
**Aluminium and aluminium alloys —
Alloyed ingots for remelting —
Specifications**

*Aluminium et alliages d'aluminium — Lingots pour refusion en
aluminium allié — Spécifications*

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO 17615:2007

<https://standards.iteh.ai/catalog/standards/sist/2ba301b7-bd8c-463b-90c4-d0c07f126f85/iso-17615-2007>



PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[ISO 17615:2007](https://standards.iteh.ai/catalog/standards/sist/2ba301b7-bd8c-463b-90c4-d0c07f126f85/iso-17615-2007)

<https://standards.iteh.ai/catalog/standards/sist/2ba301b7-bd8c-463b-90c4-d0c07f126f85/iso-17615-2007>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2007

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword.....	iv
1 Scope	1
2 Terms and definitions	1
3 Ordering information	2
4 Requirements	2
4.1 Production and manufacturing processes	2
4.2 Quality control	2
4.3 Chemical composition	2
4.4 Quality	3
4.5 Form of products	3
5 Product inspection and test methods	3
5.1 Analysis of chemical composition	3
5.2 Chemical composition limits	4
6 Inspection documents	4
7 Marking of products	4
8 Packaging	4
9 Delivery documents	4
10 Complaints	5
Annex A (normative) Rules for expressing the designation and chemical composition of alloyed ingots for remelting	9
Annex B (informative) Comparison between cast aluminium alloy designations	11
Bibliography	12

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 17615 was prepared by Technical Committee ISO/TC 79, *Light metals and their alloys*, Subcommittee SC 7, *Aluminium and cast aluminium alloys*.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[ISO 17615:2007](https://standards.iteh.ai/catalog/standards/sist/2ba301b7-bd8c-463b-90c4-d0c07f126f85/iso-17615-2007)

<https://standards.iteh.ai/catalog/standards/sist/2ba301b7-bd8c-463b-90c4-d0c07f126f85/iso-17615-2007>

Aluminium and aluminium alloys — Alloyed ingots for remelting — Specifications

1 Scope

This International Standard defines the requirements for grades of alloyed aluminium ingots intended for remelting.

It specifies the classifications and designations applicable to these grades, the conditions in which they are produced, their properties and the required identification marking.

This International Standard does not address the issue of radioactivity.

Certain elements, such as Pb, Hg, Cr6 and Cd, may be subject to restrictions.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

2.1

alloying element

metallic or non-metallic element whose content lies within specific upper and lower limits for the purpose of giving the resulting alloy specific properties

2.2

impurity

metallic or non-metallic element present but which is not intentionally added to a base metal and for which no lower limit is specified

2.3

casting alloy

alloy primarily intended for the production of castings

2.4

ingot for remelting

metal cast into a form suitable for remelting, which has been processed, as appropriate, to adjust the chemical composition and to control certain metallic or non-metallic impurities

2.5

casting

general term for products at or near finished shape, formed by solidification of a metal or alloy in a mould

2.6

melt

quantity of liquid metal that has simultaneously undergone the same preparatory treatment in the furnace before the casting operation

**2.7
bundle**

collection of ingots taken from one or more batches and secured, for example by banding, for the purposes of handling, shipment and storage

**2.8
heat
cast**

quantity of products cast simultaneously from the same melt

NOTE 1 This term is not used for casting.

NOTE 2 The different ingots of a cast can have different dimensions.

3 Ordering information

The purchase order shall define the product required and shall contain the following information:

- a) designation of the aluminium alloy according to this International Standard (or the purchaser code after agreement between the supplier and the purchaser);
- b) form and approximate shape of the product;
- c) quantity:
 - mass (in metric tonnes);
 - tolerances on quantity, if required;
- d) any requirements for certificates of conformance, test and/or analysis reports or inspection certificates;
- e) any additional requirements agreed between the supplier and the purchaser, such as metallurgical structure, samples, delivery details, etc.

ITeh STANDARD PREVIEW
(standards.iteh.ai)

ISO 17615:2007

https://standards.iteh.ai/catalog/standards/sist/210211/iso-17615-2007
d0c07f126f85/iso-17615-2007

4 Requirements

4.1 Production and manufacturing processes

Unless otherwise specified in the order, the production and manufacturing processes shall be at the discretion of the producer.

Unless it is explicitly stated in the order, no obligation shall be placed on the producer to use the same processes for subsequent similar orders. However, the supplier should inform the purchaser of any change that may affect the quality of the ingots or the final products.

4.2 Quality control

The supplier shall be responsible for carrying out all inspection and tests required by the relevant International Standard and/or the particular specification prior to shipment of the product. If the purchaser wishes to inspect the product at the supplier's works, he shall stipulate this at the time of placing the order.

4.3 Chemical composition

The alloy shall be in accordance with the designations and chemical composition given in Table 1, and/or equivalent designations as per Annex A.

If the purchaser requires chemical composition limits for elements not specified in the above International Standard, these limits shall be stated on the order, after agreement between supplier and purchaser.

4.4 Quality

To a degree agreed between supplier and purchaser, the ingots shall be reasonably free from:

- a) visible surface contamination (such as grease, dirt, products of corrosion, dross or any other foreign material, including paint) apart from that which is approved for marking purposes;
- b) metallic or non-metallic inclusions;
- c) gas porosity.

The ingots can have shrinkage holes or cracks, which might retain water. They shall therefore be thoroughly dried and preheated before coming in contact with liquid metal to avoid the risk of a violent explosion.

4.5 Form of products

Ingots may have several possible shapes, for example:

- trapezoidal which can be stacked. This type of ingot may have one or more notches to enable it to be divided into pieces if required;
- continuously cast material;
- other shapes.

The dimensions and tolerances on dimensions of the ingots and bundles, and the tolerances on the unit masses, shall be agreed between supplier and purchaser at the time of ordering, and stated in the purchase order.

iTeh STANDARD PREVIEW
(standards.itih.ai)

<https://standards.itih.ai/catalog/standards/sist/2ba301b7-bd8c-463b-90c4-d0c071126185/iso-17615-2007>

5 Product inspection and test methods

5.1 Analysis of chemical composition

Sampling procedures and analytical tests shall be carried out in accordance with agreed quality assurance procedures. The results shall be traceable to standard reference materials. The capability of the analytical procedures shall be verified and recorded.

The melt shall be clearly identified with a traceable number. For chemical analysis, the sample and the sampling procedures and conditions shall be so designed that they are representative of the melt being cast. The analytical samples shall be taken during the cast from the metal distribution system. At least two samples shall be taken, one from the beginning and one from the end of every melt, unless otherwise agreed between the manufacturer and the purchaser, in which case the procedure shall be designed to produce samples representative of the melts.

When analysed by emission spectrometry, each analytical sample shall be suitably machined and shall be analysed using at least two sparks. The analysis result shall be the arithmetic mean of the individual results.

Each sample shall meet the specified composition limits. The analysis of the melt shall be the arithmetic mean of all the samples taken from this melt.

The producer shall determine and periodically check the analytical accuracy for each element analysed. The producer shall be able to demonstrate the validity of the whole test procedure, including sampling, sample preparation and measurement.

The analytical methods are at the discretion of the producer, who shall use methods accepted at the international level.

5.2 Chemical composition limits

In Table 1, composition is expressed as mass fraction (percent); The values given are maximum limits, unless shown as a range or otherwise.

6 Inspection documents

The producer shall supply the grade of aluminium alloy quoted on the order. By agreement between the supplier and the purchaser or when specified on the order, the consignment shall be accompanied by a certificate listing the results of the analysis of the chemical elements noted in Table 1 and any other element that has been requested in advance.

7 Marking of products

Unless otherwise indicated on the order, each unit (i.e. bundle of ingots, T-bar or sow) shall bear one or more marks which indicate the following:

- the producer identification;
- the alloy designation;
- the melt number;
- the mass of the unit.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

The method of marking is at the discretion of the supplier, but it shall be sufficiently weatherproof and shall not be a source of contamination.

ISO 17615:2007

Each unit shall carry a warning of the risk of explosion when ingots contact liquid metal without first being properly dried (see 5.4).

<https://standards.iteh.ai/catalog/standards/sist/2ba301b7-bd8c-463b-90c4-d0c071126185/iso-17615-2007>

8 Packaging

Small ingots shall be gathered together in bundles, the mass of which generally should not exceed one tonne.

Each bundle shall originate from only one heat.

The packaging shall be sufficiently strong for the bundle to be handled without breakage.

9 Delivery documents

The delivery documents shall accompany the delivery and include:

- the producer identification;
- the order number;
- the alloy designation;
- the melt number(s);
- the results of chemical analysis for all elements for which specific limits are given in Table 1, in the same sequence as given in the table;

- the mass of each unit and the total mass delivered;
- the form of the product (shape of the supplied ingot).

10 Complaints

The chemical composition or physical condition of the delivered product may give rise to complaints if it affects the processing or the end use of the relevant finished product.

The purchaser shall enable the supplier to check the basis of the complaint. The purchaser shall provide at least one of the following:

- a piece of the ingot(s) in question, with complete identification;
- a specimen showing the objectionable conditions of the semi-finished or final product that has been fabricated from the relevant ingot(s), together with information which gives evidence of a relationship between the objectionable condition and the ingot(s), and details about the fabrication conditions and intermediate controls.

It should be noted that the direct spectrographic analysis of ingot slices can give rise to inaccuracy due to segregation. The sampling and analysis methods shall be agreed between supplier and purchaser.

In case of dispute concerning conformity with the requirements of this International Standard or the specification stated on the order, examinations and tests shall be performed by a referee laboratory chosen by mutual agreement between supplier and purchaser.

An arbitrator shall be appointed by mutual agreement between the supplier and the purchaser.

The arbitrator's decision should be final. [ISO 17615:2007
https://standards.iteh.ai/catalog/standards/sist/2ba301b7-bd8c-463b-90c4-d0c07f126f85/iso-17615-2007](https://standards.iteh.ai/catalog/standards/sist/2ba301b7-bd8c-463b-90c4-d0c07f126f85/iso-17615-2007)