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फेरो वैनेडियम- विशिष्ट IS 1466:1985 के अनुसार

PRODUCT MANUAL FOR SPECIFICATION FOR FERRO VANADIUM ACCORDING TO IS 1466:1985

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 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.	**मानक संख्या** **IS No.**	:	IS 1466:1985
	शीर्षक **Title**	:	Specification for Ferro Vanadium
	संशोधनों की संख्या **No. of Amendments**	:	0
2.	**नमूना दिशानिर्देश** **Sampling Guidelines:**		
a)	**कच्चा माल** **Raw material**	:	No specific requirement for raw material 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 Size**	:	500 gms approx. for Chemical Composition only (Sampling to be done as per IS 1472) 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 (in

			case of market surveillance, effort may be made to procure the required 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 are possible in a day 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 ready reference 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 1466:1985 with the following scope:		
	Name of the product		Ferro Vanadium
	Grade		Low Carbon: Fe V 40, Fe V 55….. Foundry: Fe V 40 F,…
	Particle Size Range/Class		1 (2 mm to 50 mm), 1A (20 mm to 50 mm), 2 (2 mm to 25 mm), 3 (Up to 2 mm) or any other particle size range agreed between manufacturer and purchaser

BUREAU OF INDIAN STANDARDS
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New Delhi – 110002

ANNEX A

GROUPING GUIDELINES

1. For the purpose of GoL/CSoL, the following Grouping Guidelines shall be considered:

A) Grouping on the basis of Grade Designation:

A.1 Manufacturer shall declare the Grade Designations intended to be covered in the Licence within each Category of Ferro Vanadium as specified at Table 1 of IS 1466:1985.

Category	Grade	Remarks
Low Carbon	Fe V 40 Fe V 55 Fe V 78	One sample of any Grade Designation shall be drawn and tested (Also See A.2)
Foundry	Fe V 40 F Fe V 55 F Fe V 78 F	One sample of any Grade Designation shall be drawn and tested

A.2 Evidence of manufacturing capability, such as Mill Test Certificates (MTCs) (of earlier consignments), of all Grades intended to be covered in the Licence within each Category of Ferro Vanadium shall be submitted by the manufacturer and their conformity to the requirements of IS 1466:1985 shall be established before endorsing all Grades in the Scope. In case of non-availability of MTCs (of earlier consignments), samples of all those Grades shall also be drawn and tested within each Category.

B) Grouping on the basis of Size Range:

B.1 The Particle Size Range(s) for the supply of Ferro Vanadium shall be declared by the manufacturer. The requirements of Particle Size Range as per cl.6. of IS 1171:2011 shall be tested during factory testing only. **No sample shall be drawn for the requirements of Particle Size Range for Independent Testing.**

2.2 If manufacturer intends to supply Ferro Vanadium in more than 1 Size Range, any one Size Range shall be tested in the factory during Preliminary Inspection and all Size Ranges shall be covered in the scope of licence based upon manufacturing capability available.

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.

ANNEX B
List of Test Equipment
(INDICATIVE LIST, FOR GUIDANCE ONLY)

Sl. No.	Tests used in with Clause Reference	Test Equipment
1	Preparation of specimen for chemical composition	Rough Polishing Machine, Cutting Machine, Fine Polishing Machine, Grinder Machine
2	Clause 5 V, Si, C, S, P, Al, Mn, Cr, Cu, Ni, Pb, Sn, Zn, Mo, Ti	**Instrumental methods** Spectrometer: atomic-absorption spectrometry, inductively coupled plasma atomic emission, inductively coupled plasma mass spectrometry techniques, spark source optical emission spectrometry, XRF fluorescence Spectrophotometer Standard Reference Materials, Certified Reference Materials, Standard Solutions with Certificate
3	Si content (Cl 5) (Chemical method, alternative to instrumental method)	Digital weighing balance, muffle furnace, Nickel Crucible - 30 to 50 ml capacity, with lid. Platinum Crucible - 25 to 30 ml capacity, with lid, Sodium Hydroxide – solid, Dilute Hydrochloric Acid - 1 : 1 and 1 :, 20 (v/v), Concentrated Hydrochloric Acid, Dilute Sulphuric Acid - 1 : 1 (v/v), Hydrofluoric Acid - 40 percent, Dilute Nitric Acid, Filter paper No.40, IS sieve 15, Hot plate
4	C content (Cl 5) (Chemical method, alternative to instrumental method)	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
5	S content (Cl 5) (Chemical method, alternative to instrumental method)	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
6	P content (Cl 5) (Chemical method, alternative to instrumental method)	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
7	Al content (Cl 5) (Chemical method, alternative to instrumental method)	Hydrofluoric Acid, Concentrated Nitric Acid, Dilute Hydrochloric Acid, Concentrated Hydrochloric Acid, Sodium Hydroxide solution, Ammonium Chloride solution (50% & 2%), Phenolphthalein solution, EDTA, Congo Red Indicator paper, Sodium Acetate, glacial acetic acid, Xylenol Orange, Zinc Acetate, glacial acetic acid, distilled water, Aluminium foil 99.9 percent, Absolute Alcohol, Ammonium Fluoride, Perchloric acid, Distilled water, Dessicator, Hot plate, Platinum dish, polythene Beaker, Steam bath, Volumetric flask 500ml, conical flask, Steam bath, pipette
8	Mn content (Cl 5) (Chemical method, alternative to instrumental method)	Apparatus: Gooch Crucible, Dark Coloured Glass, Stoppered Bottles, Glass wares like pipette, burettes, flasks etc, Facility for cold water. 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. Reagents for Volhard Method: Sulphuric Acid, Sodium Carbonate, Zinc Oxide, Nitric Acid, Potassium Permanganate
9	Size Range (Cl 6)	Different sizes of sieve, Automatic Sieve Shaker

ANNEX 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 differenttests 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, material of one cast/ melt representing one furnace heat/ one tap of continuous furnace/ladle or holding furnace shall constitute one control unit.

1.3.1 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 housetesting 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 givenbelow. 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 perIS/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 facilitiesor get testing done from BIS recognized/empaneled laboratory or any other laboratory having validNABL accreditation as per IS/ISO/IEC 17025.

2.3 **Large Scale manufacturers shall maintain an in-house laboratory equipped at least**

withtest facilities for routine tests (indicated as "R" in Column 2 of Table 1), where different testsgiven 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 commoncluster 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 laboratoryor 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 incorporated legibly and indelibly on each bag or container of Ferro Vanadium, 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 provisions of the Indian Standard.

4. TEST CERTIFICATE- For each consignment of BIS Certified Material conforming to IS 1466:1985,the manufacturer shall issues a Test Certificate as per the format enclosed as Annexure-I.

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

(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 Chemical Composition							
	V	Table 1	IS 1466 IS 1559(Part 1 to 7) or any other established instrumental/ chemical method.	R	One	Each Control Unit	
	Si			R	One	Each Control Unit	
	C			R	One	Each Control Unit	
	S			R	One	Each Control Unit	
	P			R	One	Each Control Unit	
	Al			R	One	Each Control Unit	
	Mn			R	One	Each Control Unit	
	Cr			S	If required by the purchaser, the manufacturer shall furnish an analysis for any of these elements on a cumulative basis over a period mutually agreed to between the purchaser and the manufacturer.		
	Cu			S			
	Ni			S			
	Pb			S			
	Sn			S			
	Zn			S			
	Mo			S			
	Ti			S			
6	Size Range	9	IS 1466	R	Firm to have adequate in-process controls to check compliance of this parameter as per the tolerances given in the Indian Standard or as agreed between the manufacturer and puchaser. However, appropriate records shall be maintained by the manufacturer for evidence of conformity		
7	Extraneous Contamination	10	IS 1466	R	Firm shall exercise adequate in-process controls to ensure that the material remains free from extraneous contaminations like slag and non-metallic inclusions, etc.		

Annexure-I

XYZ FERRO ALLOY COMPANY

(Registered office Address and works address)

TEST CERTIFICATE FOR FERRO VANADIUM

TEST CERTIFICATE No._____ DATE_____

To M/s_____

We certified that the material described below fully conforms to IS 1466:1985 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 1466:1985 FOR DETAILS OF SPECIFICATION REQUIREMENTS)

Test Results

Order No and Date	Size Designation	Control Unit No.	Grade Designation	Quantity (MT)	Chemical Composition								Residual Elements#	Extraneous Contamination
					V	C	Si	S	P	Cu	Al	Mn	Cr,Cu,Ni,Pb,Sn,Zn,Mo,Ti	

if required by purchaser

REMARKS

WAGON NO

TRUCK NO

FOR XYZ FERRO ALLOY COMPANY

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