-Galvanized Sheet or Strip, Zinc Coating shall conform to the requirements of Coatings specified in IS 277 excluding the coating of weld portion. The method for coating of weld section shall be subject to mutual agreement between the purchaser and manufacturer.
15, Table 2	Tensile Test	15.2	IS 18573 IS 1608 (Part 1)	One	Each Control Unit	—

ISI Mark With IS No. and CM/L no.

Annexure-I
(Para 4 of the Scheme of Inspection and Testing)
XYZ IRON AND STEEL COMPANY
(Registered office Address and works address)

Test Certificate for Cold Formed Welded Carbon Steel Square and Rectangular Hollow Sections for Mechanical, General Engineering and Decorative Purposes
According to IS 18573:2024

TEST CERTIFICATE NO._____

To M/s_____ Dated_____

It is certified that the material described below fully conforms to IS 18573:2024 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 LicenceNo.CM/L_____are as indicated below against each order No.

(PLEASE REFER TO IS 18573:2024 FOR DETAILS OF SPECIFICATION REQUIREMENTS)

TEST RESULTS

Order No. & Date	Type / Size	Raw Material HR/CR Strip Grade	Cast No./ Melt No.	Qty. (In tonnes)	Chemical Composition (in %)		Mechanical Properties	Dimensions and Tolerance	Measurement of Shape and Size	Surface Protection	Remarks
					S	P					

Remarks
Wagon No.
Truck No.

FOR XYZ IRON AND STEEL COMPANY

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