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उत्पाद मैन्युअल

वाहक पट्टे के लिए आइडलसर् हेत इस्पात

निलकाएँ — विशिष्ट

9295:2024 के अनुसार

PRODUCT MANUAL FOR
Steel tubes for idlers for belt conveyorsAccording to IS 9295:2024

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 underScheme-I of Bureau of Indian Standards (Conformity Assessment) Regulations,2018 for variousproducts. The document may also be used by prospective applicants desirous of obtaining BIS certification.

1.	**मानक संख्या** **IS No.**	:	**IS 9295:2024**
	शीर्षक **Title**	:	Steel tubes for idlers for belt conveyors
	संशोधनों की संख्या **No. of amendments**	:	0
2.	**नमूना दिशानिर्देश** **Sampling Guidelines**		
a)	**कच्चा माल** **Raw material**	:	The welded steel tubes shall be manufactured from hot rolled steel strips conforming to IS 2062/IS 10748. The ladle analysis of the steel for seamless tube (HFS, CDS) shall not have more than 0.060 percent sulphur and not more than 0.060 percent phosphorus. Note: This section indicates the requirements for raw material (if specified in the IS) for which compliance is to be establishedduring 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 2 meter Chemical test : 5 pcs of 5cm x 5cm (for OES) 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 therequired quantity of product sample, as far as possible since raw material sample may not be available in market)
3.	**परीक्षण उपकरणों की सूची** **List of Test Equipment**	:	Please refer Annex - B
4.	**निरीक्षण और परीक्षण की स्कीम** **Scheme of Inspection and Testing**	:	Please refer Annex - C
5.	**एक दिन में संभावित परीक्षण** **Possible tests in a day**	:	All tests 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 readyreference 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:**		
	Licence is granted to use Standard Mark as per IS 9295:2024 with the following scope:		
	Name of the product	Steel tubes for idlers for belt conveyors	
	Type	Hot finish seamless (HFS), Cold-drawn seamless (CDS), Electrical Resisting Welded (ERW) or High Frequency Induction Welding (HFIW)	
	Tube Designation	HFS 210, CDS 240, ERW 210 or HFIW 355,…	
	Sizes	Outside Diameter from ….xx… mm to up to and including ….xx…. mm, Thickness from ….xx… mm to up to and including ….xx mm	
	Optional	With or without Hardness	

ANNEXURE A

GROUPING GUIDELINES

1. For the purpose of GoL/CSoL, the following Grouping Guidelines shall be considered:

Group	Type	Tube Designation	Sizes	Grouping
1	Hot-finish seamless (HFS)	HFS 210 HFS 240 HFS 310 HFS 355	Outside Diameter: From 63.5 mm to 219.1 mm Thickness: 3.65 mm to 10.00 mm Any other outside diameters and thicknesses of tubes	Samples covering combination of the minimum and maximum wall thickness and outside diameter of Tubes, among the sizes intended to be covered in the scope of licence, of any Tube Designation shall be drawn and tested to cover all sizes for that Tube Designation. The samples of different sizes drawn above shall be drawn in such a way (combination) so that samples of all Tube Designations intended to be covered in the scope of licence, are tested.
2	Cold-drawn seamless (CDS)	CDS 210 CDS 240 CDS 310 CDS 355		Samples covering combination of the minimum and maximum wall thickness and outside diameter of Tubes, among the sizes intended to be covered in the scope of licence, of any Grade shall be drawn and tested to cover all sizes for that Grade. The samples of different sizes drawn above shall be drawn

				in such a way (combination) so that samples of all Tube Designations intended to be covered in the scope of licence, are tested
3	Electric resisting welded (ERW) (including high frequency induction welding (HFIW))	ERW 210 ERW 240 ERW 310 ERW 355		Samples covering combination of the minimum and maximum wall thickness and outside diameter of Tubes, among the sizes intended to be covered in the scope of licence, of any Grade shall be drawn and tested to cover all sizes for that Grade. The samples of different sizes drawn above shall be drawn in such a way (combination) so that samples of all Tube Designations intended to be covered in the scope of licence, are tested

2. Scope of licence shall be restricted based on the manufacturing and testing facilities available.

3. During operation of licence, samples of each variety covered in the scope of licence, shall be testedin rotation, to the extent possible

ANNEX – B

LIST OF TEST EQUIPMENTS

(INDICATIVE LIST, FOR GUIDANCE ONLY)

Sl. No.	Tests Used in with Clause Reference	Test Equipment/Chemicals and IdentificationNumbers (Where applicable)
1	Straightness (15)	Straightedge, String, Concrete platform and Verniercalliper
2	i) Dimension Tolerances (13) Length(16)	ii)Vernier calliper gauge or any other suitable device iii)Steel scale iv) micrometer (screw) gauge or other suitable device v) Weighing Balance vi) Measuring Tape
3	Tensile Test(8.1)	Universal testing machines (Loadcells of Appropriate capacities or having 3-4 ranges in Conventional equipment) with Strain Rate/Stress Rate control
4	Flattening test(8.3)	UTM with flattening test attachments
5	Drift Expansion Test (8.2)	Variable Speed Press or UTM, Conical Mandrels withangles 30^0,45^0,60^0 etc
6	i) Hardness Test(10)	ii)Rockwell Scale 'C' iii)Vickers, 30 kg load iv) Brinell (appropriate ball size/load)
7	C,S, Si, Mn ,P, Cr, Mo, Ni, Al, N, V, Ti, B etc. content(7)	Instrumental methods Spectrometer: atomic-absorption spectrometry, inductively coupled plasma atomic emission, inductively coupled plasma mass spectrometrytechniques, spark source optical emission spectrometry.
1	Clause 7 C, Mn, Si, P, S, Cr, Mo, Ni, B, Al, Nb, V, Ti, Cu, N	Instrumental methods Spectrometer: atomic-absorption spectrometry, inductively coupled plasma atomic emission, inductively coupled plasma mass spectrometry techniques, spark source optical emission spectrometry. Spectrophotometer Standard Reference Material with certificate
2	Clause 7 C& S -chemical method, alternative to instrumental method	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 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
3	Clause 7 Manganese content -chemical method, alternative to instrumental method	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
4	Clause 7	Medium textured filter paper, Porcelain casserole, platinum

	Silicon Content -chemical method, alternative to instrumental method	crucible,filter paper pulp, hot plate, hot airoven, muffle furnace Reagents: Silver nitrate solution, concentrated nitricacid, concentrated sulphuric acid, Dilute Hydrochloric Acid, Dilute SulphuricAcid, PerchloricAcid, Tartaric acidand hydroflouric acid
5	Clause 7 Phosphorus Content -chemical method, alternative to instrumental method	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 (KMnO4), Sodium Nitrite (Na2NO3), Ammonium Molybdate [(NH4)2 Mo2O7], Ammonium Phosphate [(NH4)3 PO4], Potassium Nitrate(K2NO3), Phenolphthalein Solution, Rectified spirit or methyl alcohol, Sodium Hydroxide (NaOH), Hydrofluoric Acid (HF), Perchloric Acid (HClO4), Sulphurous Acid, Hydrobromic Acid (HBr), other chemicals and reagent as applicable
6	Clause 7 Chromium Content -chemical method, alternative to instrumental method	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.
7	Clause 7 Mo Content -chemical method, alternative to instrumental method	Reagents: Perchloric Acid, Phosphoric Acid, Nitric Acid, Hydrochloric Acid, Dilute sulphuric acid, potassium thiocyanate solution, stannous chloride solution, n-butyl acetate, Iron-Mo free, molybdenum metal (99.9 pc pure) Spectrophotometer, Volumetric flask, conical flask, titration apparatus (burette, pipette etc.), hot plate, thermometer, separating funnel, dry filter paper and other laboratory glassware and apparatus
8	Clause 7 Ni Content -chemical method, alternative to instrumental method	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
9	Nitrogen Content (Clause 7)	Inert gas fusion followed by determination using thermal conductivity detector

ANNEXURE 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 theStandard 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 differenttests 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 : Tubes of the same size, type, tube designation and manufactured from the same cast of raw material on the same tube mill at a time shall constitute one control unit.

1.3.2 For the guidance of manufacturers in preparing the Quality Assurance Plan, recommendedlevels 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 requirementsof 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 housetesting 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 givenbelow. 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 perIS/ISO/IEC 17025.

2.2 For MSME manufacturers, the requirement of maintaining a laboratory/in-house testingfacility 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 facilitiesor get testing done from BIS recognized/empaneled laboratory or any other laboratory

having validNABL accreditation as per IS/ISO/IEC 17025.

2.3 **Large Scale manufacturers shall maintain an in-house laboratory equipped at least withtest facilities for routine tests (indicated as "R" in Column 2 of Table 1)**, where different testsgiven 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 theprovisions 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 commoncluster 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 laboratoryor 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 embossed, painted or suitably incorporated on each Tube and on the Test Certificate issued for each consignment of Tubes, 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.

4. TEST CERTIFICATE-For each consignment of BIS Certified material conforming to IS 9295:2024there 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**		
Clause	**Requirements**	**Test Method**		**Test equipment requirement** R: required (or) S: Sub-contracting permitted	**No. of Samples**	**Frequency**	**REMARKS**
		Clause	**Reference**				
7	Manufacture	7.1, 7.1.1., 7.2	IS 9295:2024	R	The welded steel tubes shall be manufactured from hot rolled steel strips conforming to IS 2062/ IS 10748. The ladle analysis of the steel for seamless tube (HFS, CDS) shall not have more than 0.060 percent sulphur and not more than 0.060 percent phosphorus. Manufacturer shall ensure adequate in process controls to ensure that the tubes are manufactured in accordance with the specification. Wherever required, appropriate records shall be maintained.		
7	Chemical Composition 1) Ladle Analysis 2) Product Analysis	7.1.3,7.1.4,7.1.5	IS 9295:2024 IS 228(various parts) or any other established instrumental/chemical method	R R	1) One 2) One	1) Each Heat 2) Each Cast	Applicable for manufacturers with steel making facilities. Other manufacturers shall ensure that material is received with test certificate. No further testing is required if material is ISI marked and received with test certificate.

8.1	Tensile test	8.1 to 8.1.2&12.1 Table-1	IS 9295:2024 IS 1608 Pt.1	R	One	Each Control Unit	----
8.2	Drift Expansion Test	8.2	IS 9295:2024 IS 2335	R	One	Each Control Unit	----
8.3	Flattening test	8.3&12.1	IS 9295:2024 IS 2328	R	One	Each Control Unit	----
9	Weight	9.1 to 9.1.1	IS 9295:2024	R	Firm to have adequate in-process controls to ensure that each tube is supplied as per the nominal dimensions and mass specified in the Order. Wherever required, appropriate records shall be maintained		----
10	Hardness	10.1	IS 9295:2024	S	---	----	When hardness values are required, the hardness values shall be as agreed to between the purchaser and the manufacturer. The method for testing of hardness may also be agreed between the purchaser and the manufacturer, as applicable.
13	DIMENSION TOLERANCES	13.1 to 13.1.5.4	IS 9295:2024	R	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.		
14	Workmanship	14	IS 9295:2024	R	Firm shall exercise adequate in-process controls to ensure that the material remains free from harmful defects		
15	Straightness	15	IS 9295:2024	R	Firm to have adequate in-process controls to check compliance of this parameter as per the tolerances given in the Indian Standard or as agreed to between		

					the manufacturer and purchaser. However, appropriate records shall be maintained by the manufacturer for evidence of conformity.
16	Length	16	IS 9295:2024	R	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.

BIS STANDARD MARK

ANNEXURE I

XYZ COMPANY

(Registered office Address and works address)

TEST CERTIFICATE FOR Steel tubes for idlers for belt conveyors

TEST CERTIFICATE No._____ DATE_____

To M/s_____We certified that the material described below fully conforms

to IS 9295:2024 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 9295:2024 FOR DETAILS OF SPECIFICATION REQUIREMENTS)

TEST RESULTS

Order No. & Date	Nominal Size				CHEMICAL COMPOSITION							PHYSICAL PROPERTIES					Grade	Hardness#
	OD	Mass	Thk	Length	C%	Mn%	Si%	P%	Al%	S %	N% etc.	TS	YS	%EL	Drift expansion test	Flattening test		

if agreed

REMARKS

WAGON NO.

TRUCK NO.FOR XYZ COMPANY

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