



**उत्पाद मानुयल**  
**सामान्य इंजीनियरिंग उद्देश्यों के लिए रीमेल्टिंग के लिए**  
**प्राथमिक एल्युमिनियम सिलिलियों के लिए -विशिष्ट**  
**आईएस 2590:1987 के अनुसार**  
**के अनुसार**

**PRODUCT MANUAL FOR**  
**Specification for Primary Aluminium Ingots for**  
**remelting for general engineering purposes**  
**according to IS 2590:1987**

भारतीय मानक ब्यूरो -स्कीम की विनियम (मूल्यांकन अनुरूपता)I के तहत यह उत्पाद मानुयल प्रमाणीकरण के प्रचलन मे रीति और पारदर्शिता के सुसंगता सुनिश्चित करने के लिए सभी क्षेत्रीय शाखा द्वारा धारियों लाइसेन्स एवं कार्यालयोंसंदर्भ सामग्री के रूप मे उपयोग किया जाएगा। बीआईएस लाइसेन्स जा किया उपयोग का दस्तावेज़ इस भी द्वारा आवेदकों भावी इच्छुक के करने प्राप्त पत्र प्रमाण है। सकता

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. | <b>उत्पाद</b><br><b>Product</b>                            | : | <b>IS 2590:1987</b>                                                                        |
|    | <b>शीर्षक</b><br><b>Title</b>                              | : | Specification for Primary Aluminium Ingots for re-melting for general engineering purposes |
|    | <b>संशोधन संख्या</b><br><b>No. of amendments</b>           | : | <b>01</b>                                                                                  |
| 2. | <b>नमूनाकरण दिशा निर्देश</b><br><b>Sampling Guidelines</b> |   |                                                                                            |

|    |                                                                                                                                                                                                           |                                                                         |                                                                                                                                                                                                                                                                        |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| a) | <b>कच्चा माल</b><br><b>Raw material</b>                                                                                                                                                                   | :                                                                       | No specific requirement.<br>However, it is to be insured that no scrap shall be used in the production of the material except that which has accumulated during the process of manufacture of the material and which has not been remelted except by the manufacturer. |
| b) | <b>समूहिकरण दिशा निर्देश</b><br><b>Grouping Guidelines</b>                                                                                                                                                | :                                                                       | Please refer Annex - A                                                                                                                                                                                                                                                 |
| c) | <b>नमूने का परिमाण</b><br><b>Sample Size</b>                                                                                                                                                              | :                                                                       | For Chemical test: 5 pcs of 50 mm X 50 mm<br>Tests for Shapes and Sizes as per cl.7.1 shall be carried out in the factory                                                                                                                                              |
| 3. | <b>परीक्षण उपकरणों की सूची</b><br><b>List of Test Equipment</b>                                                                                                                                           | :                                                                       | Please refer Annex - B                                                                                                                                                                                                                                                 |
| 4. | <b>निरीक्षण व परीक्षण स्कीम</b><br><b>Scheme of Inspection and Testing</b>                                                                                                                                | :                                                                       | Please refer Annex - C                                                                                                                                                                                                                                                 |
| 5. | <b>एक दिन में संभावित परीक्षण</b><br><b>Possible tests in a day</b>                                                                                                                                       | :                                                                       | All tests                                                                                                                                                                                                                                                              |
| 6. | <b>लाइसेन्स का कार्यक्षेत्र</b><br><b>Scope of the Licence :</b>                                                                                                                                          |                                                                         |                                                                                                                                                                                                                                                                        |
|    | IS 2590:1987 के अनुसार मानक मुहर का उपयोग करने के लिए लाइसेन्स निम्नलिखित कार्यक्षेत्रके लिए प्रदान किया जाता है<br>Licence is granted to use Standard Mark as per IS 2590:1987 with the following scope: |                                                                         |                                                                                                                                                                                                                                                                        |
|    | <b>Name of the product</b>                                                                                                                                                                                | Primary Aluminium Ingots for Remelting for general engineering purposes |                                                                                                                                                                                                                                                                        |
|    | <b>Grade</b>                                                                                                                                                                                              | Grade 1/2/3/4/5                                                         |                                                                                                                                                                                                                                                                        |

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

**ANNEXURE A**  
**TO PRODUCT MANUAL FOR**  
**Specification for Primary Aluminium Ingots for**  
**remelting for general engineering purposes**  
**According to IS 2590:1987**

**GROUPING GUIDELINES**

Grouping has been done on the basis of Grades of Aluminum Ingots as under:

| Sl. No. | Type                                     | Classification                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.      | Grade<br>(based on <b>purity of Al</b> ) | <div style="display: flex; align-items: center;"> <div style="flex: 1;">           (a) <b>Grade 5</b><br/>           (b) Grade 1<br/>           (c) Grade 2<br/>           (d) Grade 3<br/>           (e) Grade 4         </div> <div style="flex: 1; text-align: center;">  </div> <div style="flex: 1;">           (Increasing Al <b>purity</b>)         </div> </div> |

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

|         |                                |
|---------|--------------------------------|
| Group-1 | (a) Grade 1, 2, 3, 4, <b>5</b> |
|---------|--------------------------------|

- 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 **Grade having the highest Al purity** has been tested and found conforming, the **scope may cover grades of lower Al purity** also i.e. If sample of **Grade 5 is drawn and is found conforming, grades 1,2,3 & 4** shall also be covered in the scope of the licence.
- 2) For testing of Shapes and Sizes (cl.7.), for considering GOL, the above sample of Aluminum Ingot 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 the Aluminum Ingots 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 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.

**ANNEXURE B**  
**TO PRODUCT MANUAL FOR**  
**Specification for Primary Aluminium Ingots for**  
**remelting for General Engineering Purposes**  
**According to IS 2590:1987**

**LIST OF TEST EQUIPMENTS**

Major test equipment required to test as per requirements of Indian Standard.

| Sl No. | Test Equipment                                                                                                                                                                                                                                               | Test Used in with Clause Reference                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1      | i. Micrometer<br>ii. Vernier Calliper<br>iii. Measuring Tape<br>iv. Straight Edge<br>v. Feeler Gauge<br>vi. Weighing Scale                                                                                                                                   | Shape and Sizes Cl 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 2      | <b>Device for instrumental chemical analysis such as Optical Spectrometer with all requisite channels and Certified/Standard Reference Materials</b><br>OR<br><b>Chemicals and Reagents for Chemical method as per IS 504 for each element given below**</b> | <b>Chemical Composition</b><br>6.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| i)     | Copper                                                                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>• Dilute Sulphuric Acid</li> <li>• Hydrofluoric Acid</li> <li>• Hydrogen Sulphide Gas</li> <li>• Hydrogen Sulphide Wash Solution</li> <li>• Dilute Nitric Acid</li> <li>• Concentrated Ammonium Hydroxide</li> <li>• Dilute Ammonium Hydroxide Wash Solution</li> <li>• Citric Acid Solution</li> <li>• Sodium Diethyl-Dithiocarbamate Solution</li> <li>• Carbon Tetrachloride</li> <li>• Sodium Sulphate</li> <li>• Standard Copper Solution</li> <li>• Silica Basin</li> <li>• Analytical Balance</li> <li>• Ashless Paper Pulp</li> <li>• Filter Papers</li> <li>• Platinum Crucible</li> <li>• Heating Apparatus/Burner</li> <li>• Photometer</li> </ul> |
| ii)    | Silicon                                                                                                                                                                                                                                                      | <ul style="list-style-type: none"> <li>• Sodium Hydroxide Solution</li> <li>• Hydrogen Peroxide</li> <li>• Concentrated Sulphuric Acid</li> <li>• Sulphuric Acid-Perchloric Acid Mixture</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

|      |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      |           | <ul style="list-style-type: none"> <li>• Perchloric Acid Solution</li> <li>• Concentrated Nitric Acid</li> <li>• Sulphurous Acid</li> <li>• Dilute Sulphuric Acid</li> <li>• Concentrated Hydrochloric Acid</li> <li>• Ammonium Acetate Solution</li> <li>• Dilute Hydrochloric Acid-</li> <li>• Hydrofluoric Acid</li> <li>• Analytical Balance</li> <li>• Ashless Paper Pulp</li> <li>• Filter Papers</li> </ul>                                                                                                                                                                                                                                  |
| iii) | Iron      | <ul style="list-style-type: none"> <li>• Concentrated Sulphuric Acid</li> <li>• Concentrated Hydrochloric Acid</li> <li>• Concentrated Nitric Acid</li> <li>• Dilute Sulphuric Acid</li> <li>• Hydrofluoric Acid</li> <li>• Potassium Bisulphate</li> <li>• Hydrogen Sulphide Gas</li> <li>• Hydrogen Sulphide Wash Solution</li> <li>• Potassium Permanganate Solution</li> <li>• Potassium Thiocyanate Solution</li> <li>• Standard Titanous Chloride Solution</li> <li>• Analytical Balance</li> <li>• Platinum Crucible</li> <li>• Heating Apparatus/Burner</li> <li>• Magnet</li> <li>• Ashless Paper Pulp</li> <li>• Filter Papers</li> </ul> |
| iv)  | Manganese | <ul style="list-style-type: none"> <li>• Concentrated Nitric Acid</li> <li>• Sodium Bismuthate</li> <li>• Sulphurous Acid</li> <li>• Dilute Nitric Acid</li> <li>• Phosphoric Acid</li> <li>• Standard Ferrous Ammonium Sulphate Solution</li> <li>• Standard Sodium Oxalate Solution</li> <li>• Standard Potassium Permanganate Solution</li> <li>• Analytical Balance</li> <li>• Asbestos Gooch Crucible</li> <li>• Heating Apparatus/Burner</li> </ul>                                                                                                                                                                                           |
| v)   | Zinc      | <ul style="list-style-type: none"> <li>• Concentrated Sulphuric Acid</li> <li>• Concentrated Hydrochloric Acid</li> <li>• Dilute sulphuric acid</li> <li>• Hydrogen Sulphide gas</li> <li>• Hydrogen Sulphide Wash Solution</li> <li>• Tartaric Acid Solution</li> <li>• Concentrated ammonium hydroxide</li> </ul>                                                                                                                                                                                                                                                                                                                                 |

|      |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      |          | <ul style="list-style-type: none"> <li>• methyl red indicator solution</li> <li>• Formic Acid</li> <li>• Ammonium Sulphate</li> <li>• dilute hydrochloric acid</li> <li>• concentrated nitric acid</li> <li>• methylated spirit</li> <li>• mercuric potassium thiocyanate solution</li> <li>• Chloroform</li> <li>• Standard Zinc Solution</li> <li>• Standard Potassium Iodate Solution</li> <li>• Sintered-Glass Crucible</li> <li>• Drying Oven</li> <li>• Weighing Balance</li> <li>• Ashless Paper Pulp</li> <li>• Filter Papers</li> </ul> |
| vi)  | Titanium | <ul style="list-style-type: none"> <li>• Sodium Hydroxide Solution</li> <li>• Nitric Acid-Sulphuric Acid Mixture</li> <li>• Dilute Sulphuric Acid</li> <li>• Hydrogen Peroxide</li> <li>• Standard Titanium Solution</li> <li>• Filter Papers</li> <li>• Weighing Balance</li> <li>• Heating Apparatus/Burner</li> </ul>                                                                                                                                                                                                                         |
| vii) | Vanadium | <ul style="list-style-type: none"> <li>• Potassium Permanganate</li> <li>• N-Cinnamylol 1-N Phenyl Hydroxalmine (CPHA)</li> <li>• Dilute Hydrochloric Acid</li> <li>• Hydrochloric Acid</li> <li>• Chloroform</li> <li>• Dilute Sulphuric Acid</li> <li>• Standard Vanadium Solution</li> <li>• Filter Papers</li> <li>• Hot Plate</li> <li>• Weighing Balance</li> <li>• Heating Apparatus/Burner</li> </ul>                                                                                                                                    |

*The above list is indicative only and may not be treated as exhaustive*

**ANNEXURE C**  
**TO PRODUCT MANUAL FOR**  
**Specification for Primary Aluminum Ingots**  
**for remelting for general engineering**  
**purposes as per IS 2590:1987**  
**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. STANDARD MARK** - The Standard Mark as given in the Schedule of the license and Licence Number (i.e. CM/L ..... ) shall be incorporated, and the marking shall be done as per the provisions of the Indian Standard, provided always that the product thus marked conforms to all the requirement of the specification.

**4. CONTROL UNIT** - All Aluminum Ingots representing the same cast, grade and manufactured under the uniform conditions of production in the same place shall constitute a control unit.

**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 2590:1987 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**  
**Specification for Primary Aluminum Ingots for remelting for general engineering purposes as per IS**  
**2590:1987**

**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                                                                                                                   |                            |                                                                                                                                                       |           |         |
| 5.1          | Chemical Composition ofingots |             | IS 2590 & <del>IS 504</del> /IS 504(Part 1 to 12) and (Part 13 to 16)<br>Any other established chemical/instrumental method | R                          | One                                                                                                                                                   | Each cast | -----   |
| 7.           | Shapesand Sizes               | 7.1         | IS 2590, 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.

**ANNEXURE I**

(Para 7 of the Scheme of Inspection and Testing)

XYZ Company

(Registered office Address and works address)

BIS  
STANDARD  
MARK**TEST CERTIFICATE FOR Primary Aluminium Ingots for remelting for general engineering purposes**

TEST CERTIFICATE No. \_\_\_\_\_

DATE \_\_\_\_\_

To M/s \_\_\_\_\_

We certified that the material described below fully conforms to 2590:1987 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 2590:1987 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 | % Zn | % Ti + V | % Other elements | Shape, Size and dimensions |         |

REMARKS

WAGON NO.

TRUCK NO.

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

FOR XYZ COMPANY