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उत्पाद मैनुअल
सामान्य इंजीनियरिंग उद्देश्यों के लिए पिटवाँ एल्युमीनियम और एल्यूमीनियम मिश्रधातु
बारस, छड़ें, सेक्शन, एक्स्ट्रूडेड नालियाँ, खोखले सेक्शन और प्रोफाइलें- विशिष्टि
IS 733: 2025 के अनुसार

**Product Manual for
Wrought Aluminium and Aluminium Alloy Bars, Rods, Sections, Extruded Tubes, Hollow
Sections and Profiles for General Engineering Purposes**

According to IS 733: 2025

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। दस्तावेज 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 uniformity 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.

1.	भारतीय मानक संख्या IS No.	:	IS 733:2025
	शीर्षक Title	:	Wrought Aluminium and Aluminium Alloy Bars, Rods, Sections, Extruded Tubes, Hollow Sections and Profiles for General Engineering Purposes
	संशोधनों की संख्या No. of amendments	:	0
2.	नमूना दिशानिर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	No specific requirement. 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	:	Please refer Annex-A

	Grouping Guidelines	
c)	नमूने का परिमाण Sample Quantity	For chemical testing – 5 pcs of 5 cm length For mechanical testing – 1 pcs of 1 meter length In case of higher sizes (bulky sizes) of bars, rods and sections (regular solid sections and irregular solid sections), extruded structural and seamless tubes (round and other than round), hollow sections and Profiles, prepared Pieces for Mechanical testing may be sent. Requirements of Freedom from Defects (Cl 5) and Dimensions and Tolerances (Cl 9) may be tested in the factory (F/T) on full sizes of bars, rods and sections (regular solid sections and irregular solid sections), extruded structural and seamless tubes (round and other than round), hollow sections and Profiles from which samples are drawn for IT. 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)
d)	परीक्षण अनुरोध में घोषित किए जाने वाले पैरामीटर Parameters to be Declared in Test Request	Alloy Designation, Type of Section/Profile, (Bars, Rods, regular solid sections, irregular solid sections, Extruded rod/bar, tube etc.), Size, Condition (Temper). Note: Apart from the above, any other requirements/parameters may also be declared as per the standard, as applicable.
3.	परीक्षण उपकरणों की सूची List of Test Equipment	Please refer to Annex- B
4.	निरीक्षण और परीक्षण की स्कीम Scheme of Inspection and Testing	Please refer to Annex- C
5.	एक दिन में संभावित परीक्षण Possible tests in a day	
	All tests.	
	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:	

	IS 733: 2025 के अनुसार मानक मुहर का उपयोग करने के लिए लाइसेंस निम्नलिखित कार्यक्षेत्र के लिए प्रदान किया जाता है □Licence is granted to use Standard Mark as per IS 733: 2025 with the following scope:	
7.	उत्पाद का नाम Name of the product	Wrought Aluminium and Aluminium Alloy Bars, Rods, Sections, Extruded Tubes, Hollow Sections and Profiles for General Engineering Purposes
	Alloy Designation	1050, 1050A, 1050Z.....(As per Table 1 to Table 8)
	Type of Sections/Profiles	Bars, Rods and Sections (regular solid sections and irregular solid sections), extruded structural and seamless tubes (round and other than round), hollow sections and Profiles
	Supply Condition	Temper designation such as F, O, T4, T6 etc.
	Size	Diameter, Width, Thickness etc.

BUREAU OF INDIAN STANDARDS
Manak Bhawan, 9, Bahadur Shah Zafar Marg,
New Delhi – 110002

ANNEX-A
TO PRODUCT MANUAL FOR
Wrought Aluminium and Aluminium Alloy Bars, Rods, Sections, Extruded Tubes,
Hollow Sections and Profiles for General Engineering Purposes
According to IS 733:2025

GROUPING GUIDELINES

A) Grouping based upon Grade Designation:

Manufacturer shall declare the Alloy Designations (specified in Table 1 to Table 8 of IS 733) intended to be covered in the scope of licence.

Group	Alloy Designation	Grouping
1	Aluminium Alloys- 1000 Series-Al	One sample of Alloy Designation having the highest Purity of Aluminium shall be drawn to cover Alloy Designations having lower purity in the Scope
2	Aluminium Alloys- 2000 Series-Al Cu	One sample of any Alloy Designations shall be drawn and tested
3	Aluminium Alloys- 3000 Series-Al Mn	One sample of any Alloy Designations shall be drawn and tested
4	Aluminium Alloys- 4000 Series-Al Si	One sample of any Alloy Designations shall be drawn and tested
5	Aluminium Alloys- 5000 Series-Al Mg	One sample of any Alloy Designations shall be drawn and tested
6	Aluminium Alloys- 6000 Series-Al Mg Si	One sample of any Alloy Designations shall be drawn and tested
7	Aluminium Alloys- 7000 Series-Al Zn	One sample of any Alloy Designations shall be drawn and tested
8	Aluminium Alloys- 8000 Series-Miscellaneous	One sample of any Alloy Designations shall be drawn and tested

B) Grouping based on Supply Condition (Temper Designation):

Alloy Designations specified in Table 1 to Table 8 of IS 733 can be supplied in different Temper Designation and mechanical properties of Alloy Designations in different Temper Designation are specified in Table 9 of IS 733. Manufacturer shall declare the Temper Designation for supply of each Alloy Designation as a part of scope of the licence.

Note: The mechanical properties of tempers not mentioned in Table 9 may be as per the agreement between the purchaser and the manufacturer.

Temper Designation	Grouping
F, O, T4, T5, T6.....	Samples of different Alloy Designations, drawn at A above, shall be drawn in such combination that samples of all Temper Conditions, intended to be covered in the scope of the licence, are tested.

C) Grouping based on Type of Section/Sizes:

Manufacturer shall declare the Sections/Profiles and their Sizes intended to be covered in the Scope of the Licence

Type of Sections/Profiles	Grouping
Bars, Rods, Sections (regular solid sections and irregular solid sections), extruded structural and seamless tubes (round and other than round), hollow sections and Profiles	Samples of different Alloy Designations and Temper Designations, drawn at A & B above, shall be drawn in such combination that samples of all Sections/Profiles, intended to be covered in the scope of the licence, are tested. The samples of different Sections/Profiles drawn may be of any size. However, scope of licence with regards to sizes shall be restricted based upon manufacturing capability.

D. Scope of licence shall be restricted based on the manufacturing and testing facilities available.

E. 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 EQUIPMENTS
(INDICATIVE LIST, FOR GUIDANCE ONLY)

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	Vernier Caliper, Micrometer, Steel Scale, Right Angle, Measuring Tape, Feeler Gauge, Straight Surface	Dimensions and Tolerances (Clause 9)
2	Universal Tensile Testing Machine, Extensometer	Tensile Test (Clause 7) and Table 9
3	Spectrometer, Analytical Balance(0-200gm, LC- 0.1mg), Hot Plate, Hot Air Oven, Photometer (Absorption cell), Porcelain/Silica Crucible, Platinum Crucible, Thermometer, Filter Paper including ash less filter paper pad, Stainless steel/nickel beaker, Plastic/polyethene/SS Beaker, Pyrex beakers and other glassware	Chemical Composition (Clause 6)
4	Reagents-Mixed Acid (Conc.HCL, Conc. Sulphuric Acid, Conc. Nitric Acid), 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-Dithiocarbonate solution,Carbon Tetrachloride, Sodium Sulphate, Standard Copper Solution, silica basin.	Copper (Below 0.1%)
5	Reagents – Concentrated Sulphuric Acid, Concentrated Nitric Acid, Concentrated Hydrochloric Acid, Mixed Acids(Conc.HCL, Conc. Sulphuric Acid, Conc. Nitric Acid), Hydrofluoric Acid, Dilute Sulphuric Acid, Ammonium Fluoride, Concentrated Ammonium Hydroxide, Acetic Acid, Urea Solution, Potassium Iodide Solution, Standard Sodium Thiosulphate Solution, Starch solution, ammonium thiocyanate, Sodium Hydroxide Solution, Sodium Sulphate Solution, Sodium Hydroxide-Sodium Sulphate Wash Solution, Dilute Nitric Acid, Sulphurous Acid, Hydrogen Sulphide (gas),Hydrogen Sulphide Wash Solution	Copper (Above 0.1%)
6	Reagents – Sodium Hydroxide, Hydrogen Peroxide, Sodium Carbonate, Methyl Red Indicator Solution, Conc. Ammonium Hydroxide, Ammonium Chloride Wash Solution, Ammonium Chloride, Conc. Hydrochloric Acid, Ammonium Sulphide Solution, Ammonium Persulphate, Ammonium Sulphide Wash Solution, Bromine Water, 8-Hydroxyquinoline Solution, Dilute Ammonium Hydroxide, Methyl Orange Indicator Solution, Potassium Bromate- Potassium Bromide Solution, Potassium Iodide Solution, Starch Solution, Standard Potassium Iodate Solution, Standard Sodium Thiosulphate Solution	Magnesium (0.01 to 12 %)

7	Reagents – Sodium Hydroxide Solution, Hydrogen Peroxide, Potassium Cyanide Solution, Dilute Hydrochloric Acid, Ammonium Chloride, Bromine Water, Conc. Ammonium Hydroxide, Sodium Acetate, Tartaric Acid, Chrome Blank T Indicator, Standard Magnesium Sulphate, Standard EDTA Solution.	Magnesium (0.5 to 11%)
8	Reagents- Sodium Hydroxide Solution, Dilute Nitric Acid, Ammonium Molybdate Solution, Standard Silicon Solution.	Silicon (0.02 to 0.3%)
9	Reagents – Sodium Hydroxide Solution, Hydrogen Peroxide, Conc. Sulphuric Acid, Sulphuric Acid-Perchloric Acid Mixture, Perchloric Acid Solution, Conc. Nitric Acid, Sulphurous Acid, Dilute Sulphuric Acid, Conc. Hydrochloric Acid, Ammonium Acetate Solution, Dilute Hydrochloric Acid, Hydrofluoric Acid	Silicon (Above 0.3%)
10	Reagents-Sodium Hydroxide Solution, Finely granulated lead containing under 0.001% iron, Acetate Buffer Solution, Hydroxylamine Hydrochloride Solution, O-phenanthrolinesolution, Standard Iron Solution. Equipment – Magnet, Nickel Beaker.	Iron (0.03 to 0.10%)
11	Reagents -Concentrated Sulphuric Acid, Concentrated Nitric Acid, Concentrated Hydrochloric Acid, Mixed Acids(Conc.HCL, Conc. Sulphuric Acid, Conc. Nitric Acid), Dilute Sulphuric Acid, Hydrofluoric Acid, Potassium Bisulphate, Hydrogen Sulphide, Hydrogen Sulphide Wash Solution, Potassium Permanganate Solution, Potassium Thiocyanate Solution, Standard Titanous Chloride Solution. Equipment – Apparatus for Storing Titanous Chloride Solution, Solid Glass Beads.	Iron (0.01 to 2.0%)
12	Reagents – Sodium Hydroxide Solution, Sodium Nitrite Solution, Acid Mixture (Conc. Nitric Acid and Phosphoric Acid), Hydrofluoric Acid, Potassium Periodate Solution, Standard Manganese Solution	Manganese (Mn content between 0.01 to 0.1%)
13	Reagents - Sodium Hydroxide Solution, Acid Mixture (Conc. Sulphuric Acid, Phosphoric Acid and Nitric Acid), Silver Nitrate Solution, Ammonium Persulphate Solution, Ammonium Chloride Solution, Standard Arsenite-Nitrite Mixture, Sodium Arsenite, Standard Manganese Solution.	Manganese (Chromium Content up to 0.5%)
14	Reagents – Conc. Nitric Acid, Sodium Bismuthate, Sulphurous Acid, Dilute Nitric Acid, Phosphoric Acid, Standard Ferrous Ammonium Sulphate Solution, Standard Sodium Oxalate Solution, Standard Potassium Permanganate Solution. Equipment-Asbestos Gooch Crucible.	Manganese (Mn content between 0.1 to 1.5%)
15	Reagents – Dilute Hydrochloric Acid, Potassium Chlorate, Carbon Tetrachloride, Complex Forming Solution (Conc. Ammonium Hydroxide, Ammonium Oxalate, HCl acid, sodium acetate, sodium thiosulphate solution and sodium sulphide solution), Dithizone Solution, Sodium Sulphide Wash Solution, Standard Zinc Solution.	Zinc (Photometric Method for Zn content below 0.1%)
16	Reagents – Mixed Acid (Conc. Sulphuric Acid, Conc. HCl and Conc. Nitric Acid), Dilute Sulphuric Acid, Hydrogen Sulphide(gas), Hydrogen Sulphide Wash Solution, Tartaric Acid	Zinc (By Mercuric Thiocyanate Method)

	Solution, Conc. Ammonium Hydroxide, Methyl Red Indicator Solution, Formic Acid Mixture, Formic Acid Wash Solution, Dilute Hydrochloric Acid, Ammonium Nitrate, Methylated Spirit, Mercuric Potassium Thiocyanate Solution, Chloroform, Standard Zinc Solution, Standard Potassium Iodate Solution.	
17	Reagents – Sodium Hydroxide Solution, Nitric Acid-Sulphuric Acid Mixture, Dilute Sulphuric Acid, Hydrogen Peroxide, Standard Titanium Solution.	Titanium
18	Reagents – Conc. Sulphuric Acid, Conc. Nitric Acid, Silver Nitrate, Hydrofluoric Acid, Ammonium persulphate, Dilute HCl, Standard Ferrous Ammonium Sulphate Solution, Standard Potassium Permanganate Solution.	Chromium

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

ANNEX- C SCHEME OF INSPECTION AND TESTING

1. QUALITY ASSURANCE PLAN

1.1 It is expected that during operation of BIS licence, manufacturers will implement a Quality Assurance Plan (QAP) 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 (QAP) defining the control unit (i.e. lot/batch etc.), the levels of control (i.e. the frequency and number of samples for conducting the different tests as per the Indian Standard) and declare the arrangement for testing i.e. whether in-house or subcontracting/sharing for each applicable test and submit the same to BIS Branch Office for information. The manufacturer shall comply with the QAP and maintain test records in accordance with para 2.1.

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, aluminium bar, rod, sections (regular solid sections and irregular solid sections), extruded structural and seamless tubes (round and other than round), hollow sections and Profiles of same shape, dimension and condition, produced continuously from the same cast one the same line in one go, shall be taken as one control unit.

1.3.2 For the guidance of manufacturers in preparing the Quality Assurance Plan, recommended levels of control are given in Table 1. Manufacturer has the discretion of declaring their own levels of control or accept the levels of control given in this document.

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.

2. ENSURING COMPLIANCE THROUGH TESTING- manufacturers shall ensure compliance of their products to all the requirements of the Indian Standard for which they may have in-house test facilities. However, there is no obligation to maintain in-house laboratory. Licensee may use alternative arrangements for tests of the production as per the declared QAP. Various alternatives are available for operation of BIS certification as given below and the relevant guidelines for availing such relaxations by the manufacturers, as amended from time to time, are to be referred:

- i) Shared testing resources like common facility,
- ii) Cluster based testing facility,
- iii) Sub-contracting to outside laboratories which may either be:
 - a) BIS recognised/empanelled laboratories, or
 - b) Any accredited laboratory as per ISO/IEC 17025

2.1 TEST RECORDS- The manufacturers shall maintain test records for the tests carried out (either in-house or at a sub-contracted or at shared test facility) to establish conformity of the product to the Standard for operation of licence. For the tests being subcontracted or

conducted at a shared test facility, test results issued by the laboratories or test facilities, shall be made available for inspection by BIS.

3. PACKING AND MARKING - The Standard Mark as given in the Schedule of the license and Licence Number (i.e. CM/L...) shall be incorporated suitably on each lot of aluminium bar, rod, sections (regular solid sections and irregular solid sections), extruded structural and seamless tubes (round and other than round), hollow sections and Profiles and on the Test Certificate issued along with each Consignment provided always that the product thus marked and packed conforms to all the requirement of the specification.

3.1 Packing and Marking shall be done as per the Indian Standard.

3.2 Additional Marking requirements: Additionally, the following shall also be marked on each box/package of the material:

- a) “For BIS certification details please visit www.bis.gov.in”
- b) Any other requirement not specified in the Indian Standard

4. TEST CERTIFICATE – For each consignment of BIS Certified material conforming to IS 733:2025 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).

5. REJECTION - 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
(Recommended Levels of Control by BIS- For Guidance Only)

(1)				(3)		(4)
TEST DETAILS				LEVELS OF CONTROL		REMARKS
Clause	Requirements	Test Method		No. of Samples	Frequency	
		Clause	Reference			
5.1	Freedom from defects	5.1 & 5.2	IS 733:2025	Manufacturer shall exercise adequate in-process controls to ensure the material remains free from harmful defects.		
5.3	Peripheral Coarse Grain Envelope	5.3	IS 733:2025	For aluminium copper and aluminium-zinc-magnesium-copper alloys, which are susceptible to peripheral grains coarsening, the permissible limit and test method of 'coarse grain' envelope may be as agreed between the manufacturer and the purchaser.		
6	Chemical Composition	6.1 & 6.2	IS 733:2026 IS 504 (all parts) or any other established instrumental/chemical method	One	Each Heat/Cast	—
7	Mechanical Properties	7.1 & 7.2	IS 733:2025 IS 1608 (Part 1)	One	Each Control Unit	—
9	Dimensions and Tolerances	9.1	IS 733:2025	Firm to have adequate in-process controls to check compliance of this parameter as per the tolerances given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity		

Annexure-I
(Para 4 of the Scheme of Inspection and Testing)
XYZ ALUMINIUM COMPANY
(Registered office Address and works address)

ISI Mark
With IS No.
and CM/L
no.

Test Certificate for Wrought Aluminium and Aluminium Alloy Bars, Rods, Sections, Extruded Tubes, Hollow Sections and Profiles for General Engineering Purposes
According to IS 733:2025

TEST CERTIFICATE NO. _____

To M/s _____

Dated _____

We certified that the material described below fully conforms to IS 733:2025 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 733:2025 FOR DETAILS OF SPECIFICATION REQUIREMENTS)

TEST RESULTS

Order No. & Date	Type (bar, rod, section, extruded structural and seamless tubes, hollow sections and Profiles) and nominal size	Alloy Designation	Cast No./ Lot No.	Qty. (in tonnes)	Chemical Composition (in %)																Mechanical Properties		
					Al	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Others	Zr + Ti	Ni	Zr	Pb	Bi	Li	R _m	R _{p0.2}	Elongation (%)

Remarks
Wagon No.
Truck No.

FOR XYZ ALUMINIUM COMPANY

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