



उत्पाद मैनुअल
खाद्य, पेय, डेयरी और दवा उद्योग के लिए स्टेनलेस इस्पात नलिकाएँ
IS 6913: 2023 के अनुसार

**Product Manual for
Stainless Steel Tubes for the Food, Beverage, Dairy and Pharmaceutical Industry
According to IS 6913 : 2023**

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 6913:2023
	शीर्षक Title	:	Stainless Steel Tubes for the Food, Beverage, Dairy and Pharmaceutical Industry
	संशोधनों की संख्या No. of amendments	:	0
2.	नमूना दिशानिर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	No specific raw material requirement. 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	2.5 metre length 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	Dimensions (Outside Diameter & Thickness), Grade Designation, Process (Seamless (SML), Welded (WLD) or Heavily Cold Worked Welded (HCW), Application, Supply Condition (Hot-Finished or Cold Finished), Surface Finish, Optional/Supplementary Tests. 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 are possible to 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:	
	6913:2023 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 6913:2023 with the following scope:	
7.	उत्पाद का नाम Name of the product	Stainless Steel Tubes for the Food, Beverage, Dairy and Pharmaceutical Industry
	Grade Designation/ Numerical Symbol	Austenitic steels- X04Cr19Ni9/ 304,... Duplex steels- X02Cr22Ni5Mo3N/ 1803,...

	Process	Seamless (SML), Welded (WLD) or Heavily Cold Worked Welded (HCW)
	Supply Condition	Hot Finished/Cold Finished
	Size (Dimensions)	Outside Diameter(OD) from ...mm upto and including ...mm, Thickness from ...mm upto and including ...mm
	Surface Finish	Nill Finish, Mechanically Polished Surface Finish...
	Any other aspect required as per standard	Optional/Supplementary tests

ANNEX-A
TO PRODUCT MANUAL FOR
Stainless Steel Tubes for the Food, Beverage, Dairy and Pharmaceutical Industry
According to IS 6913:2023

GROUPING GUIDELINES

- 1) IS 6913: 2023 covers the requirements of seamless (SML), welded (WLD), or heavily cold worked welded (HCW) tubes of various Austenitic and Duplex Steel grades.
- 2) Within each category of Stainless Steels tubes as mentioned above, apart from the Grade Designation, it has been further classified with numerical symbols based upon their distinct chemical composition.
- 3) Since the final/desired properties of seamless (SML), welded (WLD), or heavily cold worked welded (HCW) tubes depend upon the chemical composition of the steel used, the process (SML/Welded/HCW) used and the Heat Treatment carried out, following Grouping Guidelines may be considered for the purpose of GoL/CSoL: -

Group	Grade Designation/ Numerical Symbol	Grouping
1	Austenitic: X04Cr19Ni9 (304) X02Cr19Ni10 (304L) X02Cr20Ni18Mo6CuN (312) X04Cr17Ni12Mo2 (316) X02Cr17Ni12Mo2 (316L) X01Cr20Ni25Mo6Cu (904LN)	Samples, covering combination of minimum and maximum outside diameter and wall thickness of tubes (preferably of different grade designation) intended to be covered in the licence of each process (SML/WLD/ HCW) shall be drawn from the group.
2	Duplex: X02Cr22Ni5Mo3N (1803) X02Cr22Ni6Mo3N (2205) X02Cr25Ni7Mo4CuN (2507)	Samples, covering combination of minimum and maximum outside diameter and wall thickness of tubes (preferably of different grade designation) intended to be covered in the licence of each process (SML/WLD/ HCW) shall be drawn from the group.

- 5) Hydrostatic Test as per cl.14 shall be carried out in the factory on full length(s) of tubes from which samples are drawn for I/T.
- 6) However, it shall be ensured that the firm is having all the necessary manufacturing and testing facilities for manufacturing/testing of all the grade designations/sizes covered in the scope of the licence.
- 7) During the operation of the licence, BOs shall ensure that all designations covered in the scope of the licence are drawn for independent testing in rotation over a period of time.

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.	Test Equipment/Chemicals and Identification Numbers (Where applicable)	Tests Used in with Clause Reference
1	Instrumental methods Spectrometer: atomic-absorption spectrometry, inductively coupled plasma atomic emission, inductively coupled plasma mass spectrometry techniques, spark source optical emission spectrometry, Spectrophotometer, XRF All sample preparation facilities including cutting, grinding polishing etc. Standard Reference Materials with Certificate	Chemical Composition, cl.8. (C, Si, Mn, Ni, Cr, Mo, S, P, N, Cu)
2	Vernier Caliper, Micrometre, Steel Scale, Steel Tape, Measuring Tape	Dimensions (Cl 9) and Tolerances (Cl 10).
3	Vision based inspection system, Surface Roughness Tester	Finish (Cl 11)
4	Universal Tensile Testing Machine with extensometer	Tensile Test (Cl 12)
5	Rockwell Hardness Tester, Standard Calibration Blocks	Hardness Tests (Cl 12)
6	Flattening Test Machine, Vernier Caliper, Filing or Chamfering Equipment	Reverse Flattening Test, (Cl 13). Flattening Test (Cl 15.4)- Optional/Supplementary tests.
7	Hydrostatic Test Equipment	Hydrostatic Test (Cl 14)
8	Apparatus for corrosion resistance test by Moneypenny Strauss Test (IS 10461 (Part2):1994) Single use corrosive solution prepared by dissolving 100 g of copper sulphate pentahydrate in 700 ml of distilled water. Then add 184 g (100ml) of sulphuric acid and made up to 1000 ml with distilled water, Conical flask of one litre	Intergranular Corrosion Test (Cl 15.1) Remark: Optional/Supplementary tests

	fitted with four ball rising condenser weigh balance, Hot Plate, test piece support, copper filings Mechanical/chemical preparation and degreasing apparatus and reagents including Grade 120 Abrasive Paper or cloth, Hydrochloric Acid, Nitric Acid, Trichloroethylene or any other suitable solvent Apparatus for bend test, flattening test	
9	Tool having 60° included angle, Flaring Machine	Flaring Test (for Seamless Tubes)- Cl 15.2 Remark: Optional/Supplementary tests
10	Universal Tensile Testing Machine, Conical Mandrel having a suitable angle, Flanging Tool, Supporting Die	Flange Test (For Welded Tubes)- Cl 15.3 Remark: Optional/Supplementary tests
11	Arrangement for Salt Spray Test, Water Immersion Test, Humidity Test and Test for Passivation Film as per IS 13177 Arrangement for Soak cleaning, Pickling, Passivation Treatment, Test for Resistance to Corrosion, Potential Time Measurement as per IS 10117	Chemical Cleaning – Cl 15.5 Remark: Optional/Supplementary tests

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 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 records in 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: All the stainless steel tubes of the same outside diameter & thickness manufactured from same manufacturing process, from the same heat of steel and heat treated in the same furnace 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 Plan submitted 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 of control 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 as may 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 required in 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 guidelines for the utilization of cluster based test facilities by MSMEs or the provisions of Sharing of testing facilities or get testing done from BIS recognized/empanelled 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 on BIS 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 license and Licence Number (i.e. CM/L...) shall be suitably incorporated in each tube, provided always that the product thus marked and packed conforms to all the requirement of the specification.

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

3.2 Additional Marking requirements: The material shall also be marked with the following additional requirement:

- 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 6913:2023 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 - 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
(ONLY FOR GUIDANCE PURPOSE)

(1)				(2)	(3)		(4)
TEST DETAILS					LEVELS OF CONTROL		REMARKS
Clause	Requirements	Test Method		Test equipment requirement R: required (or) S:Sub-contracting permitted	No. of Samples	Frequency	
		Clause	Reference				
8	Chemical Composition						
	Ladle Analysis	8.1, Table 2	IS 6913 & IS 228 (Relevant Parts) Or any other established Instrumental/ Chemical methods	R	One	Each Heat	Applicable for manufacturers with steel making facilities
	Product Analysis	8.2, Table 2 & Table 3	IS 6913 & IS 228 (Relevant Parts) Or any other established Instrumental/ Chemical methods	R	(i) Nil (ii) One	(i) Nil (ii) each cast	(i) Applicable for manufacturers with steel making facilities (ii) For manufacturers not having steel making facilities and are procuring raw material stainless steel strips/sheets.

							No further testing is required if the raw material received is ISI marked and is received with test certificate
9 & 10	Dimensions & Tolerances	9.1 Table 4, 10.1, 10.2	IS 6913	R	Adequate inspection to ensure each item to be within the limits of the specification. Records of dimensions mutually agreed to shall be maintained.		
11	Finish	11.1 to 11.2	IS 6913	R	Adequate inspection to ensure that each item conforms to the requirements of the specification		
11	Critical Surface Finish	11.3, 11.4	IS 6913 IS 3073 IS 15262	R	Adequate inspection to ensure that each item conforms to the requirements of the specification		
12	Tensile and Hardness Tests	12, Table 5	IS 6913 IS 1608 (Part 1) IS 1586 (Part 1)	R	One	Each Control Unit	—
13	Reverse Flattening Test (For welded tubes)	13	IS 6913	R	One	Each Control Unit	
14	Hydrostatic Test	14.1 to 14.4	IS 6913	R	One	Each Tube	
15	Intergranular Corrosion Test	15.1	IS 6913 IS 10461 (Part 2)	S	--	--	Subject to agreement between the purchaser and the supplier
	Flaring Test (for seamless tubes)	15.2	IS 6913	S	--	--	
	Flange Test (for welded tubes)	15.3	IS 6913 IS 2330	S	--	--	
	Flattening Test	15.4	IS 6913 IS 2328	S	--	--	

	Chemical Cleaning	15.5	IS 6913 IS 10117 IS 13177	S	--	--	
17	Hygienic Conditions	9.1 & 9.2	IS 5872	R	Adequate Inspection to ensure that tubes conforms to the requirements of the specification		

PM/6913/2
June 2025

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 Stainless Steel Tubes for the Food, Beverage, Dairy and Pharmaceutical Industry
TEST CERTIFICATE NO. _____

To M/s _____

Dated _____

We certified that the material described below fully conforms to 6913:2023 Chemical composition and Mechanical properties of the product 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 6913:2023 FOR DETAILS OF SPECIFICATION REQUIREMENTS)

TEST RESULTS

Order No. & Date	Outside Diameter/ Thickness	Control unit No.	Grade Designation/ Numerical Symbol	Quantity (in tonnes)	Chemical Composition (in %)										Mechanical Properties			Hydrostatic Test	Dimensions and Tolerances	Surface finish	Optional Test requirements	Remarks
					C	Si	Mn	Ni	Cr	Mo	S	P	N	Cu	Tensile Requirements	Hardness	Reverse Flattening Test					

Remarks
Wagon No.
Truck No.

FOR XYZ IRON AND STEEL COMPANY

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