

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

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.	<b>Product</b>	:	IS 1239 (Part 1):2004
	<b>Title</b>	:	Steel Tubes, Tubulars and Other Wrought Fittings Part 1: Steel Tubes
	<b>No. of amendments</b>	:	5
2.	<b>Sampling Guidelines</b>		
a)	<b>Raw material</b>	:	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 CR Low Carbon Steel sheets & strips conforming to IS 513
b)	<b>Grouping Guidelines</b>	:	Please refer Annex – A
c)	<b>Sample Size</b>	:	For tubes-Mechanical: 3m, Chemical: 5 pcs of 5cm x 5cm For HR strip- Mechanical: 0.5 sq m, Chemical: 5 pcs of 5cm x 5cm
3.	<b>Additional Guidelines</b>	:	Please refer Annex – B (For post black pipe operations)
4.	<b>List of Test Equipment</b>	:	Please refer Annex – C
5.	<b>Scheme of Inspection and Testing</b>	:	Please refer Annex – D
6.	<b>Possible tests in a day</b>	:	All tests
7.	<b>Scope of the Licence :</b>		
	Licence is granted to use Standard Mark as per IS 1239 (Part 1):2004 with the following scope:		
	<b>Name of the product</b>	Steel Tubes	
	<b>Class</b>	Light/Medium/Heavy	
	<b>Grade</b>	Yst210, Yst240 etc.	
	<b>Size</b>	Nominal bore 15 mm to 150 mm	
	<b>Any other aspect required as per the Standard</b>	Manufacturing Process: Seamless/ERW/HFIW etc. End Condition: Plain/Bevel ended/Screwed and socketed Surface Condition: Black/Galvanized	

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

**GROUPING GUIDELINES**

**GRANT OF LICENCE** -Most of the tube makers are manufacturing pipes of the sizes between 15 to 150 mm Nominal Bore. As regards different classes (if applicable) of pipes, there is difference of thickness requirements only. Three samples preferably of minimum intermediate and maximum size (One from each class, if applicable) from each type and grade intended to be covered under the licence shall be tested for all the requirements of the specification.

**INCLUSION** – For the purpose of inclusion of additional sizes of tubes in the existing licences, one sample (preferably maximum for higher sizes or minimum for lower sizes intended to be covered) shall be tested for all the requirements of the specification.. Similarly for inclusion of additional classes/grades of tubes, one sample from each class/grade shall be tested. However, for inclusion of additional types, procedure as given above for grant of licence shall be followed.

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.

On the question of grades, samples be drawn from highest grade material and the recommendations may include lower grades also. If screwed and socketed sample is tested, recommendations may include plain and bevel ended tubes as well. If galvanized tubes are tested, recommendation may include black tubes as well.

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**  
**Steel Tubes, Tubulars and Other Wrought Fittings Part 1: Steel Tubes**  
**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.
  2. The black pipes shall contain standard mark, Licence no. and brand name of the licensee.
  3. The outsourced unit shall have a valid BIS licence for IS 1239 (Part-1).
- A. Action by the Licensee
1. The licensee intending to outsource post black pipe operation shall inform the corresponding branch office of BIS and seek its permission, after which outsourcing of post black pipe operations may be carried out.
  2. Black pipes shall be dispatched by the licensee to the outsourced processing unit, control unit wise. The outsourced unit shall maintain records for post black pipe operations as per frequency stipulated in the STI.
  3. The responsibility of conformity of the product in respect of all requirements shall lie with both the licensees - licensee manufacturing the black pipe and the outsourced unit carrying out post black pipe operation. In this regard, an undertaking shall be taken by concerned Branch Offices from both the licensees.
  4. An agreement shall be made between the licensee and the outsourced unit clearly indicating the terms and conditions as well as the extent of sharing of responsibility in case of product deficiency. A copy of the agreement shall be submitted to branch office of BIS under which the licensee operates its licence. The extent of sharing of responsibility in the event of product deficiency shall be clearly indicated in the agreement, in terms of responsibility up to black pipe manufacturing & post black pipe operations.
- B. Action by the BO
1. The BO receiving such request from its licensee shall ensure the following:
    - a) The proposed outsourced unit has a valid BIS licence as per IS 1239 (Part-1) and has the necessary manufacturing facilities, testing facilities and competent personnel to test as per STI, for such post black pipe operations.
    - b) If the licensee and the outsourced units are under different BOs, the BO receiving the request shall seek information from the other BO about the availability of manufacturing, testing facilities and competent testing personnel with the outsourced unit.
    - c) The BO under which the outsourcing unit is located, shall provide the information within 7 days by verifying the manufacturing and testing facilities available in the licence file. No visit is required to be paid to the premises of the outsourced unit.
    - d) If needed (in case of addition to manufacturing and testing facilities), a visit may be paid to the outsourced unit and special inspection charges shall be collected for such visits.
  2. On receipt of conformation regarding availability of requisite manufacturing and testing facility in the outsourced unit, the BO shall grant permission for the outsourcing of the operation(s).

3. The scope of the licences granted to both the licensees shall clearly indicate the outsourcing of operations carried out and details of name of licensee (outsourced licensee or licensee who has outsourced as the case may be), with address and licence number.

C. Operation after Grant of Permission

1. During the operation of licence, all such records maintained by the licensee and the outsourced unit shall be verified by the IOs.
2. The licensee 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 STI. The pipes shall be sent control unit wise to the outsourced unit. The outsourced unit 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 Galvanizing'; after ensuring conformity of post black pipe operations to the IS 1239 (Part 1).
3. The outsourced agency (the licensee who would carry out galvanizing etc) shall issue the test results for each CU w.r.t. operations carried out by them and shall furnish the same to the licensee (manufacturer of black pipe) who shall incorporate the necessary results in Test Certificate and will issue final TC and material may be dispatched from premises of outsourced agency.

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

**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 <sub>4</sub> ), Sodium Nitrite (Na <sub>2</sub> NO <sub>3</sub> ), Ammonium Molybdate [(NH <sub>4</sub> ) <sub>2</sub> Mo <sub>2</sub> O <sub>7</sub> ], Ammonium Phosphate [(NH <sub>4</sub> ) <sub>3</sub> PO <sub>4</sub> ], Potassium Nitrate (K <sub>2</sub> NO <sub>3</sub> ), Phenolphthalein Solution, Rectified spirit or methyl alcohol, Sodium Hydroxide (NaOH), Hydrofluoric Acid (HF), Perchloric Acid (HClO <sub>4</sub> ), 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)

**BUREAU OF INDIAN STANDARDS**

Manak Bhawan, 9, Bahadur Shah Zafar Marg,  
New Delhi – 110002

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

**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.

**1.1**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 AND MARKING**– The Standard Mark as given in the First Schedule of the license shall be embossed at a suitable place on the outside of each tube, provided always that the tube thus marked conforms to all the requirements 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 intervals 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 up to 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](http://www.bis.gov.in)"

3.5 Test Certificate – 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

**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) Test Details			(2)	(3) Levels of Control		
Cl.	Requirement	Test Methods Clause Reference	Test equipment requirement R: required (or) S: Sub-contracting permitted	No. of Sample	Frequency	Remarks
7	Chemical composition	IS 10748	R	1	Each cast	No testing is required if the material is ISI marked
8, 9	Dimensions	Cl. no. 8.1 of IS 1239(Part-1) & Tables-3 to 5	R	1	Every Hour	
9	Mass	Cl. No. 8.1.1 of IS 1239(Part-1) & Tables-3 to 5	R	1	Every Hour	
10	Joints	Cl. no. 10.1 to 10.2	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	Length	Cl. no. 11.1 to 11.3	R	1	Every Hour	

12	Galvanizing	Cl. no. 12.1 & 12.2	R	1	Ever Control Unit	
13	Leak Proof Test	Cl. no. 13	R	Each Tube		
14	Tensile Strength & Elongation	Cl. no. 14.1	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	R	2	Each Control Unit	
14	Flattening Test (on tubes above 50mm NB)	Cl. no. 14.3	R	2	Each control Unit	
15	Workmanship	Cl. no. 15	R	Each Tube		
18	Protection and packing	18	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	Weigh t (g/m <sup>2</sup> )	Uniformti y	

-----  
-----  
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