



SLOVENSKI STANDARD

SIST EN 576:1998

01-april-1998

Aluminij in aluminijeve zlitine - Nelegirani aluminijevi ingoti za pretaljevanje - Specifikacije

Aluminium and aluminium alloys - Unalloyed aluminium ingots for remelting -
Specifications

Aluminium und Aluminiumlegierungen - Unlegiertes Aluminium in Masseln -
Spezifikationen

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

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Aluminijski izdelki

Aluminium products

SIST EN 576:1998

en

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EUROPEAN STANDARD

EN 576

NORME EUROPÉENNE

EUROPÄISCHE NORM

July 1995

ICS 77.120.10

Descriptors: aluminium, non-alloyed aluminium, ingots, grades : quality, chemical composition, designation, classifications, specifications, inspection, packing, marking

English version

Aluminium and aluminium alloys - Unalloyed aluminium ingots for remelting - Specifications

Aluminium et alliages d'aluminium - Lingots - Aluminium und Aluminiumlegierungen -
pour refusion en aluminium non allié - Unlegiertes Aluminium in Massen -
Spécifications (standards.iteh.ai) Spezifikationen

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This European Standard was approved by CEN on 1995-06-03. 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.

CEN members are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

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

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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Foreword

This European Standard has been prepared by the Technical Committee CEN/TC 132 "Aluminium and aluminium alloys" of which the secretariat 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 January 1996, and conflicting national standards shall be withdrawn at the latest by January 1996.

According to the CEN/CENELEC Internal Regulations, 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, United Kingdom.

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1 Scope

This European Standard specifies the requirements for grades of unalloyed and refined 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.

- | | |
|---------------|--|
| prEN 1780-1 | Aluminium and aluminium alloys - Designation of unalloyed and alloyed aluminium ingots for remelting, master alloys and castings - Part 1 : Numerical designation system |
| prEN 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 |
| prEN 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 aluminium

Metal with a minimum content of 99,0 % by mass of aluminium, provided that the content by mass of any other element does not exceed the following limits :

- iron + Silicon contents not greater than 1,0 % ;
- other element contents not greater than 0,10 % each, with the exception of copper which is permitted to a content of up to 0,20 % provided that neither the chromium nor the manganese content exceeds 0,05 %.

NOTE: Aluminium in the liquid state or in the form of ingots for remelting is often called "unalloyed aluminium".

3.2 refined aluminium

Aluminium of very high purity (conventional aluminium content : 99,95 % by mass and more) which is obtained by special metallurgical treatments.

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 ingot for remelting

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

4 Orders or tenders

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

- a)** designation of the unalloyed or refined aluminium according to this European Standard or the customer code after agreement between supplier and purchaser) ;
- b)** form of the product : [SIST EN 576:1998](https://standards.iteh.ai/catalog/standards/sist/65ded03d-6049-41e4-87aa-ba9aa27f7dc/sist-en-576-1998)
- c)** quantity :
- mass (in metric tonnes) ;
 - quantity tolerances if required ;
- d)** any requirements for certificates of conformity, test and/or analysis reports or inspection certificates ;
- e)** any additional requirements agreed between supplier and purchaser.

5 Requirements

5.1 Production and manufacturing processes

Unless otherwise specified on the order, the production and manufacturing processes shall be left to the discretion of the producer.

Unless it is explicitly stated on the order, no obligation shall be placed on the producer to use the same processes for subsequent and similar orders.

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 unalloyed aluminium for general applications shall be in accordance with the designations and chemical composition given in table 1.

Each grade of unalloyed aluminium for specific application shall be in accordance with the designations and chemical composition given in table 2.

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

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

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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 may have shrinkage holes or cracks which may retain water. They shall therefore be thoroughly dried and preheated before charging to a furnace 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 ;
- T, U, sow, etc. shapes.

The tolerances of the unit masses, the shape, the dimensions and the dimensional tolerances of the ingots and bundles shall be defined by agreement 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 tests shall be carried out in accordance with quality assurance procedures (see EN ISO 9000-1). The results shall be traceable to national or international standard reference materials. 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, from the beginning and end of every melt.

Each analytical sample shall be suitably machined and, when analysed by emission spectrometry, shall be sparked at least twice. The analysis of the sample is the arithmetic mean of the sparks.

Each sample shall meet the specified composition limits and the analysis of the melt is 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 supplier who shall use methods accepted at the European or International levels.

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6.2 Chemical composition limits

The compositions shown in table 1 and table 2 are given in mass percent maximum unless otherwise stated.

In interpreting the results of chemical analysis, the number representing the result of the determination of an element content shall be rounded to the same number of decimal places as the corresponding number in this standard.

6.3 Special analytical requirements

Sodium and lithium impurities can cause severe problems on casting, rolling and the quality of some special products and it is strongly recommended that the producer of the ingots analyses these elements and indicates the results (in mass percent to 4 decimals) on the certificate of analysis.

For these elements and for other impurities that can cause similar problems, the limits may be defined by agreement between supplier and purchaser.