

**PRODUCT MANUAL FOR  
Ferrochromium  
According to IS1170:1992**

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.	<b>Product</b>	:	IS 1170:1992
	<b>Title</b>	:	Ferrochromium
	<b>No. of amendments</b>	:	1
2.	<b>Sampling Guidelines</b>		
a)	<b>Raw material</b>	:	No specific requirement
b)	<b>Grouping Guidelines</b>	:	Please refer Annex - A
c)	<b>Sample Size</b>	:	1Kg (for lab sample, Compliance to Cl 6.1.3 & 6.1.4 ,as applicable, of IS 1472 to be ensured)
3.	<b>List of Test Equipment</b>	:	Please refer Annex - B
4.	<b>Scheme of Inspection and Testing</b>	:	Please refer Annex –C
5.	<b>Possible tests in a day</b>	:	Particle Size test, All chemical tests & Extraneous Contamination.
6.	<b>Scope of the Licence :</b>		
	Licence is granted to use Standard Mark as per IS 1170:1992 with the following scope:		
	<b>Name of the product</b>	Ferrochromium	
	<b>Grade No.</b>	1,..	
	<b>Grade Designation</b>	7FeCr65,..	
	<b>Size Designation</b>	1,..	

**ANNEXURE A  
TO PRODUCT MANUAL FOR  
FERROCHROMIUM  
According to IS 1170:1992  
GROUPING GUIDELINES**

1. Grouping has been done on the basis of grade designation as under:

Group No.	Type	Grade Designation	Remarks
Group 1	High Carbon Ferrochromium	5 Fe Cr 58 7 Fe Cr 58 5 Fe Cr 65 7 Fe Cr 65	One sample of highest grade may be drawn from each group for all tests, to cover all the grade designations of the product within that group.  However, for applications intended to cover both the size designations, samples drawn amongst the groups should comprise of both the size designations from any of the grades applied for.
Group 2	Medium carbon ferrochromium	15 Fe Cr 55 3 Fe Cr 55 15 Fe Cr 64 3 Fe Cr 64 15 Fe Cr 71 3 Fe Cr 71	
Group 3	Low carbon ferrochromium	002 Fe Cr 55 004 Fe Cr 55 008 Fe Cr 55 03 Fe Cr 55 08 Fe Cr 55 002 Fe Cr 64 004 Fe Cr 64 008 Fe Cr 64 03 Fe Cr 64 08 Fe Cr 64 002 Fe Cr 71 004 Fe Cr 71 008 Fe Cr 71 03 Fe Cr 71 08 Fe Cr 71 008 Fe Cr 64 Si 4 008 Fe Cr 71 Si 4	
Group 4	High- Nitrogen Low- Carbon Ferrochromium	Fe Cr 64 N 075 Fe Cr 64 N 125 Fe Cr 64 N 175 Fe Cr 64 N 300	
Group 5	Carbon- Free Ferrochromium	Fe Cr 70	

2. However, the licence can be granted for all the particle sizes of the Ferromanganese specified in the specification and 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 particle sizes of the Ferromanganese proposed to be included in the licence.
3. During the operation of license, BO shall ensure that all sizes /grades covered in the license are drawn for independent testing on rotation over a period of time

**ANNEXURE B**  
**PRODUCT MANUAL FOR**  
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**LIST OF TEST EQUIPMENT**

Major test equipment required to test as per requirements of Indian Standard.

Sr No	Test Equipment/Chemicals	Tests Used in with Clause Reference
1	Rough Polishing Machine, Cutting Machine, Fine Polishing Machine, Grinder Machine	Preparation of specimen for chemical composition (8.2)
2	<p><b>Instrumental methods</b>  Spectrometer: atomic-absorption spectrometry, inductively coupled plasma atomic emission, inductively coupled plasma mass spectrometry techniques, spark source optical emission spectrometry.</p> <p>Spectrophotometer</p>	<p>C,S,P,Mn,Si,Al (8.2)</p> <p>Si,Mn,S,P</p>
3	Digital weighing balance, Hot air oven, Muffle Furnace, Hot plate, Conc. Nitric Acid, Potassium chloride, phenolphthalein indicator, Hydrofluoric Acid, sodium hydroxide, Conc. Nitric Acid, Boric Acid, Zinc, Barium Chloride,	C content (8.2) (Chemical method, alternative to instrumental method)
4	Digital weighing balance, Hot air oven Hot plate, Potassium nitrate, Dilute Hydrochloric Acid, Conc. Hydrochloric Acid, Dilute Sulphuric Acid, Hydrofluoric Acid, Conc. Nitric Acid, Boric Acid, Zinc(Sulphur free), Barium Chloride, Nickel crucible, Nickel rods, Hydrogen peroxide, sodium carbonate, sodium peroxide	S content (8.2) (chemical method, alternative to instrumental method)
5	Digital weighing balance, Nickel crucible, Nickel rods, sodium peroxide, dilute sulphuric acid, potassium permanganate, manganese sulphate, ferrous ammonium sulphate, phosphoric acid, potassium dichromate, sodium diphenylamine sulphonate indicator solution, potassium permanganate, Gooch crucible or fritted glass crucible	Cr content (8.2) (chemical method, alternative to instrumental method)
6	Digital weighing balance, Hot air oven , nickel crucible, sodium carbonate, sodium peroxide, Dilute Hydrochloric Acid, Concentrated Nitric Acid, hydrofluoric acid, Dilute Sulphuric Acid, conc. Ammonium hydroxide, dilute nitric acid, sulphurous acid, potassium permanganate, potassium nitrite, ammonium molybdate, Conc. Sulphuric acid, perchloric acid, hydrobromic acid, potassium nitrate, sodium hydroxide, , phenolphthalein indicator	Phosphorus content (8.2) (chemical method, alternative to instrumental method)

8	Digital weighing balance Nickel crucible, muffle furnace, sodium carbonate, sodium peroxide, sodium hydroxide, Dilute Hydrochloric Acid, Conc. Hydrochloric Acid, Dilute Sulphuric Acid, Hydrofluoric acid	Silicon content (8.2) (chemical method, alternative to instrumental method)
9	Apparatus as per Fig 3 of IS 1559, Nessler's reagent, Nitrogen free water, potassium sulphate, copper sulphate, dilute sulphuric acid, barium chloride, conc. Sulphuric acid, bromocresol green, methyl red, methanol, selenium metal, devar's alloy, boric acid, sodium hydroxide, tartaric acid,	N content (8.2) (chemical method, alternative to instrumental method)
10	Different sizes of sieve	Particle Size Range (9)

This is an indicative list for the purpose of guidance only and may not be taken as exhaustive

**ANNEXURE C**  
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**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. **PACKING AND MARKING**–The Standard Mark as given in the Schedule of the license and Licence Number (i.e. CM/L.....) and the packing and 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, material of one cast/ melt representing one furnace heat/ one tap of continuous furnace/ladle or holding furnace 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.
6. **TEST CERTIFICATE** - For each consignment of BIS Certified material conforming to IS 1170:1992 there shall be a test certificate which shall contain the Standard Mark, the 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.A separate record shall be maintained giving information on quantity and control unit number, as applicable, relating to all such rejections/defective/substandard material of the production not conforming to the requirements of the Specification and the method of its disposal. Such material shall in no case be stored together with that conforming to the Specification.

**TABLE 1 LEVELS OF CONTROL**  
**(Clause 5 of the Scheme of Inspection and Testing)**

TEST DETAILS				Test equipment requirement R: required (or)S: Sub-contracting permitted	LEVELS OF CONTROL		Remarks
Clause	Requirements	Test Method			No. of Samples	Frequency	
		Clause	Reference				
8	Chemical Composition	8.2.1 to 8.5.1 Table-1 IS 1472	IS 1559 or any other established instrumental or chemical method.	R	One	Each Control Unit	Samples may be taken at the time of tapping. Occasional analysis of finished product shall also be done. The finished sample may be composed of materials collected from different containers of same heat.
9	Particle Size	9.1,9.2 &9.3 Table 2	IS 1170:1992	R	Adequate inspection to ensure that the particle size range of material being supplied is in accordance with ISS.		
10	Extraneous Contaminations	10	IS 1170:1992	R	Adequate inspection to ensure that the material is reasonably free from extraneous contaminations.		

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 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 COMPANY**  
**(Registered office Address and works address)**  
**TEST CERTIFICATE FOR Ferrochromium According to IS 1170:1992**

BIS Standard Mark
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TEST CERTIFICATE NO. \_\_\_\_\_ DATED \_\_\_\_\_  
 To M/s \_\_\_\_\_

It is certified that the material described below fully conforms to IS 1170:1992. Chemical 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. etc.

(PLEASE REFER TO IS 1170:1992 FOR DETAILS OF SPECIFICATION REQUIREMENTS)

**TEST RESULTS**

Order no and date	Grade Designation	Cast No./Lot No.	Quantity (in tonnes)	Chemical Analysis (in %)								Size Designation	Constitution of consignment	Remarks
				C	S	P	Mn	Si	Al	Cr	N			

REMARKS  
 SHIPPING ADVICE NO.WAGONNo.s

FOR XYZ COMPANY

**“For details of BIS certification please visit [www.bis.gov.in](http://www.bis.gov.in)”**

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