SLOVENSKI STANDARD
SIST EN 1676:1998

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Aluminij in aluminijeve zlitine - Legirani polizdelki za pretaljevanje - Specifikacije

Aluminium and aluminium alloys - Alloyed ingots for remelting - Specifications

Aluminium and Aluminiumlegierungen - Legiertes Aluminium in Masseln - Spezifikationen

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

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English version

Aluminium and aluminium alloys - Alloyed ingots for remelting - Specifications

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

Aluminium und Aluminiumlegierungen - Legiertes Aluminium in Masseln - Spezifikationen

This European Standard was approved by CEN on 1996-10-25. CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

The European Standards exist in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 132 "Aluminium and aluminium alloys", the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 1997, and conflicting national standards shall be withdrawn at the latest by May 1997.

Within its programme of work, Technical Commitee CEN/TC 132 entrusted CEN/TC 132/WG 1 "Liquid metal, unalloyed and alloyed ingots" to prepare the following standard:

prEN 1676	Aluminium and aluminium alloys - Alloyed ingots for remelting - Specifications.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European 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 marks by which they are identified.

2 Normative references

This European Standard incorporates by dated and undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies.

EN 1780-1	Aluminium and aluminium alloys - Designation of unalloyed and alloyed aluminium ingots for remelting, master alloys and castings - Part 1 : Numerical designation system
EN 1780-2	Aluminium and aluminium alloys - Designation of unalloyed and alloyed aluminium ingots for remelting, master alloys and castings - Part 2 : Chemical symbol based designation system
EN 1780-3	Aluminium and aluminium alloys - Designation of unalloyed and alloyed aluminium ingots for remelting, master alloys and castings - Part 3 : Writing rules for chemical composition
EN ISO 9000-1	Quality management and quality assurance standards - Part 1 : Guidelines for selection and use (ISO 9000-1:1994)

3 Definitions

For the purposes of this standard, the following definitions apply :

3.1 alloy : Metallic substance of a mixture of the basic metallic element (the element predominating by mass) and other elements such as alloying elements and impurities.

3.2 alloying element : Metallic or non-metallic element intentionally added to, or naturally contained by, a basic metal and the amount of which is controlled within specific upper and lower limits for the purpose of giving that metal certain special properties.

3.3 impurity : Metallic or non-metallic element present but which is not intentionally added to a metal and for which no lower limit is specified.

3.4 casting alloy : Alloy primarily intended for the production of castings.

3.5 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.

3.6 casting : General term for products at or near finished shape, formed by solidification in a mould.

3.7 melt : Quantity of liquid metal that has simultaneously undergone the same preparatory treatment in the furnace before the casting operation.

4 Orders or tenders

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

a) designation of the aluminium alloy according to this European Standard (or the purchaser code after agreement between the supplier and the purchaser) ;

b) form of the product ;

c) quantity :

- mass (in metric tonnes) ;

- tolerance quantity if required ;

d) any requirements for Certificates of Conformity, 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.

5 Requirements

5.1 Production and manufacturing processes

Unless otherwise specified in the order, the production and manufacturing processes shall be left to 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 and similar orders. However, the supplier should inform the purchaser of any change which may affect the quality of the ingots or the final products.

5.2 Quality control

The supplier shall be responsible for carrying out all inspection and tests required by the relevant European 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.

5.3 Chemical composition

Each grade of alloyed aluminium ingot for remelting shall be in accordance with the designations and chemical composition specified in Table 1.

The writing rules for designations and chemical compositions, as specified in EN 1780-1, EN 1780-2 and EN 1780-3, shall be applied.

If the purchaser requires content limits for elements not specified in this standard, these limits shall be stated on the order, after agreement between supplier and purchaser.

5.4 Freedom from defects

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

a) visible defects such as grease, dirt, products of corrosion, dross or any other foreign bodies, 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 can 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.

5.5 Form of products

There are several possible shapes of ingots, e. g. :

- 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 ;

- continously cast material ;

- T, U, sow etc shape.

The dimensions and tolerances on dimensions of the ingots and bundles and the variations on the units masses shall be agreed between supplier and purchaser at the time of ordering.

6 Product inspection and testing methods

6.1 Analysis of chemical composition

Sampling procedures and analytical test shall be carried out in accordance with quality assurance procedures (see EN ISO 9000-1). The results shall be traceable to reference samples. The capability of the analytical procedures shall be verified.

The melt shall be clearly identified with a traceable number. The shape of the samples and the sampling conditions for chemical analysis 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.

When analysed by emission spectrometry, each analytical sample shall be suitabily machined and, when analysed by emission spectrometry, shall be analysed at least twice. 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 of each element analysed. He 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 European or international levels.

6.2 Chemical composition limits

The composition in Table 1 is given in percentage by mass. Figure are a maximum unless a minimum is also shown.

7 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 which may have been requested in advance.

8 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 will show the following :

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

The method of marking is left to the discretion of the supplier, but it shall be sufficiently wea ther proof and shall not be a source of contamination.

It is recommended that each unit, carries a warning about the risk of explosion when getting in contact with liquid metal without first being properly dried (see 5.4).