



उत्पाद मैनुअल
बर्तन निर्माण के लिए पिटवाँ एल्यूमिनियम और एल्यूमिनियम मिश्रधातुएँ –विशिष्ट
IS 21: 2025 के अनुसार

**Product Manual for
Wrought Aluminium and Aluminium Alloys for Manufacture of Utensils
According to IS 21: 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। 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 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 21:2025
	शीर्षक Title	:	Wrought Aluminium and Aluminium Alloys for Manufacture of Utensils - Specification
	संशोधनों की संख्या No. of amendments	:	0
2.	नमूना दिशानिर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	No specific raw material 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 Grouping Guidelines	:	Please refer Annex-A
c)	नमूने का परिमाण Sample Quantity	:	For Chemical test: 5 pcs of 50 mm X 50 mm For Mechanical tests: 1 pc of 500 mm length

		Adequate sample shall be drawn for earing test (Optional test) according to the test method as agreed between purchaser and supplier, Subjective requirements e.g. Dimensions (Cl 7) shall be tested in the factory (during Factory Testing) on the full width strip/sheet/plate and full diameter circle/oval from which samples are drawn for Independent Testing. 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	Grades/Designation, Condition (Temper designation), Form, Dimensions : 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 can be carried out 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:	
	IS 21: 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 21: 2025 with the following scope:	
7.	उत्पाद का नाम Name of the product	Wrought Aluminium and Aluminium Alloys for Manufacture of Utensils
	Designation	19000, 19000A, 19002 etc.
	Grade	O/H12/H22/H14/H24/T4/T6 etc. as per Table 2 of IS 737
	Form	sheet, strip, plates, circles, ovals or in other shapes in flat form

	Dimension	e.g.		
		Sheet & Plates	Width	mm up to and including..... mm
			Length	mm up to and including..... mm
			Thickness	mm up to and including..... mm
		Strip	Width	mm up to and including..... mm
			Thickness	mm up to and including..... mm
		Circles	Diameter	mm up to and including..... mm
			Thickness	mm up to and including..... mm
		Ovals	Major Dia.	mm up to and including..... mm
			Minor Dia.	mm up to and including..... mm
			Thickness	mm up to and including..... mm
		Note: For other than above shapes, dimensions may be as per agreement between purchaser and manufacturer		
	Optional Test	With or Without “Earing Test (Optional Test)”		

ANNEX-A
TO PRODUCT MANUAL FOR
Wrought Aluminium and Aluminium Alloys for Manufacture of Utensils
According to IS 21:2025

GROUPING GUIDELINES

1. Wrought Aluminium and Aluminium Alloys for Manufacture of Utensils as per IS 21:2025 are classified into various grade/designations based upon the major alloying element as per Table 1 of IS 737. Further, these designations could be supplied in the conditions (temper designations such as O, H12, H22, H14, H24 etc.) as per the desired mechanical properties as per Table 2 of IS 737.

2. Grade/designations, as specified in Cl 5.1 of IS 21:2025, have been grouped into the following groups based upon the major alloying elements and are arranged in order of least to most stringent based upon the purity/percentage of major alloying element:

Lowest Purity/Lowest percentage of Major alloying Element ↓ Highest Purity/Highest percentage of Major alloying element	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
	19000	31000	40800	41352A	51000A	53800	64430	81400
	19000A	31000A			51000B		64430A	81400A
	19002	31200					64430B	
	19500	31500						
	19600	31500A						
		31500B						
		31500C						

3) In view of above, the following grouping guidelines shall be considered for GoL/CSoL:-

a) From each group if sample of higher purity/higher percentage of major alloying element is drawn the lower designations may be covered for same temper designation.

b) Separate samples under each group are to be drawn for each Temper Condition intended to be included in Scope of Licence.

c) The sample drawn above shall be of any form and size and separate samples for all forms and sizes intended to be covered in the licence are not required to be drawn.

d) If the sample drawn and tested for “Earing Test (Optional Test)”, the scope of the licence may be specified either with or without the inclusion of the ‘Earing Test (Optional Test)’.

4) However, it shall be ensured that the firm is having all the necessary manufacturing and testing facilities for the manufacture and testing of the varieties to be included in the licence

5) During the operation of licence, BO shall ensure that all the varieties covered in the license are drawn for independent testing on rotation over a period of time

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.	Tests Used in with Clause Reference	Test Equipment/Chemicals and Identification Numbers (Where applicable)
1	Cl 7 of IS 737 (Chemical Composition)	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
	Copper (Below 0.1%)	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 (Above 0.1%)	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
	Magnesium (0.5 to 11%)	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
	Silicon (0.02 to 0.3%)	Reagents- Sodium Hydroxide Solution, Dilute Nitric Acid, Ammonium Molybdate Solution, Standard Silicon Solution.
	Silicon (Above 0.3%)	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
	Iron (0.03 to 0.10%)	Reagents-Sodium Hydroxide Solution, Finely granulated lead containing under 0.001% iron, Acetate Buffer Solution, Hydroxylamine Hydrochloride Solution, O- phenanthroline solution, Standard Iron Solution. Equipment – Magnet, Nickel Beaker.
	Iron (0.01 to 2.0%)	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.
	Manganese (Chromium Content upto 0.5%)	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 (Mn content between 0.1 To 1.5%)	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.
	Zinc (Photometric Method for Zn content below 0.1%)	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 (By Mercuric Thiocyanate Method)	Reagents – Mixed Acid (Conc. Sulphuric Acid, Conc. HCl and Conc. Nitric Acid), Dilute Sulphuric Acid, Hydrogen Sulphide (gas), Hydrogen Sulphide Wash Solution, Tartaric Acid 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.
	Titanium	Reagents – Sodium Hydroxide Solution, Nitric Acid-Sulphuric Acid Mixture, Dilute Sulphuric Acid, Hydrogen Peroxide, Standard Titanium Solution.
	Chromium	Reagents – Conc. Sulphuric Acid, Conc. Nitric Acid, Silver Nitrate, Hydrofluoric Acid, Ammonium persulphate, Dilute HCl, Standard Ferrous Ammonium Sulphate Solution, Standard Potassium Permanganate Solution.
2.	Cl 8 of IS 737- Mechanical properties (Tensile Strength, Elongation and 0.2% proof stress, Bend Test)-	Universal Tensile Testing Machine with attachments
3.	Cl 7 (Dimensions and Tolerances)	Vernier calipers, micrometer, Steel tape, Steel Scale, Flat surface or Flat Bench,

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 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 different tests 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: All quantity of material of same form, grade designation, condition (temper designation) and manufactured from the same raw material under uniform conditions of production in the same production line at a time shall constitute a 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**.

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 house testing 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 given below. 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 per IS/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 facilities or get testing done from BIS recognized/empanelled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

2.3 Large Scale manufacturers shall maintain an in-house laboratory equipped at least with test facilities for routine tests (indicated as “R” in Column 2 of Table 1), where different tests given 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 common cluster 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 laboratory or 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 license and Licence Number (i.e. CM/L...) shall be suitably incorporated on each Package 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 Each Package and/or test certificate shall also be marked with the following:

- (a) Name of manufacturer
- (b) Grade and temper of the material
- (c) Batch Number
- (d) Date of Manufacture

3.2 Additional Marking requirements: The material shall also be marked with the following additional requirement on each Package:

- 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 21:2025 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 - 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
(ONLY FOR GUIDANCE PURPOSE)

(1)				(2)	(3)		(4)
TEST DETAILS					LEVELS OF CONTROL		REMARKS
Clause	Requirements	Test Method		Test equipment requirement R: required (or) S:Sub-contracting permitted	No. of Samples	Frequency	
		Clause	Reference				
5 of IS 21 & 7, Table 1 of IS 737	Chemical Composition	7 of IS 737	IS 504 (Part 1 to 12) and (Part 13 to Part 16) or any other established instrumental/ chemical method.	R	One	Each control unit	--
5 of IS 21 & 8, Table 2 of IS 737	Mechanical Properties						
(i)	0.2% Proof Stress	8 of IS 737	IS 1608 (Part 1)	R	One	Each control unit	—
(ii)	Tensile Strength	8 of IS 737	IS 1608 (Part 1)	R	One	Each control unit	
(iii)	Elongation	8 of IS 737	IS 1608 (Part 1)	R	One	Each control unit	

(iv)	Bend Test	8 of IS 737	IS 1599	R	One	Each control unit	
7	Dimensions and tolerances	7	IS 2676 IS 2677 Table 2 of IS 21:2025	R	Adequate inspection to ensure each sheet/strip/plate/circle/oval/any other shape conforms to the requirement of the specification		
8	Earing Test (Optional Test)	8	As per agreement between purchaser and supplier.				

PM/21/2
September 2025

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

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

Test Certificate for Wrought Aluminium and Aluminium Alloys for Manufacture of Utensils
TEST CERTIFICATE NO. _____

To M/s _____

Dated _____

We certified that the material described below fully conforms to IS 21:2025 Chemical composition and Mechanical 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 21:2025 FOR DETAILS OF SPECIFICATION REQUIREMENTS)

TEST RESULTS

Order No. & Date	Dimensions (Nom Size)	Control unit No.	Grade	Quantity (in tonnes)	Chemical Composition (in %)										Mechanical Properties				Earing Test (Optional)	Remarks
					Al	Cu	Mg	Si	Fe	Mn	Zn	Ti	Cr	Othrs	Tensile Strength	Elongation	Bend test	0.2% proof stress		

Remarks
Wagon No.
Truck No.

FOR XYZ COMPANY

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