

**PRODUCT MANUAL FOR
Silicomanganese
According to IS 1470:2013**

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 1470:2013
	Title	:	Silicomanganese
	No. of amendments	:	0
2.	Sampling Guidelines		
a)	Raw material	:	No specific requirement
b)	Grouping Guidelines	:	Sample of each grade is to be tested for considering GoL/CSoL. The samples drawn, as mentioned above against the grades should consist of all the Size classes intended to be covered in licence scope.
c)	Sample Size	:	5Kg (for lab sample, Compliance to Cl 6.1.3 of IS 1472 to be ensured)
3.	List of Test Equipment	:	Please refer Annex - A
4.	Scheme of Inspection and Testing	:	Please refer Annex – B
5.	Possible tests in a day	:	Particle Size test, All chemical tests & Extraneous Contamination.
6.	Scope of the Licence :		
	Licence is granted to use Standard Mark as per IS 1470:2013 with the following scope:		
	Name of the product	Silicomanganese	
	Grade Designation	Si18Mn72,..	
	Class	1,..	

ANNEXURE A
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LIST OF TEST EQUIPMENT

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

Sr. No.	Test Equipment	Tests used in with Clause Reference
1.	Spectrometer	Chemical Composition (7.2)
2.	Analytical Balance (0-200gm, LC- 0.1mg)	
3.	Hot Plate	
4.	Hot Air Oven	
5.	Thermometer	
6.	Filter Paper	
7.	Sieves of appropriate sizes	Particle Size (8)
8.	<p>Apparatus: 50ml iron crucible, Iron or Nickle Rod, Porcelain Dish, Filter Paper No. 40, Platinum Crucible, Muffle Furnace, Dessicator, Hot plate</p> <p>Reagents- Sodium Carbonate anhydrous, Sodium Peroxide solid, Sodium Hydroxide – solid, Dilute Hydrochloric Acid, Concentrated Hydrochloric Acid, Dilute Sadphuric Acid, Hydrofluoric Acid - 40 percent.</p>	Silicon (7.2)
9.	<p>Apparatus: Gooch Crucible, Dark Coloured Glass, Stoppered Bottles, Glasswares like pipette, burettes, flasks etc, Facility for cold water.</p> <p>Reagents for Bismuthate Method: Nitric Acid, Sulphuric Acid, Sulphurous Acid (Facility to prepare sulphurous acid by dissolving sulphur dioxide in water), Sodium Bismuthate, Ferrous Ammonium Sulphate, Phosphoric Acid, Potassium Permanganate, Analar Sodium Oxalate.</p> <p>Reagents for Volhard Method: Sulphuric Acid, Sodium Carbonate, Zinc Oxide, Nitric Acid, Potassium Permanganate</p>	Manganese(7.2)
10.	<p>Apparatus: Strohlein Apparatus with all attachments Barometer with chart, Porcelain Boats, Oxygen – 99.5% minimum purity, ether or acetone, Standard Reference Material (NML) with certificate reagents for Carbon.</p> <p>Reagents: Tin Granules, Methyl Red, Caustic Potash, Potassium Hydroxide, Phenolphthalein, Sulphuric Acid, magnesite brick powder</p>	Carbon (7.2)

11.	Dilute Sulphuric Acid, Concentrated Sulphuric Acid , Chromic Sulphuric Acid, Manganese sulphate, Ammonium Hydroxide, Ammonium Persulphate, soda Asbestos, Anhydron(Magnesium Perchlorate), Magnesite Brick Powder, Lead Foil, Buchner funnel, mortar grinder, IS Sieves 140 to 50, IS Sieves 85 to 70, combustion boat, low carbon standard steel of known carbon content Recommended Apparatus: Apparatus for determination of carbon by gravimetric method comprising oxygen cylinder & purifier , furnace with combustion tube, train for purifying & absorbing CO ₂ (apparatus as per fig.1 of IS 1559)	Carbon (7.2) Gravimetric Method
12.	Apparatus: Platinum dish, Heating Apparatus. Reagents: Nitric Acid, Hydrochloric Acid, Hydrofluoric Acid, Ammonium Bromide, Potassium Permanganate, Potassium Nitrite, Ammonium Hydroxide, Ammonium Molybdate, Ammonium Phosphate, Dil Sulphuric acid, Sulphur dioxide, perchloric acid, hydrobromic acid, Con. Sulphuric acid, Potassium nitrate, sodium hydroxide, Phenolphthalein Indicator Solution	Phosphorus (7.2)
13.	Apparatus: IS Sieve 15, Platinum Dish (300ml), Porcelain Vessel, Close Texture Filter Paper, Filter Paper No. 42, Steam Bath, Platinum or porcelain crucible, Muffle Furnace. Reagents: Nitric Acid, Hydrofluoric Acid, Potassium Nitrate, Boric Acid, Hydrochloric Acid, Zinc (Sulphur free, 20-30 mesh powder), Barium Chloride	Sulphur (7.2)

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

ANNEXURE B
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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 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.
 - 3.1 **TEST CERTIFICATE** - For each consignment of BIS Certified material conforming to the specification there shall be a test certificate which shall contain the Standard Mark, the lot/cast number and the corresponding test results (as given in Annexure- I enclosed).
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 1470:2013 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				
7.2	Chemical Composition	7.2.1 to 7.2.4 Table-1	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.
8	Particle Size	8 Table 2	IS 1470	R	Adequate inspection to ensure that the particle size range of material being supplied is in accordance with ISS.		
9	Extraneous Contaminations	9	IS 1470	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 Silicomanganese According to IS 1470:2013

BIS Standard Mark

TEST CERTIFICATE NO. _____ DATED _____
 To M/s _____

It is certified that the material described below fully conforms to IS 1470:2013. 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. CML/_____ are as indicated below against each order no. etc.

(PLEASE REFER TO IS 1470:2013 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
				Si	Mn	C	P	S	non-specified elements #			

if required by purchaser and as agreed between manufacturer and purchaser.

REMARKS
 SHIPPING ADVICE NO.WAGON No.s

FOR XYZ COMPANY

“For details of BIS certification please visit www.bis.gov.in”

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