PM/ 210/ 1/ June 2020

PRODUCT MANUAL FOR
Grey Iron Castings
According to IS 210:2009

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 210:2009**
	Title	**:**	Grey Iron Castings
	No. of amendments	**:**	0
2.	**Sampling Guidelines**		
a)	**Raw material**	**:**	no specific requirements for raw material in the specification
b)	**Grouping Guidelines**	**:**	Each grade has to be tested for GoL.
c)	**Sample Size**	**:**	a) Mechanical test- 3 test bars b) Chemical tests: 5 pieces of 5cm X 5cm or 50 gms drillings
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 210:2009 with the following scope:		
	Name of the product	Grey Iron Castings	
	Grade	FG 150,..	
	Condition of Delivery	Heat treated,..	

BUREAU OF INDIAN STANDARDS
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New Delhi – 110002

ANNEXURE A
TO PRODUCT MANUAL FOR
Grey Iron Castings
According to IS 210:2009

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	Microscope 10X	Microstructure (9)
2	Universal Tensile Testing Machine 0-600kN, LC-10N	Tensile Strength (14)
3	Brinell Hardness Tester (along with tungsten indenter of appropriate size, measuring device) 0-300 BHN	Hardness (16)
4	Test arrangement for Transverse Test	Transverse Test (17)
5	Dial Vernier Caliper Outside Micrometer	Castings Dimensions (7.2)
6	Spectrophotometer	Chemical composition (6)

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

ANNEXURE B
TO PRODUCT MANUAL FOR
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According to IS 210:2009

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. LABELLING AND 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 – For the purpose of this scheme, castings of same ladle or heat and manufactured under similar conditions of production 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. Manufacturing of castings shall conform to cl 5, 7 & 8 of IS 210:2009.

6. TEST CERTIFICATE-For each consignment of BIS Certified material conforming to IS 210:2009 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)		
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**				
6	Chemical Composition	6.1,6.2	IS 210:2009	**S**	One	Each Cast/Heat	If required by purchaser.
7	Workmanship and Finish	7.1,7.2	IS 210:2009 IS 5519	**R**	Two	Each Cast/Heat	
9	Microstructure	9.1, 9.1.1	IS 210:2009 IS 7754	**S**	Adequate inspection as agreed to between the purchaser and the manufacturer		If required by purchaser.
10	Freedom from Defects	10.1, 10.2	IS 210:2009 IS 5139	**R**	10% of the castings	Each Cast/Heat	
14,15	Tensile Test	11, 13, 14,15, 19, Table 2 and 3	IS 210:2009 IS 1608 Pt.1	**R**	One	Each Control Unit	
16	Hardness Test	16,19 Table 3	IS 210:2009 IS 1500 Pt.1	**R**	25% of the castings	Each Control Unit	
17	Transverse Test, if required	17, 19, Annex E	IS 210:2009	**S**	One	Each Control Unit	As and if required by purchaser.
18	Hydrostatic Test	18	IS 210:2009	**S**	As agreed between the purchaser and the manufacturer		

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 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 Grey Iron Castings

BIS STANDARD MARK

TEST CERTIFICATE No._____ DATE_____

To M/s_____We certified that the material described below fully conforms to IS 210:2009 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 210:2009 FOR DETAILS OF SPECIFICATION REQUIREMENTS)

TEST RESULTS

Order No. & Date	(Nom Size)	Control Unit No.	Grade	Tolerances[@]	Qty in tonnes	Chemical composition [@]	Mechanical Properties			Hydrostatic test[#]	Micro structure[#]	Condition of delivery[@]	Remarks
							Tensile Test	hardness	Transverse test[#]				

[#] If required by purchaser

[@]As agreed between

REMARKS

WAGON NO.

TRUCK NO.

FOR XYZ IRON COMPANY

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