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उत्पाद मानुयल
Steel Tubes, Tubulars and Other Wrought Fittings Part 1: Steel Tubes
IS 1239 (Part 1):2004के अनुसार

PRODUCT MANUAL FOR
Steel Tubes, Tubulars and Other Wrought Fittings Part 1: Steel Tubes
According to IS 1239 (Part 1):2004

भारतीय मानक ब्यूरो -विनियम की स्कीम (अनुरूपता मूल्यांकन) के तहत यह उत्पाद मानुयल प्रमाणीकरण के प्रचलन में रीति और पारदर्शिता के सुसंगत सुनिश्चित करने के लिए सभी क्षेत्रीयशाखा कार्यालयों एवं लाइसेन्स / धारियोंद्वारा संदर्भ सामग्री के रूप में 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.	उत्पाद Product	:	IS 1239 (Part 1):2004
	शीर्षक Title	:	Steel Tubes, Tubulars and Other Wrought Fittings Part 1: Steel Tubes
	संशोधन संख्या No. of amendments	:	6
2.	नमुनाकरण दिशा निर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	Seamless Steel Tubes shall be made from tested quality steel manufactured by any approved process & shall be fully killed. The welded tubes shall be manufactured from HR Steel Strip for welded tubes & Pipes conforming to IS 10748 or Cold Reduced Carbon Steel Sheet & Strip conforming to IS 513 (Part 1)
b)	समूहिकरण दिशा निर्देश Grouping Guidelines	:	Please refer Annex –A
c)	नमूनेका परिमाण Sample Size	:	For tubes-Mechanical: 3m, Chemical: 5 pcs of 5cm x 5cm For HR/CR strip- Mechanical: 0.5 sq m, Chemical: 5 pcs of 5cm x 5cm

3.	अतिरिक्त निर्देश Additional Guidelines	:	Please refer Annex – B (For post black pipe operations)
4.	परीक्षण उपकरणों की सूची List of Test Equipment	:	Please refer Annex –C
5.	निरीक्षण व परीक्षण स्कीम Scheme of Inspection and Testing	:	Please refer Annex –D
6.	एक दिन में संभावित परीक्षण Possible tests in a day	:	All tests
7.	लाइसेन्स का कार्यक्षेत्र Scope of the Licence :		
	IS 1239 (Part 1):2004के अनुसार मानक मुहर का उपयोग करने के लिए लाइसेन्स निम्नलिखित कार्यक्षेत्रके लिए प्रदान किया जाता है Licence is granted to use Standard Mark as per IS 1239 (Part 1):2004with the following scope:		
	Name of the product	Steel Tubes	
	Class	Light/Medium/Heavy	
	Grade (of steel)	Grade 1,2,3 etc. as per IS 10748 for HR Strip OR CR1, CR2 etc. as per IS 513 (part 1) for CR Strip	
	Size	Nominal bore 15 mm to 150 mm	
	Any other aspect required as per the Standard	Manufacturing Process: Seamless/ERW/HFIW etc. End Condition: Plain/Bevel ended/Screwed End/Screwed and socketed Surface Condition: Black/Galvanized	

ANNEXURE A
PRODUCT MANUAL FOR
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GROUPING GUIDELINES

In IS 1239 (Part 1), steel tubes are classified on the basis of

- i) Class – Light, Medium, heavy
- ii) Grade (of steel)
- iii) Size (NB)
- iv) Manufacturing process - Seamless/ERW/HFIW etc.
- v) End condition - Plain/Bevel ended/Screwed End/Screwed and socketed
- vi) Surface Condition: Black/Galvanized

For the purpose of defining the scope of licence at the time of grant of licence or addition of new varieties in the scope of licence, samples of each class, and each manufacturing process of the tubes of highest and lowest sizes intended to be covered in the scope of licence, shall be drawn and tested.

In addition, separate samples of welded steel tubes made from hot rolled and cold rolled steel shall be drawn and tested. However, in case a sample of higher grade of steel is tested, the lower grades can be added in the scope of the licence on that basis.

Similarly, in case sample of galvanized tube is tested, black tubes can be covered in the scope of licence on that basis.

Similarly, If screwed and socketed sample is tested, recommendations may include screwed end, plain and bevel ended tubes as well. Similarly, if screwed end sample is tested, recommendation may include plain and bevel ended tubes as well.

For example:- If scope of the licence applied for is Class- Light, Medium, Heavy, 6 mm (NB) to 150 mm (NB), ERW (Grade 3 to 6 of IS 10748), Plain/Bevel Ended/Screwed End, Black and Galvanized, the following samples have to be drawn for covering the entire scope in the licence:-

- 1) Class-Light, 6 mm (NB), ERW (Grade 6 of IS 10748), Screwed End, Galvanized
- 2) Class- Medium, 150 (mm), ERW (Grade 3/4/5/6 of IS 10748), Plain/Bevel Ended/Screwed End, Black/Galvanized
- 3) Class- Heavy, any size from 6 mm to 150 mm, ERW (Grade 3/4/5/6 of IS 10748 of IS 10748), Plain/Bevel Ended/Screwed End, Black/Galvanized

It shall, however, be ensured that the applicant/licensee has got complete manufacturing as well as testing facilities for the sizes/classes/grades/types of tubes required to be covered in the licence.

After the grant of licence it may be ensured that samples of all sizes, types and grades covered in the licence without testing are drawn one by one and tested in independent labs at the earliest.

ANNEXURE B
PRODUCT MANUAL FOR
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According to IS 1239 (Part 1):2004

ADDITIONAL GUIDELINES
FOR MANUFACTURERS WHO INTEND TO OUTSOURCE
POST BLACK PIPE OPERATIONS

1. The post black pipe operation could be socketing, screwing and galvanizing.

Action by licensees

- i. The licensee intending to outsource post black pipe operation shall outsource these operations **only to a manufacturer holding a valid BIS licence for IS 1239 (Part 1).**
- ii. **For the purpose of these guidelines, the licensee which is outsourcing the post black pipe operation shall be called Licensee A and the licensee to whom the operation is being outsourced, shall be licensee B.**
- iii. Black pipes shall be dispatched by the licensee A for post black pipe operations to the licensee B, control unit wise. Both the licensee A and B shall maintain records for post black pipe operations as per frequency stipulated in the SIT. These records shall be made available by both licensees for examination to BIS Certification Officers or Agents during surveillance visits or whenever otherwise sought by BIS.
- iv. The responsibility of conformity of the product in respect of all requirements shall lie with both the licensees.
- v. The licensee A shall emboss the Standard Mark (ISI) and its licence number on the black pipes conforming to IS 1239 (Part-1), along with all other details as per the marking clause of the SIT. The pipes shall be sent control unit wise to the licensee B. The licensee B shall employ 'transfix labels' for identification on the pipes; the label shall contain IS No. over Standard Mark and under Standard Mark, its licence number and the phrase 'Only **Screwing**' (See image below); after ensuring conformity of post black pipe operations to IS 1239 (Part 1).

IS 1239 (Part 1)



CM/L-XXXXXXXXXX

Only Screwing

- vi. The licensee A shall issue the test certificate of the ISI marked black pipes as per IS 1239(Part 1) along with each consignment of the black pipes dispatched to licensee B. The licensee B, after carrying out post black pipe operations such as screwing and after testing conformity of the post black pipe operations such as IS 554 in case of screwing shall issue the final test certificate of screwed pipes, incorporating the results of both the black pipes and screwed pipes, and other details such as Batch No./Lot No., Size(s), Grade, Quantity etc. for ensuring traceability to the black pipes.

All such pipes, after Screwing, shall be dispatched by Licensee B after enclosing the final test certificate of the Screwed pipes.

Action by BOs

- i. The post black pipe operations shall be verified by the BO during the next surveillance of the outsourcer licensee unit and the licensee unit to whom this operation is outsourced. During the operation of licence, all such records maintained by the licensee and the outsourced unit shall be verified by the IOs.
- ii. If the licensee and the outsourced unit are under different BOs, the BO receiving the request shall inform the other BO accordingly and the BO under which the outsourced unit is located shall verify the post black pipe operations during the next surveillance and shall provide the necessary information to the BO.

ANNEXURE C
PRODUCT MANUAL FOR
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LIST OF TEST EQUIPMENT

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

Sr. No.	Test Equipment	Tests used in with Clause Reference
1	i) Vernier calliper gauge or any other suitable device ii) Steel scale iii) micrometer (screw) gauge or other suitable device iv) Weighing Balance v) Measuring Tape	Dimensions, Cl no. 8
2	Hydrostatic Test Equipment	Leak Proof Test, Cl. no. 13
3	Universal Testing Machine (UTM), Class-1 accuracy or better as per IS 1608	Tensile, Elongation & Bend, Cl. no. 14
4	Hydraulic Press	Flattening Test, Cl. no. 14.3
5	Device for instrumental chemical analysis such as Optical Spectrometer with all requisite channels, certified reference materials etc. OR Equipment, Apparatus and reagents as per list annexed in case of analysis as per IS 228	Chemical Composition, Cl. no. 7 & Table-2

The above list is indicative only and may not be taken as exhaustive.

ANNEXURE TO LIST OF TEST EQUIPMENT

INDICATIVE LIST OF TEST APPARATUS, CHEMICALS AND REAGENTS FOR CHEMICAL ANALYSIS THROUGH CHEMICAL METHODS AS PER IS 228

1.	Strohlein or Leco apparatus with all attachments Barometer with chart, Hot plate, Muffle furnace, Complete range of glass wares, measuring cylinders, Desiccator, porcelain boats or ceramic crucibles, Thermometer, Electronic Balance, Distilled Water, Hot air oven, Oxygen - 99.5 percent minimum purity, ether or acetone Standard Reference Material (NML) with certificate Reagents for C: tin granules or pure iron fillings, acidulated water/brine water, methyl red, caustic potash Reagents for S: Ceramic boats/crucibles – desiccators, Fluxes -Low sulphur copper, tin or iron, Dilute hydrochloric acid, Starch Iodide solution, Potassium iodate	C & S (chemical method, alternative to instrumental method)
2.	Weighing balance, Heater/ Heating element along with energy regulator, Ice water bath, Vol Flask Cap – 1 litre, (Whatman) filter paper No. 040, Suction Filtration Facility, Filter paper pulp pad, Standard Reference Material (NML) with certificate, Potassium Permanganate (KMnO ₄), Sodium Nitrite (Na ₂ NO ₃), Ammonium Molybdate [(NH ₄) ₂ Mo ₂ O ₇], Ammonium Phosphate [(NH ₄) ₃ PO ₄], Potassium Nitrate (K ₂ NO ₃), Phenolphthalein Solution, Rectified spirit or methyl alcohol, Sodium Hydroxide (NaOH), Hydrofluoric Acid (HF), Perchloric Acid (HClO ₄), Sulphurous Acid, Hydrobromic Acid (HBr), other chemicals and reagent as applicable	Phosphorus content (chemical method, alternative to instrumental method)
3.	Hot plate, Conical flask Reagents: silver nitrate, ammonium persulphate sodium arsenite solution, Dilute Nitric Acid, Phosphoric Acid, Dilute Sulphuric Acid, Concentrated .Nitric Acid, NaCl Solution, Permanganic acid	Manganese content (chemical method, alternative to instrumental method)
4.	Medium textured filter paper, Porcelain casserole, platinum crucible, filter paper pulp, hot plate, hot air oven, muffle furnace Reagents: Silver nitrate solution, concentrated nitric acid, concentrated sulphuric acid, Dilute Hydrochloric Acid, Dilute Sulphuric Acid, Perchloric Acid, Tartaric acid and hydrofluoric acid	Silicon content (chemical method, alternative to instrumental method)
5.	Plate, Muffle Furnace, porcelain or silica crucible, Reagents: Hot Wash Solution (dilute sulphuric acid solution 1 : 99 v/v with hydrogen sulphide), dilute sulphuric acid, hydrogen sulphide, Dilute Nitric Acid, Sodium Fluoride, solid, Dilute Ammonium Hydroxide, Acetic Acid, Potassium Iodide, Starch	Cu content (chemical method, alternative to instrumental method)

	Solution, Sodium Thiosulphate Solution, Ammonium Bifluoride Solution	
6.	ashless paper pulp, paper pulp pad, hot plate, dessicator, Reagents: ammonium nitrate, methyl red, dilute ammonium hydroxide, Concentrated hydrochloric acid Concentrated nitric acid, Perchloric acid, Hydrofluoric Acid	Ni content (chemical method, alternative to instrumental method)
7.	Hot plate, stop watch Reagents: dilute sulphuric acid and phosphoric acid mixture, concentrated nitric acid, ammonium persulphate, silver nitrate, dilute hydrochloric acid, ferrous ammonium sulphate, standard potassium permanganate solution.	Cr content (chemical method, alternative to instrumental method)

ANNEXURE D
PRODUCT MANUAL FOR
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SCHEME OF INSPECTION AND TESTING

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.

1.1The manufacturer shall prepare and implement 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 AND MARKING– The Standard Mark as given in the First Schedule of the license shall be shall be embossed at a suitable place on the outside of each tube, provided always that the tube thus marked conforms to all the requirement of the specification. Each tube shall carry legibly the manufacturer’s name or trade mark.

3.1 The different classes of tubes shall be distinguished by colour bands which shall be applied as per clause 17.2, 17.3 and 17.4 of the specification before the tubes leave the factory.

3.2 Each tube shall be embossed with the manufacturer’s name or trade mark, IS No. (i.e. IS 1239) (Pt.1) and class of tubes i.e. L, M or H for Light, Medium and Heavy class as applicable at regular interval of say one metre.

3.3 Each tube of size 25 mm NB and above shall be marked with batch number by embossing/stencilling/transfix label/etching. For sizes upto and including 20 mm NB, batch number shall be marked on the tag attached to the bundle of steel tubes.

3.4 In addition the following information shall be included in the durable tag (metal/plastic) attached to each bundle :

- a) The class of tubes/ process of manufacture (Cl. 6.3);
- b) Identity of the source of manufacture;
- c) Size;
- d) Batch number or Identification mark in code or otherwise to enable the date of manufacture and control unit no. to be traced back to factory records;
- e) Made in India (if required);and
- f) Licence number (CM/L.....).
- g) The following information should be given on each label - “For details of BIS certification Scheme, visit www.bis.gov.in”

3.5 Test Certificate – 1) If so desired by the purchaser, for each consignment of BIS certified material conforming to IS 1239 (Part I):2004, test certificate may be issued which shall contain the

Standard Mark, cast/control unit number, type, class, size of tubes and corresponding test results as given in Annex 1

2) In addition to the test certificate issued as at 1 above, the manufacturer shall also enclose ISI marked test certificate(s) of the material as per IS 10748 or IS 513 (Part 1), as applicable, wherever such raw material is procured from outside.

4. CONTROL UNIT – All the tubes of one size, grade & class manufactured in one shift (8 hrs or less) on each tube mill shall constitute one 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.

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 resalable 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/substandard 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. The Standard Mark (if already applied) on rejected material should be defaced

TABLE 1
LEVELS OF CONTROL
(PARA 5 OF SCHEME OF INSPECTION AND TESTING)

(1)				(2)	(3)		
Test Details				Test equipment requirement R: required (or) S: Sub-contracting permitted	Levels of Control		
Cl.	Requirement	Test Methods			No. of Sample	Frequency	Remarks
		Clause	Reference				
7	Chemical composition	6.1.1,6.2, 7, Table 1	IS 1239 (Part 1) IS 10748 IS 513 (Part 1) IS 228 (various parts)	R	1	Each cast	No testing is required if the material is ISI marked Also See clause 3.5(2) of the SIT
8	Dimensions	8.1, 8.1.1., Tables 3 to 5	IS 1239 (Part 1)	R	1	Every Hour	
9	Tolerances on Thickness and Mass	9.1, Tables 3 to 5	IS 1239 (Part 1)	R	1	Every Hour	
10	Joints	10.1 to 10.2	IS 1239(Part 1) IS 1239 (Part 2) IS 554 IS 8999	R	1	Every Hour	One sample of after every one hour production at each threading machine shall be taken and checked for the requirement of thread. If a sample fails, the production during the hour prior to drawl of test sample on that particular machine shall be considered as not fit to be covered. However, all production of the previous one hour may be sorted out and those found failing shall be reworked.
11	LengthS	11.1 to 11.3	IS 1239 (Part 1)	R	1	Every Hour	

12	Galvanizing	12.1 & 12.2	IS 4736 IS 1239(Part 1)	R	1	Every Control Unit	
13	Leak Proof Test	13, Annex B	IS 1239(Part 1)	R	Each Tube		
14	Tensile Strength & Elongation	14.1	IS 1608(Part 1)	R	2	Each Control Unit	If any one of the test piece first selected fail to pass any of the test specified, two further samples shall be selected for testing in respect of each failure. If the test pieces from both these additional sample pass, the material shall be deemed to comply with the requirements of that particular test. If the test pieces from either of these additional sample fail, the material represented by the test samples shall be deemed as not complying with the Standard.
14	Bend (on tubes up to & including 50mm NB)	Cl. no. 14.2	IS 2329	R	2	Each Control Unit	
14	Flattening Test (on tubes above 50mm NB)	Cl. no. 14.3	IS 2328	R	2	Each control Unit	
15	Workmanship	15	IS 1239(Part 1)	R	Each Tube		
18	Protection and packing	18	IS 1239(Part 1)	R	-do-		

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 empanelled 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.

ANNEXURE -I (Para 3.5 of the Scheme of Testing and Inspection)
XYZ - IRON AND STEEL COMPANY
(Registered Office Address and works address)
TEST CERTIFICATE FOR STEEL TUBES

TEST CERTIFICATE NO. _____

DATE _____

To

M/s

We certify that the material described below fully conforms to IS 1239(Pt.1):2004 Chemical composition and mechanical properties of the product, as tested in accordance with the Scheme of Testing and Inspection contained in the BIS Certification Marks Licence No.CM/L _____ are as indicated below against each order no.

{PLEASE REFER TO IS IS 1239(Pt.1):2004 FOR DETAILS OF SPECIFICATION REQUIREMENTS}

TEST RESULTS

Order no	Size	Class/type	Cast/lot no.	Qty (tonnes)	Chemical Analysis (%)				Mechanical Properties			Galvanizing		Remarks
					C	S	Mn	P	TS (Mpa)	% El	Flattenin g/ Bend test	Weight (g/m ²)	Uniformity	

It is certified that each steel tube is eddy current/hydrostatically tested to test pressure of 5 MPa. Screwed tubes and sockets are supplied with pipe threads conforming to IS 554 and material supplied conforms to standard dimensions and mass tolerances.

Remarks

REMARKS

SHIPPING ADVICE NO/WAGON NO.

FOR XYZ IRON AND STEEL COMPANY