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उत्पाद मैनुअल

हबलेस अपकेन्द्री ढलवा (स्पन) लोहे के पाइप, फिटिंग्स तथा सहायक उपकरण - स्पिगट श्रेणी

IS 15905:2024 के अनुसार

**PRODUCT MANUAL FOR
Hubless Centrifugally Cast (Spun) Iron Pipes, Fittings and Accessories - Spigot Series
According to IS 15905:2024**

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 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.	मानक संख्या IS No.	:	IS 15905:2024
	शीर्षक Title	:	Hubless Centrifugally Cast (Spun) Iron Pipes, Fittings and Accessories - Spigot Series-Specification
	संशोधनों की संख्या No. of amendments	:	0
2.	नमूना दिशानिर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	Cast iron used for the manufacture of pipes, fittings and accessories conform to FG 150 grade (min), as appropriate, specified in IS 210. Materials for clamping components shall usually be made from: a) Ductile iron of grade SG 500/7 as per IS 1865 or (ductile iron clamping components shall be coated as given in cl.11.; and b) Austenitic stainless steels of 300 series, preferably of 304 or 316 grades.

			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 pieces each of Pipes and fittings - Coated Separately Cast Tensile Test Bars-2 pcs as per IS 210 for Tensile Test, Separately Cast Test Specimen(s) for Hardness and Microstructure as per IS 210 Chemical test (if required) as per IS 210: 5 Chilled pieces In case of Assembly of Pipes, Fittings and Accessories, suitable quantity of EPDM or Neoprene Rubber Gaskets/Couplers shall be drawn for testing for conformity to requirements of Table 29, Table 30 and Table 31 of IS 15905. The requirements of Length(as per cl.10.4) shall be tested in the factory on full length of Pipes from which samples are drawn for I/T. 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 (incase 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 15905:2024 with the following scope:	
	Name of the product	Hubless Centrifugally Cast (Spun) Iron Pipes, Fittings and Accessories - Spigot Series
	Pipe(Size) Fitting(Variety with Size)	Pipes - from DN 50 mm upto & including DN 400 mm,..Fittings (88° Bend with or without access door)- from DN 50 to up to and including 300 mm,
	Accessory	Joints,Couplings,..

BUREAU OF INDIAN STANDARDS

ManakBhawan, 9, Bahadur Shah
ZafarMarg, New Delhi – 110002

ANNEXURE A

GROUPING GUIDELINES

1. For the purpose of grant of licence / change in scope of licence, samples from pipes and fittings shall be tested for all the requirements of IS 15905:2024 as under:
 - a) **Pipes:** In order to cover the entire range of sizes of pipes, two samples (one each of minimum and maximum size from the lot offered) shall be drawn for independent testing.
 - b) **Fittings:** Two Samples (one each of minimum and maximum size) of each fitting (covered under Table 4 to Table 28) shall be drawn and tested to cover entire range of sizes of that fitting.
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 tested in rotation, to the extent possible

ANNEXURE B**LIST OF TEST EQUIPMENT*****(INDICATIVE LIST, FOR GUIDANCE ONLY)***

Sl. No.	Tests Used in with Clause Reference	Test Equipment/Chemicals and Identification Numbers (Where applicable)
1	Preparation of specimen for tensile test	For Machined Tensile Test piece – casting mould, machining facilities, cutting facilities
2	Freedom from Defects (5.2) Visual Inspection and Hammer (7), Joints (6.4)	Vision-based inspection system , Light Hand Hammer, Steel Tape, Steel Scale
3	Tensile Test (5.1),	Tensile Testing Machine of suitable range
4	Hardness(5.1,5.4)	Brinell Hardness Tester, with Standard Reference Blocks for calibration, Conditioning Facilities - control the temperature within a range, such as $23 \pm 5^{\circ}\text{C}$
5	Microstructure (cl.5.1)	Metallurgical Microscope (0-500X), Etchants, Polishing Machine, Mounting Machine
6	Fracture (5.5)	Fracture Testing Machine or by hand hammer
7	Crush Tests on Pipe Rings (8)	Crush Testing Machine
8	Hydrostatic Test (9)	Hydrostatic Testing Setup with pressure gauges, Stop watch
9	Dimensions and Tolerances (10)	Vernier Callipers, Micrometre, Steel Scale, Measuring Tape, Angle Protector, Height Gauge, Inside & Outside Callipers, Pistol Callipers, Straight Edge, Surface Plate, Flat Bench, Weigh bridge/ Weighing balance
10	Coating (11)	Coating Thickness Gauge, Laboratory Hot Air Oven, Deep Freezer, Penknife and associated tools
11	Resistance to Salt Spray (11.2)	Sodium Chloride, Distilled or Deionized Water, pH meter, Salt Spray Test Cabinet with Temperature Control, Hydrochloric Acid, Glacial Acetic Acid, Sodium Bicarbonate, Copper(II) chloride dihydrate ($\text{CuCl}_2 \cdot 2\text{H}_2\text{O}$)

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 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 : For the purpose of this Scheme, all Pipes/Fittings of the same size/type and manufactured from the same cast of raw material on the same line in one go 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/empaneled 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 licence shall be cast or stamped or indelibly painted on each pipe, fitting or accessory, provided always that the material so marked conforms to each 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 15905:2024 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: 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				
5.1	Material	5.1	IS 15905:2024 IS 210	S	One	Each Heat/Cast	No further testing if the raw material received is ISI marked and is received with Test Certificate indicating conformity to the specification
5.2	Freedom from defects	5.2	IS 15905: 2011	R	Firm shall exercise adequate in-process controls to ensure that the material remains free from harmful defects		
5.4	Hardness	5.4	IS 1500 Pt.1 IS 15905: 2024	R	One	Each Control Unit	Either Hardness test or Fracture test shall be conducted as applicable.
5.5	Fracture	5.5	IS 15905: 2024	R	One	Each Control Unit	
6	Joints	6.1,6.2,6.3	IS 15905:2024	R	Firm to have adequate in-process controls to check compliance of this parameter as per the requirements given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity		
6.4	Free length	6.4	IS 15905:2024	R	Firm to have adequate in-process controls to check compliance of this parameter as per the requirements given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity		
6.5	Materials for clamping components	6.5	IS 15905:2024	S	----	-----	No further testing if the raw material received is with Test Certificate indicating conformity to the specification

7	Visual inspection and Hammer test	7.1	IS 15905: 2024	R	Firm to have adequate in-process controls to check compliance of this parameter as per the requirements given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity		
8	Crush Test on Pipe Rings	8.1 8.2	IS 15905: 2024	R	One	Each Control Unit	---
9	Hydrostatic test	9.1 to 9.3	IS 15905: 2024	R	Each Pipe/ fitting /accessory	Each Pipe/ fitting /accessory	----
10	Dimensions and Tolerances	10.1 to 10.7, Table 1 to Table 3	IS 15905: 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		
10.8.1	Other Dimensions (Pipe)	10.8.1, Fig 1	IS 15905: 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		
10.8.2	Other Dimensions (Fittings)	10.8.2.1 to 10.8.2.25, Table 4 to 28	IS 15905: 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		
11.1	Coating test	11.1.1 to 11.1.4	IS 15905: 2024	R	One	Each Control Unit	-
11.2	Resistance to Salt Spray	11.2.1 to 11.2.2	IS 15905: 2024	R	One	Each Control Unit	-

ANNEXURE I

XYZ IRON COMPANY

BIS
STANDARD
MARK

(Registered office Address and works address)

TEST CERTIFICATE FOR Hubless Centrifugally Cast (Spun) Iron Pipes, Fittings and Accessories - Spigot Series

TEST CERTIFICATE No. _____

DATE _____

To M/s _____ We certified that the material described below fully conforms

to IS 15905:2024. 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 Licence No. CM/L_ are as indicated below against each order No.

(PLEASE REFER TO IS 15905:2024 FOR DETAILS OF SPECIFICATION REQUIREMENTS)

TEST RESULTS

Order No. & Date	(No m Size)	Control Unit No.	Grade	Dimension and Tolerances	Qty in tonnes	CHEMICAL COMPOSITION #	PHYSICAL PROPERTIES					Joint s	Coating	Resistance to Salt Spray	Remarks
							Tensile Test	Freedom from Defects / hammer test	Hydrostatic test	Crush test	Fracture test	Hardness test			

#As and If agreed between

REMARKS
WAGON
NO.
TRUCK NO. FOR XYZ IRON COMPANY
(It is suggested that size A4 paper be used for this test certificate)