



**PRODUCT MANUAL
FOR
Cast Iron/Ductile Iron Drainage Pipes and Pipe Fittings For Over
Ground Non Pressure Pipeline Socket and Spigot Series
ACCORDING TO IS 1729:2002**

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 1729:2002
	Title	:	Cast Iron/Ductile Iron Drainage Pipes and Pipe Fittings For Over Ground Non Pressure Pipeline Socket And Spigot Series
	No. of Amendments	:	7
2.	Sampling Guidelines:		
a)	Raw material	:	Grey Iron: Quality not less than Grade FG 150 of IS 210. Ductile Iron: Quality not less than Grade 400/12 of IS 1865.
b)	Grouping guidelines	:	Please refer ANNEX – A
c)	Sample Size	:	1 number + 2 metre
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 Chemical and Physical Tests
6.	Scope of the Licence :		
	“Licence is granted to use Standard Mark as per IS 1729: 2002 with the following scope:		
	Name of the product	Cast Iron/Ductile Iron Drainage Pipes and Pipe Fittings for Over Ground Non Pressure Pipeline Socket And Spigot Series	
	Material	Cast Iron/Ductile Iron	
	Variety	Straight Pipe, Short radius bend without Access door of size	
	Type	Type A ‘Socket’ with spigot end, ..	
	Sizes	Nominal Size (in mm)	

ANNEX A

**TO PRODUCT MANUAL FOR
Cast Iron/Ductile Iron Drainage Pipes and Pipe Fittings For Over Ground Non Pressure Pipeline
Socket and Spigot Series
According to IS 1729:2002**

GROUPING GUIDELINES

1. Grouping of CI/DI pipes and fittings for over ground non-pressure purposes is carried out on the basis of following

For pipes: Material (DI/CI), Type of Mould, Type of Socket (Socket A having Spigot end, Socket B having Spigot, Double socketed) and Nominal Size

For fittings: Type of fittings (Table 2 to Table 33) and Nominal size

2. Accordingly, for the purpose of the GOL/CSoL the product is grouped as under:

Product	Group	Remarks
Pipe	1	One sample of higher nominal size for a given material (CI/DI), produced from a type of mould, for each end condition (Socket A having Spigot end, Socket B having Spigot, Double socketed A, Double Socketed B) shall be drawn and tested for considering pipes of all sizes of the material, mould and end condition in scope of licence.
Fittings	2	Sample of each type of fitting of highest nominal size for a given material (CI/DI), produced from a type of mould, shall be drawn and tested for considering inclusion/ grant of license of fittings of all sizes of the material, mould in scope of licence .

3. It shall, however, be ensured and recorded that manufacturer has testing and manufacturing facility for all varieties/sizes of pipes & fittings included in the scope of license.
4. During the operation of license, BO shall ensure that all varieties and sizes covered in the license are drawn for independent testing on rotation over a period of time.

ANNEX B**List of Test Equipment***Major test equipment required to test as per the Indian Standard*

Sl. No.	Test Equipment	Tests used in with Clause Reference
1	<p>For Grey Iron:</p> <p>Instrumental methods Spectrometer: atomic-absorption spectrometry, inductively coupled plasma atomic emission, inductively coupled plasma mass spectrometry techniques, spark source optical emission spectrometry.</p> <p>Chemical Methods: Sulphur Content 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</p> <p>Phosphorus Content : 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</p>	<p>Material Test (5.1)</p> <p>a) Chemical composition</p>

	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	
	Metallurgical Microscope	b) Microstructure
	Tensile Testing Machine	c) Tensile Test
	Transverse Test Machine with all arrangements	d) Transverse Test
	V-notch Charpy Impact Test Machine Conditioning using liquid medium/ gaseous medium	e) Impact Test (For Ductile Iron)
2.	Brinell Hardness Test, Tungsten Carbide composite ball indenter	Hardness Test (5.4, 5.4.1 & 5.5)
3.	Visual Inspection System, Magnifying Glass	Casting Defects (5.3)
4.	Light Hand Hammer	Hammer Test (6)
5.	Hydrostatic Pressure Testing Machine Pressure Gauge Stop Watch Safety Valves Water Supply	Leakage Test (7)
6.	Vernier Calliper Steel Scale Radius Gauge Steel Scale Measuring Tape Weighing Balance Go & No Go Callipers	Pipes, Dimension, Mass and tolerance (8,9 & 10)
7.	Tar or suitable base bath, Heating arrangement Or Coating can also be done by spraying or brush painting, Heating oven, Deep Freezer, Pen knife	Coating test(11)

The above list is indicative only and may not be treated as exhaustive.

ANNEX C

Scheme of Inspection and Testing

1. 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. MARKING – The Standard Mark as given in the Schedule of the license and Licence Number (i.e. CM/L.....) shall be incorporated, and the marking 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 – All the Production carried out from material of single heat 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.

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.

6. TEST CERTIFICATE-For each consignment of BIS Certified material conforming to IS 1729:2002 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.

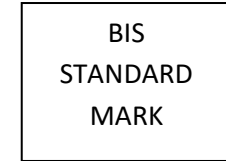
TABLE 1

(1)				(2)	(3)		
Test Details				Test equipment requirement R: required (or) S: Sub-contracting permitted	Levels of Control		
Cl.	Requirement	Test Method			No. of Sample	Frequency	Remarks
		Clause	Reference				
5	Manufacture						
	Material Test	5.1	IS 1729: 2002	R	One	Each Heat	
	Hardness Test	5.4, 5.4.1 & 5.5	-do-	R	-do-	-do-	
	Casting Defects	5.3	-do-	R	Each Pipe & Fitting	Each Pipe & Fitting	
<u>Pipes</u>							
6	Hammer Test	6	-do-	R	Each Pipe	Each Pipe	
7	Leakage Test	7.1 & 7.2	-do-	R	-do-	-do-	
8, 9 & 10	Pipes Dimension Mass and Tolerances	8.2, 9.2, 9.3, 10.1, 10.7, 10.8 Table 1 to 32	-do-	R	-do-	-do-	
11	Coating Test	11.1 to 11.7	-do-	R	One pipe	Once a week	
<u>Fittings</u>							
6	Hammer Test	6	-do-	R		Each Fitting	
7	Leakage Test	7	-do-	R		-do-	
8, 9 & 10	Dimensions, mass and tolerances	8.2, 9.2, 9.3 10.1 to 10.8	-do-	R		Each fitting	
11	Coating Test	11.1 to 11.7	-do-	R	One Pipe	Once a week	

Note-1: Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empanelled 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 for approval by BO Head.

ANNEXURE I
(Para 6 of the Scheme of Inspection and Testing)
XYZ IRON COMPANY



(Registered office Address and works address)

TEST CERTIFICATE FOR Cast Iron/Ductile Iron Drainage Pipes and Pipe Fittings For Over Ground Non Pressure Pipeline Socket and Spigot Series

TEST CERTIFICATE No. _____

DATE _____

To M/s _____ We certified that the material described below fully conforms to IS 1729:2002 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 1729:2002 FOR DETAILS OF SPECIFICATION REQUIREMENTS)

TEST RESULTS

Order No. & Date	(Nom Size)	Control Unit No.	Type	Tolerances	Qty in tonnes	Coating #	Properties of material #	Hardness	Leakage test	Hammer Test	Remarks

As agreed between

REMARKS

WAGON NO.

TRUCK NO.

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

FOR XYZ IRON COMPANY