



उत्पाद मानुयल
सामान्य सेवाओं के लिए स्टेनलेस इस्पात वेल्डेड
पाइप और ट्यूब - विशिष्ट
IS 17876:2022 के अनुसार

PRODUCT MANUAL FOR
Stainless Steel Welded Pipes and Tubes for General Services as per IS 17876:2022

भारतीय मानक ब्यूरो (अनुरूपता मूल्यांकन (विनियम की स्कीम-I के तहत यह उत्पाद मानुयल प्रमाणीकरणके प्रचलन में रीति और पारदर्शिता के सुसंगतता सुनिश्चित करने के लिए सभी क्षेत्रीय/शाखा कार्यालयों एवं लाइसेन्स धारियों द्वारा संदर्भ सामग्री के रूप में उपयोग किया जाएगा। बीआईएस लाइसेन्स/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 17876:2022
	शीर्षक Title	:	Stainless Steel Welded Pipes and Tubes for General Services
	संशोधन संख्या No. of amendments	:	NIL
2.	नमूनाकरण दिशा निर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	No specific raw material requirement
b)	समूहिकरण दिशा निर्देश Grouping Guidelines	:	Please see Annex-A

c)	नमूने का परिमाण Sample Size	:	2.5 m length
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 are possible to be carried out in a day
6.	लाइसेन्स का कार्यक्षेत्र /Scope of the Licence :		
	IS 17876:2022 के 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 17876:2022 with the following scope:		
	Name of the product	Stainless Steel Welded Pipes and Tubes for General Services	
	Grade Designation/Numerical Symbol	Ferritic Steels- X04Cr12Al/405, Martensitic Steels- X12Cr12/410 Austenitic Steels- X04Cr19Ni9/304,..... Duplex- X02Cr22Ni5Mo3N/1803,.....	
	Process	Welded(WLD) or Heavily Cold Worked(HCW)	
	Sizes	Pipes of Nominal Bore(NB) fromxx.... to ...xx...., Wall Thickness from ...xx... mm toxx.... mm Tubes of Outside Diameter(OD) from ...xx.... mm toxx.... mm, Wall Thickness from ...xx... mm toxx.... mm	
	Any other aspect required as per standard	No. of seams in case of Outside Diameter greater than 355.6 mm	

ANNEXURE A
TO PRODUCT MANUAL FOR
Stainless Steel Welded Pipes and Tubes for General Services to IS 17875:2022

GROUPING GUIDELINES

1) IS 17876:2022 covers the requirements of Welded Stainless Steel Pipes and Tubes for General Services. Table 1 of IS 17876:2022 specifies various Ferritic, Martensitic, Austenitic and Duplex Steel grades for these Pipes and Tubes.

2) Within each category of Stainless Steels as mentioned above, apart from the specific chemistry defining the phase, grades have been further designated based upon their distinct chemical composition such as low carbon grades, addition of Alloying elements , Nitrogen, etc. or a combination of these

3) Further, Austenitic Stainless Steel Pipes and Tubes can also be supplied in heavily cold worked (HCW) by cold working to at least 35 percent reduction in thickness of both wall and weld prior to anneal. Pipes and Tubes shall be heat treated as per the treatments specific to types of steel specified at cl.9. of IS 17876:2022.

4) Since the final/desired properties of seamless tubes/pipes depend upon the chemical composition of the steel used, the process (Welded/HCW) used and the Heat Treatment carried out, for the purpose of GoL/CSoL, following Grouping Guidelines may be considered:-

Group	Grade Designation/Numerical Symbol	Grouping
1	Ferritic - 405 409M 410S2 429 430 442 446S1	Samples, covering combination of minimum and maximum nominal bore /outside diameter and wall thickness of pipes/tubes intended to be covered in the licence ,of each process (WLD or HCW) of any grade designation shall be drawn from the group.
2	Ferritic- 430Ti 439 439Ti2 444 446S2 446S3	Samples, covering combination of minimum and maximum nominal bore /outside diameter and wall thickness of pipes/tubes intended to be covered in the licence ,of each process (WLD or HCW) of any grade designation shall be drawn from the group.

3	Martensitic- 410	Samples, covering combination of minimum and maximum nominal bore /outside diameter and wall thickness of pipes/tubes intended to be covered in the licence ,of each process (WLD or HCW) of any grade designation shall be drawn from the group.
4	Duplex- 1803 2101 2205 2304 2507	Samples, covering combination of minimum and maximum nominal bore /outside diameter and wall thickness of pipes/tubes intended to be covered in the licence ,of each process (WLD or HCW) of any grade designation shall be drawn from the group.
5	Duplex- 2760	Samples, covering combination of minimum and maximum nominal bore /outside diameter and wall thickness of pipes/tubes intended to be covered in the licence ,of each process (WLD or HCW) of any grade designation shall be drawn from the group.
5	Austenitic- 201 201LN 204 304 304L 304H 304LN 304N 309S 309H 310S 310H 310MoLN 312 316 316L 316H 316LN 316N1 316N2 317 317L 317LN 317LM 317LMN 326	Samples, covering combination of minimum and maximum nominal bore /outside diameter and wall thickness of pipes/tubes intended to be covered in the licence ,of each process (WLD or HCW) of any grade designation shall be drawn from the group.
6	Austenitic- 304Ce 308Ce 309Nb 309HNb	Samples, covering combination of minimum and maximum nominal bore /outside diameter and wall thickness of pipes/tubes intended to be covered in the licence ,of each process (WLD or HCW) of any grade designation shall be drawn from the group.

	310Nb 310HNB 316Ti 317LCu 321 321H 345 347 347H 347LN 348 348H	
7	Austenitic- 904L 904LN	Samples, covering combination of minimum and maximum nominal bore /outside diameter and wall thickness of pipes/tubes intended to be covered in the licence ,of each process (WLD or HCW) of any grade designation shall be drawn from the group.

5) Leak Tightness Test as per cl.17. shall be carried out in the factory on full length(s) of pipes/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.

**ANNEXURE B
TO PRODUCT MANUAL FOR**

Stainless Steel Welded Pipes and Tubes for General Services as per IS 17876:2022

LIST OF TEST EQUIPMENTS

Major test equipment essentially 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, Al, Ti, Nb, Ce, Ta, Co, W, V)
2.	Vernier Caliper, Micrometer, Steel Scale, Steel Tape, Measuring Tape	Dimensions and Tolerances, cl.24.
3.	Universal Tensile Testing Machine with extensometer	Tensile Requirements, cl.10.1, Transverse Tension Test, cl.11
4.	Brinell Hardness Tester, Rockwell Hardness Tester, Standard Calibration Blocks	Hardness Test, cl.12.1, 12.2
5.	Universal Tensile Testing Machine, Conical Mandrel having a suitable angle, Flanging Tool, Supporting Die	Flange Test , cl.13.
6.	Flattening Test Machine, Vernier Caliper, Filing or Chamfering Equipment	Flattening Test cl.15., Reverse Flattening Test, cl.14.
7.	Metallurgical Microscope , Suitable Carbide Revealing Etchant, Polishing/ Grinding Machine, Laboratory Furnace	Grain Size, cl.16.
8.	Hydrostatic Test Equipment	Leak Tightness Test, cl.18.
9.	Apparatus for corrosion resistance test BY HUEY TEST (IS 10461 (Part1):1994) Oven (0-700Deg C), Stop Watch Corrosive Solution (Aqueous solution of 65+/-2% (m/m) reagent grade HNO ₃ , weigh balance, Hot Plate, Conical Flask (1 litre) fitted with cold finger immersion condenser or other type of condenser such as Allihn condenser with at least 4 bulbs, paper indicator to check acid fumes, test piece support Mechanical/chemical preparation and degreasing apparatus and reagents including Grade 120 Abrasive Paper or cloth, Hydrochloric Acid, Nitric Acid, soap, acetone, Water Apparatus for test specimen preparation 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	Corrosion Test, cl.19.

	Conical flask of one litre 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	
10.	Straight Edge	Workmanship, Finish and Appearance, cl.22.

Note 1: The above is an indicative list for the purpose of guidance only and may not be treated as exhaustive

ANNEXURE C
TO PRODUCT MANUAL FOR
Stainless Steel Welded Pipes and Tubes for General Services as per IS 17876:2022

SCHEME OF INSPECTION AND TESTING

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 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, MARKING, PACKING - The Standard Mark as given in schedule of the licence and Licence Number (i.e. CM/L.....) shall be incorporated, and the marking and packing shall be done as per the provisions of the Indian Standard, provided always that the product thus marked conform to all the requirements of the specification.

3.1 Each pipe/tube shall be marked with the following details:

- a) Name and trade-mark of the manufacturer;
- b) Nominal bore and thickness for pipes or OD and thickness for tubes;
- c) Grade;
- d) Heat No.;
- e) Lot Number; and
- f) Process (WLD or HCW as applicable)

4. CONTROL UNIT - All the stainless steel pipes/tubes prior to cutting, of the same nominal diameter & wall thickness manufactured from the same heat of steel and heat treated in the same furnace shall constitute a 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.

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 17876:2022 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-salable 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/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. The Standard Mark (if already applied) on rejected material should be defaced.

TABLE 1: LEVELS OF CONTROL

(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 1	IS 228 (all parts) Any other established instrumental/chemical method	R	One	Each Heat	Applicable for manufacturers having steel making facilities only
	Product Analysis	8.2, Table 1, Table 2	IS 228 (all parts) Any other established instrumental/chemical method	R	i) NIL ii) One	i) NIL ii) Each Cast	i) For manufacturers having steel making facilities only ii) For manufacturing 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
10	Mechanical Properties						
	Tensile Requirements	10.1, Table 4	IS 1608(Part 1)	R	One	Each Control Unit	
	Transverse Tension Test	11	IS 1608(Part 4)	S	----	-----	To be carried out if required by purchaser

12	Hardness Test						
	Pipes	12.1, Table 5	IS 1500 (Part 1) IS 1586(Part 1)	R	One	Each Control unit	
	Tubes	12.2, 12.2.1, 12.2.2, Table 6	IS 1500 (Part 1) IS 1586(Part 1)	R	One	Each Control unit	Hardness Test is not required for tubes smaller than 6.4 mm in diameter or having a wall thickness less than 0.51 mm
13	Flanging Test	13.1, 13.2 Table 7	IS 17876	R	One	Each Control Unit	i) Applicable for tubes only ii) The test is not required to be carried out for tubes of outside diameter from 1.27 mm to 12.7 mm and wall thickness from 0.13 to 1.65 mm
14	Reverse Flattening Test	14	IS 17876	R	One	Each Control Unit	
15	Flattening Test	15.1,15.2	IS 2328	R	One	Each Control Unit	i) Applicable for Pipes and Large Size Tubes Only ii) This test is required to be carried out on tubes over 203 mm in OD or tubes with wall thickness 9.52 mm and over
16	Grain Size	16, Table 8	IS 4748	R	One	Each Control Unit	Applicable to grades of austenitic steels as specified at Table 8 only

17	Leak Tightness Test						
	For Pipes	18.3.1, 18.3.2	IS 17876	R	One	Each Pipe	
	For Tubes	18.4.1, 18.4.2, 18.4.3, 18.4.4	IS 17876	R	One	Each Tube	
19	Corrosion Test	19	IS 10461(Part 1) IS 10461(Part 2)	S	---	---	If required by purchaser
22	Workmanship, Finish, Appearance	22.1, 22.2	IS 17876	R	Adequate inspection to ensure that each item conforms to the requirements of the specification		
23	Dimensions and Tolerances						
24.1	For Pipes	24.1.1 to 24.1.5, Table 9, Table 10 Annex A Annex B	IS 17876	R	Adequate inspection to ensure that each item conforms to the requirements of the specification		
24.2	For Tubes	Table 11	IS 17876	R	Adequate inspection to ensure that each item conforms to the requirements of the specification		

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.

Note-3: ----- means that the levels of control shall be as agreed with the purchaser

ANNEXURE I

(Para 6 of the Scheme of Inspection and Testing)

XYZ STAINLESS STEEL COMPANY

(Registered office Address and works address)

TEST CERTIFICATE FOR**Stainless Steel Welded Pipes and Tubes for General Services according to IS 17876:2022****TEST CERTIFICATE No.**BIS
STANDA
RD
MARK

To M/s _____

DATE _____

We certified that the material described below fully conforms to **17876:2022** 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 **17876:2022** FOR DETAILS OF SPECIFICATION REQUIREMENTS)**TEST RESULTS**

Order No. & Date	Outside Diameter/ Nominal Bore, Wall Thickness	Control Unit No.	Grade Designation	Quantity in tonnes	CHEMICAL COMPOSITION								Tensile Requirements	Hardness	Flanging Test	Reverse Flattening Test	Dimensions and Tolerances	Grain Size	Leak Tightness	Remarks
					C %	Si %	Mn %	Ni %	Cr %	Mo %	S %	P % etc.								

REMARKS

WAGON NO.

TRUCK NO.

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

FOR XYZ STAINLESS STEEL COMPANY