



PM/ 9295/ 2/ Sept 2020

**PRODUCT MANUAL FOR
Steel tubes for idlers for belt conveyors
According to IS 9295:1983**

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.	Product	:	IS 9295:1983
	Title	:	Steel tubes for idlers for belt conveyors
	No. of amendments	:	6
2.	Sampling Guidelines		
a)	Raw material	:	Steel used for manufacture of tubes shall be with limits for product analysis of Sulphur and Phosphorus as 0.065 Max.
b)	Grouping Guidelines	:	Please refer Annex - A
c)	Sample Size	:	Mechanical Test 2 meter Chemical test : 5 pcs of 5cm x 5cm (for OES) or 50 gm drillings for testing by chemical method
3.	List of Test Equipment	:	Please refer Annex - B
4.	Scheme of Inspection and Testing	:	Please refer Annex - C
5.	Possible tests in a day	:	All tests
6.	Scope of the Licence :		
	Licence is granted to use Standard Mark as per IS 9295:1983with the following scope:		
	Name of the product	Steel tubes for idlers for belt conveyors	
	Manufacturing Process	ERW,..	
	Grade	Yst 210, ...	
	Sizes	OD and its corresponding thickness	
	Optional	With or without hardness	

ANNEXURE A

GROUPING GUIDELINES

1. Grouping of steel tubes for automotive purposes is carried out on the basis of method of manufacture and strength as under:

Sl No.	Grade Designation	Type/Class	Sizes	Group	Remarks
1	HFS 210	Hot finishes seamless	Upto and including outer diameter 219.10 mm	1	Three samples of preferably lowest OD, intermediate OD and highest OD from each Group of products shall be drawn to cover the range of OD in the group. Regarding the Grade, if superior grade is drawn lower grade may be included in the scope of license (e.g if grade ERW 310 is drawn scope may include ERW 240 and ERW 210 also)
2	HFS- 240				
3	HFS-310				
4	CDS 210	Cold Drawn Seamless		2	
5	CDS- 240				
6	CDS-310				
7	ERW 210	Electric Resistance Welded		3	
8	ERW- 240				
9	ERW-310				

2. Accordingly, licence can be granted for all the sizes, for higher Grade Designation tested can include the lower Designation applied by the applicant/licencee, provided that the firm is having all the necessary manufacturing and testing facilities for the manufacture and testing of all other sizes, conditions of tubes proposed to be included in the licence.
3. During the operation of license, BO shall ensure that all Grades & Product types covered in the license are drawn for independent testing on rotation over a period of time.

ANNEXURE B

LIST OF TEST EQUIPMENTS

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	Straightedge, String, Concrete platform and Vernier calliper	Straightness (15)
2	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	Tolerances (13) Length(16)
3	Universal testing machines (Loadcells of Appropriate capacities orhaving 3-4 ranges in Conventionalequipment) Range: 20 kN – 400kN LC: 0.01 kN	Tensile Test(8.1)
4	UTM with flattening test attachments	Flattening test(8.3)
5	Variable Speed Press or UTM, Conical Mandrels with angles 30 ⁰ ,45 ⁰ ,60 ⁰ etc	Drift ExpansionTest (8.2)
6	i) Rockwell Scale 'C' ii) Vickers, 30 kg load iii) Brinell (appropriate ball size/load)	Hardness Test(10)
7	Instrumental methods Spectrometer: atomic-absorption spectrometry, inductively coupledplasma atomic emission, inductively coupled plasma mass spectrometry techniques, spark source optical emission spectrometry. Spectrophotometer	S,P content(7) S,P
8	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 S: Ceramic boats/crucibles – desiccators, Fluxes -Low sulphur copper, tin or iron, Dilute hydrochloric acid, Starch Iodide solution, Potassium iodate	S -chemical method, alternative to instrumental method (7,14,20,25)
9	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(7,14,20,25)

Note: The above is an indicative list for the purpose of guidance only

ANNEXURE C
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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 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 the Schedule of the license 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 and packed conforms to all the requirement of the specification.

4. CONTROL UNIT – For the purpose of this scheme of Testing & Inspection, tubes of same size, type, grade designation, manufactured from the same consignment of material (Cast/Heat of steel) under identical conditions in a shift 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.

5.1 All the production which conforms to the Indian Standards and covered by the licence should be marked with Standard Mark.

5.2 General requirements relating to the supply of material shall conform to IS 1387. The steel to be used in production of steel tubes shall be manufactured as per CI 7 IS 9295:1983.

6. TEST CERTIFICATE-For each consignment of BIS Certified material conforming to IS 9295:1983 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.

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				
6.2	Manufacture	6.2	IS 9295:1983	R	Each Tube	Each Tube	
7	Chemical Composition	7	IS 9295:1983 IS 228(various parts)	R	One	Each Heat	Applicable for manufacturers with steel making facilities. Other manufacturers shall ensure that material is received with test certificate. No testing is required if material is ISI marked and received with test certificate.
	i) Ladle Analysis	7.1					
	ii) Product Analysis	7.2		S	One	Each Cast	
8.1	Tensile test	8.1 to 8.1.2&12.1 Table-1	IS 9295:1983 IS 1608 Pt.1	R	Two	Each Control Unit	
8.2	Drift Expansion Test	8.2&12.1	IS 9295:1983 IS 2335	R	-do-	-do-	
8.3	Flattening test	8.3&12.1	IS 9295:1983 IS 2328	R	-do-	-do-	
9	Weight	9.1 to 9.1.1	IS 9295:1983	R	One from each control unit	Every hour	
10	Hardness	10.1	IS 9295:1983	R ^s	As agreed between manufacturer and purchaser.		

(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				
13	Tolerances	13.1 to 13.1.5.4 Table-3	IS 9295:1983	R	One from each control unit	Every hour	
14	Workmanship	14.1	IS 9295:1983	R	Adequate inspection to ensure that product meets requirements of the specification.		
15	Straightness	15.1					
16	Length	16.1 16.2	IS 9295:1983	R			
17	Surface protection	17.1	IS 9295:1983	R			

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 empaneled by the Bureau.

Note-2: Levels of control given in column 3 are only recommendatory in nature. The manufacturer may define the control unit/batch/lot and submit his own levels of control in column 3 with proper justification.

Note-3: Test equipment(s) to be possessed by the manufacturer only if they are capable of supplying pipes with the optional requirement of hardness against a scale of their choice. For other manufacturers it should be treated as **S** instead of **R**.

ANNEXURE I

(Para 6 of the Scheme of Inspection and Testing)

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 9295:1983 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 Licence No. CM/L _____ are as indicated below against each order No.

(PLEASE REFER TO IS 9295:1983 FOR DETAILS OF SPECIFICATION REQUIREMENTS)

TEST RESULTS

Order No. & Date	Nominal Size				CHEMICAL COMPOSITION		PHYSICAL PROPERTIES					Grade	Remarks
	OD	Mass	Thk	Length	S %	P %	TS	YS	%EL	Drift expansion test	Flattening test		

REMARKS

WAGON NO.

TRUCK NO. FOR XYZ COMPANY

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