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उत्पाद मैन्युअल

सामान्य इंजीनियरिंग प्रयोजनों के लिए गढ़ा एल्यूमीनियम और एल्यूमीनियम मिश्र धातु चादर और पट्टी IS 737:2024 के अनुसार

Product Manual for
Wrought Aluminium and Aluminium Alloy Sheet and Strip for General Engineering Purposes
According to IS 737:2024

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 737:2024
	शीर्षक **Title**	:	Wrought Aluminium and Aluminium Alloy Sheet and Strip for General Engineering Purposes
	संशोधनों की संख्या **No. of amendments**	:	01
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** **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

			Test for Dimensions and Tolerances as per cl.10. shall be carried out in factory on the full width/length of strips/sheets 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**	:	Designation, Condition (Temper Designation), Sizes. 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 737:2024 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 737:2024 with the following scope:		
7.	**उत्पाद का नाम** **Name of the product**		Wrought Aluminium and Aluminium Alloy Sheet and Strip for General Engineering Purposes
	Designation		19000, 19000A, 19000B, 19002,……
	Condition (Temper Designation)		O, H12, H22, H24,……..
	Size		Thickness From -----mm to upto and including-----mm, Width from ---mm to upto and including-------mm Length from …. mm to upto and including------mm

Annex-A
To Product Manual for
Wrought Aluminium and Aluminium Alloy Sheet and Strip for General Engineering Purposes
According to IS 737:2024

GROUPING GUIDELINES

1. For the purpose of GoL/CSoL, the following grouping guidelines shall be considered:

A) Grouping based upon Grades of Aluminium and Aluminium Alloys: A total of 181 Grade Designations are specified in the IS 737. Manufacturer shall declare the Grade Designations of Aluminium and Aluminium Alloys intended to be covered in the scope of licence

Sl. No.	Grade Designation	Grouping
1	19000 to 19998 (Sr. No. 1 to Sr. No. 24 of Table 1)	One sample of Grade having the highest purity of Aluminium, among the grades intended to be covered in the Scope of Licence, shall be drawn and tested to cover all other Grades having lower purity of Aluminium in the Scope of Licence.
2	22130 to 26388A (Sr. No. 25 to Sr. No. 38 of Table 1)	One sample of any Grade, among the grades intended to be covered in the Scope of Licence, shall be drawn and tested.
3	31000 to 32400A (Sr. No. 39 to Sr. No. 54 of Table 1)	One sample of any Grade, among the grades intended to be covered in the Scope of Licence, shall be drawn and tested.
4	40800 to 47000 (Sr. No. 55 to Sr. No. 73 of Table 1)	One sample of any Grade, among the grades intended to be covered in the Scope of Licence, shall be drawn and tested.
5	51000A to 57100 (Sr. No. 74 to Sr. No. 127 of Table 1)	One sample of any Grade, among the grades intended to be covered in the Scope of Licence, shall be drawn and tested.
6	62100 to 67660 (Sr. No. 128 to Sr. No. 165 of Table 1)	One sample of any Grade, among the grades intended to be covered in the Scope of Licence, shall be drawn and tested.
7	71000 to 76528A (Sr. No. 166 to Sr. No. 173 of Table 1)	One sample of any Grade, among the grades intended to be covered in the Scope of Licence, shall be drawn and tested.
8	81000 to 82300 (Sr. No. 174 to Sr. No. 181 of Table 1)	One sample of any Grade, among the grades intended to be covered in the Scope of Licence, shall be drawn and tested.

B) Grouping based upon Temper Conditions:

Alloy Designations specified in Table 1 of IS 737 can be supplied in different Condition (Temper Designation) and mechanical properties. Alloy Designations in different Condition

(Temper Designation) are specified in Table 2 of IS 737. Manufacturer shall declare the Temper Designation in which each Grade Designation is intended to be supplied.

Note: The mechanical properties of the grades, conditions or temper designations and thickness not mentioned in Table 2, may be subject to the mutual agreement between the purchaser and the manufacturer.

Temper Condition	**Grouping**
F, O, H12, H14, H16, H18, H22, H24, H26, H28…… or any other Temper Condition as specified by purchaser	Samples of different Grade Designations, drawn at A above, shall be drawn in such a way (combination) so that samples of all Temper Conditions, intended to be covered in the Scope of Licence, are tested. Separate Samples of each Temper Condition for each Grade are not required to be drawn.

C) Grouping based upon Form/Size:

Form/Size	Grouping
Sheet Strip	Samples, drawn at A & B above, may be of any form (sheet/strip) and any size. However, recommendation for scope of licence with regards to forms/sizes shall be restricted based upon manufacturing capability.

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 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 10)
2	Universal Tensile Testing Machine, Extensometer	Mechanical Properties (Clause 8) and Table 2
3	Device for instrumental chemical analysis such as Optical Spectrometer with all requisite channels and Certified/Standard Reference Materials 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 OR Chemicals and Reagents for Chemical method as per IS 504 (various parts) for each element given below	Chemical Composition (Clause 7)
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	Magnesium (0.01 to 12 %)

	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	
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	Zinc (Photometric Method for Zn content below 0.1%)

	Hydroxide, Ammonium Oxalate, HCl acid, sodium acetate, sodium thiosulphate solution and sodium sulphide solution), Dithizone Solution, Sodium Sulphide Wash Solution, Standard Zinc Solution.	
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 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.	Zinc (By Mercuric Thiocyanate Method)
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, material of the same thickness, grade designation, temper designation and manufactured from the same cast of raw material on the same production line in one go 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. 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 the sticker/label/metal tag attached to each coil (strip) or bundle of sheets and on the Test Certificate 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 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 737:2024 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**			
6	Freedom from defects	6	IS 737	Manufacturer shall exercise adequate in-process controls to ensure that the material remains free from harmful defects.		
7	Chemical Composition	**7**	Table 1 of IS 737, IS 504(Part 1 to 12)/IS 504 (Part 13 to 16) or any other established instrumental/ chemical method	One	Each Heat/Cast	—
8	Mechanical Properties					
8.1	Tensile Test	Table 2, 8.1	IS 737 IS 1608 (Part 1)	One	Each Control Unit	—
8.2	Bend Test	8.2, 8.2.1, 8.2.2	IS 737 IS 1599/ISO 7438	One	Each Control Unit	—
9	Condition	—	IS 737 IS 5052	Manufacturer shall exercise adequate in-process controls to ensure that the material is supplied in the temper condition as specified by purchaser.		
10	Dimensions & Tolerances	10	IS 737 IS 2676	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		

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

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

Test Certificate for Wrought Aluminium and Aluminium Alloy Sheet and Strip for General Engineering Purposes
According to IS 737:2024
TEST CERTIFICATE NO._____

To M/s_____ Dated_____

We certified that the material described below fully conforms to IS 737:2024. 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 LicenceNo.CM/L_____are as indicated below against each order No.

(PLEASE REFER TO IS 737:2024 FOR DETAILS OF SPECIFICATION REQUIREMENTS)
TEST RESULTS

Order No. & Date	Nom Size	Control Unit No.	Type	Qty. (in tonnes)	Chemical Composition (%)											Mechanical Properties			Freedom From Defects	Remark
					Al	Cu	Mg	Si	Fe	Mn	Ni	Zn	Ti	Cr	Other Elements	Tolerances	Tensile Test	Bend Test		

Remarks
Wagon No.
Truck No.

FOR XYZ ALUMINIUM COMPANY

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