



**उत्पाद मानुयल
एल्युमिनियम सिल्लियां, बिलेट्स और वायर बार्स
(ईसी ग्रेड) IS 4026:2007
के अनुसार**

**PRODUCT MANUAL FOR
ALUMINIUM INGOTS, BILLETS AND WIRE BARS
(EC GRADE)
ACCORDING TO IS 4026:2007**

भारतीय मानक ब्यूरो (अनुरूपता मूल्यांकन) विनियम 2018 की स्कीम-I के तहत यह उत्पाद मैनुअल प्रमाणीकरण की संचालन रीति में सुसंगतता और पारदर्शिता सुनिश्चित करने के लिए सभी क्षेत्रीय/शाखा कार्यालयों एवं लाइसेन्स धारियों द्वारा संदर्भ सामग्री के रूप में उपयोग किया जाएगा। बीआईएस लाइसेन्स/प्रमाण पत्र प्राप्त करने के इच्छुक भावी आवेदकों द्वारा भी इस दस्तावेज़ का उपयोग 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.	उत्पाद Product	:	IS 4026:2007
	शीर्षक Title	:	ALUMINIUM INGOTS, BILLETS AND WIRE BARS (EC GRADE)
	संशोधन संख्या No. of Amendments	:	NIL

2.	नमूनाकरण दिशा निर्देश Sampling Guidelines:	
a)	कच्चा माल Raw material	: Primary Aluminium. Scrap may also be used at the discretion of the manufacturer.
b)	समूहिकरण दिशा निर्देश Grouping guidelines	: Please refer ANNEX – A
c)	नमूने का परिमाण Sample Size	: 5 pcs of 50 mm X 50 mm
3.	परीक्षण उपकरणों की सूची List of Test Equipment	: Please refer ANNEX – B
4.	निरीक्षण व परीक्षण स्कीम Scheme of Inspection and Testing	: Please refer ANNEX – C
5.	एक दिन में संभावित परीक्षण Possible tests in a day	: All tests
6.	लाइसेन्स का कार्यक्षेत्र Scope of the Licence :	
	IS 4026:2007 के अनुसार मानक मुहर का उपयोग करने के लिए लाइसेन्स निम्नलिखित कार्यक्षेत्र के लिए प्रदान किया जाता है Licence is granted to use Standard Mark as per IS 4026:2007 with the following scope:	
	Name of the product	Aluminium ingots, billets and wire bars (EC Grade)
	Form	Ingot and/or Billet and/or Wire Bar
	Grade	1/2/3

ANNEXURE A
TO PRODUCT MANUAL FOR
ALUMINIUM INGOTS, BILLETS AND WIRE BARS
(EC GRADE) according to IS 4026:2007

GROUPING GUIDELINES

Grouping has been done on the basis of Grades of Aluminum Ingots, Billets and Wire Bards (EC Grade) as under:

Sl. No.	Type	Classification
1.	Grade (based on Al content)	(a) Grade 1 (b) Grade 2 (c) Grade 3

↑
(Increasing Al percentage)

Based on the above, the product may be divided into following group:

Group-1	(a) Grade 1, 2, 3
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- 1) One sample may be drawn from the group as above for **Chemical testing only**. The sample drawn from the group shall meet following criteria:
 - a) If sample of higher Al content Grade has been tested and found conforming, the scope may cover lower Al content Grades also i.e. If sample of Grade 1 is drawn and is found conforming, grades 2 & 3 shall also be covered in the scope of the licence.
- 2) For testing of Shapes and Sizes (cl.7.), for considering GOL, the Aluminum Ingots/Billets /Wire Bars, from which the above sample is drawn, shall be tested in the factory for the requirements specified at cl.7. Separate samples are not required to be tested for each shape/ size. In case of inclusion, factory test report for the requirements of Shapes and Sizes (cl.7.) shall be accepted for considering inclusion.
- 3) If the above sample passes, then licence may be granted/inclusion be done for the Grades of Aluminum Ingots, Billets and Wire Bars intended to be covered in the licence. However, it shall be ensured that the firm is having all necessary manufacturing and testing facilities for all the Grades of Aluminium Ingots, Billets and Wire Bars to be included in the licence and all shapes/sizes.
- 4) During the operation of license, BO shall ensure that all Grades covered in the license are drawn for independent testing on rotation over a period of time.

ANNEX B
TO PRODUCT MANUAL FOR
ALUMINIUM INGOTS, BILLETS AND WIRE BARS
(EC GRADE) according to IS 4026:2007

List of Test Equipment

Sl No.	Test Equipment	Test Used in with Clause Reference
1	i) Micrometer ii) Vernier Calliper iii) Measuring Tape iv) Straight Edge v) Feeler Gauge vi) Weighing Scale	Shapes and Sizes, Cl 7
2	Device for instrumental chemical analysis such as Optical Spectrometer with all requisite channels and Certified/Standard Reference Materials OR Chemicals and Reagents for Chemical method as per IS 504 for each element given below**	Chemical Composition cl.8.
i)	Copper	• Dilute Sulphuric Acid • Hydrofluoric Acid • Hydrogen Sulphide Gas • Hydrogen Sulphide Wash Solution • Dilute Nitric Acid • Concentrated Ammonium Hydroxide • Dilute Ammonium Hydroxide Wash Solution • Citric Acid Solution • Sodium Diethyl-Dithiocarbamate Solution • Carbon Tetrachloride • Sodium Sulphate • Standard Copper Solution • Silica Basin • Analytical Balance • Ashless Paper Pulp • Filter Papers • Platinum Crucible • Heating Apparatus/Burner • Photometer
ii)	Silicon	• Sodium Hydroxide Solution • Hydrogen Peroxide

		• Concentrated Sulphuric Acid • Sulphuric Acid-Perchloric Acid Mixture • Perchloric Acid Solution • Concentrated Nitric Acid • Sulphurous Acid • Dilute Sulphuric Acid • Concentrated Hydrochloric Acid • Ammonium Acetate Solution • Dilute Hydrochloric Acid- • Hydrofluoric Acid • Analytical Balance • Ashless Paper Pulp • Filter Papers
iii)	Iron	• Concentrated Sulphuric Acid • Concentrated Hydrochloric Acid • Concentrated Nitric Acid • Dilute Sulphuric Acid • Hydrofluoric Acid • Potassium Bisulphate • Hydrogen Sulphide Gas • Hydrogen Sulphide Wash Solution • Potassium Permanganate Solution • Potassium Thiocyanate Solution • Standard Titanous Chloride Solution • Analytical Balance • Platinum Crucible • Heating Apparatus/Burner • Magnet • Ashless Paper Pulp • Filter Papers
iv)	Manganese	• Concentrated Nitric Acid • Sodium Bismuthate • Sulphurous Acid • Dilute Nitric Acid • Phosphoric Acid • Standard Ferrous Ammonium Sulphate Solution • Standard Sodium Oxalate Solution • Standard Potassium Permanganate Solution • Analytical Balance • Asbestos Gooch Crucible • Heating Apparatus/Burner
v)	Titanium	• Sodium Hydroxide Solution • Nitric Acid-Sulphuric Acid Mixture • Dilute Sulphuric Acid • Hydrogen Peroxide • Standard Titanium Solution

		• Filter Papers • Weighing Balance • Heating Apparatus/Burner
vi)	Vanadium	• Potassium Permanganate • N-Cinnamylol 1-N Phenyl Hydroxalmine (CPHA) • Dilute Hydrochloric Acid • Hydrochloric Acid • Chloroform • Dilute Sulphuric Acid • Standard Vanadium Solution • Filter Papers • Hot Plate • Weighing Balance • Heating Apparatus/Burner • General Glasswares
vii)	Zirconium	a) By Gravimetric Method • Concentrated Hydrochloric Acid • Mandelic Acid • Mandelic Acid, Wash Solution • Absolute Alcohol • Diethylether • Analytical Balance • Hot Plate/Water Bath • Low Ash Filter Paper • Platinum Crucible • Burner b) By Spectrophotometric Method • Zirconium • Hydrofluoric Acid • Double Distilled Water • Concentrated Nitric Acid • Concentrated Sulphuric Acid • Polyethylene Bottle • Tri-n-octyl Phosphine Oxide • Nitric Acid(7N) • Pyridine • Pyrocatechol Violet • Dilute Hydrochloric Acid • Conical Flasks • B17 or B24 Glass Sockets • Stopper • Graduated Measuring Cylinder or Separating Funnel • Mechanical Shaker • Spectrophotometer with cells
viii)	Chromium	• Sulphuric Acid • Nitric Acid

		• Silver Nitrate Solution' • Hydrofluoric Acid • Ammonium Persulphate • Dilute Hydrochloric Acid • Ferrous Ammonium Sulphate • Recrystallized Potassium Dichromate Solution' • Potassium Permanganate • Dark Coloured Stoppered Glass Bottle • Pure Re-crystallized Sodium Oxalate or Oxalic Acid • Analytical Balance • Burner • General Glasswares • Titration Assembly
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****The above list is indicative only and may not be treated as exhaustive***

ANNEXURE C
TO PRODUCT MANUAL FOR
ALUMINIUM INGOTS, BILLETS AND WIRE BARS
(EC GRADE) according to IS 4026:2007

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 and implement a calibration plan for the test equipment.

2. TEST RECORDS - The manufacturer shall maintain test records for the test carried out to establish conformity.

3. LABELLING, MARKING AND STANDARD MARK – Each Aluminum Ingot, Billet and Wire Bar shall be legibly painted or stamped with the cast number for identification; and the name or trademark of the manufacturer. Further, the Standard Mark as given in the Schedule of the license and Licence Number (i.e. CM/L.....) shall be incorporated on the product and/or its packaging and the test certificate for each consignment of the material, provided always that the product thus marked conforms to all the requirement of the specification.

4. CONTROL UNIT- All Aluminum Ingots or Billets or Wire Bars representing the same cast, grade and manufactured under the uniform conditions of production in the same place.

5. LEVELS OF CONTROL: The tests as indicated in Table 1 and at the levels of control specified therein, shall be carried out on the whole production of the factory which is covered by this scheme and appropriate records maintained in accordance with paragraph 2 above.

6. 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. Any rejected material which is potentially resalable be sheared or cut or deformed in such a manner that it cannot be used for any other purpose except re-melting. A separate record shall be maintained giving information on quantity and cast number/coil number/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. The Standard Mark (if already applied) on rejected material should be defaced.

7. TEST CERTIFICATE : For each consignment of BIS Certified material conforming to IS 4026:2007 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)

ANNEXURE C
TO PRODUCT MANUAL FOR
ALUMINIUM INGOTS, BILLETS AND WIRE BARS (EC GRADE) according to IS 4026:2007

SCHEME OF INSPECTION AND TESTING

TABLE 1: LEVELS OF CONTROL

TEST DETAILS				Test Equipment Requirement	LEVELS OF CONTROL		REMARKS
Clause	Requirements	Test Method			No. of Samples	Frequency	
		Clause	Reference				
8	Chemical Composition ofingots	8	IS 4026 & IS 504/IS 504(Part 1 to 12)/IS 504(Part 13 to 16) or any other established chemical/instrumental method	R	One	Each cast/control unit	-----
7.	Shapesand Sizes	7.1	IS 4026, IS 1820	R	Adequate inspection to ensure each item conforms to nominal dimensions as agreed between manufacturer and purchaser or as stipulated in the standard.		

Note-1: Whether test equipment is required (R) or sub-contracting (S) 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: The control unit and levels of control as decided by the Bureau are obligatory to which the licensee shall comply with.

PM/IS 4026/1 Jan 2022

BIS
STANDARD
MARK

ANNEXURE I
(Para 7 of the Scheme of Inspection and Testing)
XYZ Company
(Registered office Address and works address)
TEST CERTIFICATE FOR ALUMINIUM INGOTS, BILLETS AND WIRE BARS (EC GRADE) according to
IS 4026:2007

TEST CERTIFICATE No. _____

DATE _____

To M/s _____

We certified that the material described below fully conforms to IS 4026:2007 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 4026:2007 FOR DETAILS OF SPECIFICATION REQUIREMENTS)

TEST RESULTS

Order No. & Date	Nominal Size	Control Unit No.	Type	Quantity in tonnes	CHEMICAL COMPOSITION						PHYSICAL PROPERTIES	Remarks
					% Al	% Cu	% Si	% Fe	% Mn+Zr+Cr	% Ti + V	Shapes and Sizes	

REMARKS

KS

WAGO

N NO.

TRUCK NO.

COMPANY

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

FOR XYZ