SLOVENSKI STANDARD
SIST EN 486:2009

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Nadomeġļa:
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Aluminij in aluminijeve zlitine - Drogovi za iztiskovanje - Specifikacije

Aluminium and aluminium alloys - Extrusion ingots - Specifications

Aluminium und Aluminiumlegierungen - Pressbarren - Spezifikationen

Aluminium et alliages d'aluminium - Billettes de filage - Spécifications

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Aluminium and aluminium alloys - Extrusion ingots - Specifications

Aluminium et alliages d'aluminium - Billettes de filage - Spécifications

Aluminium und Aluminiumlegierungen - Pressbarren - Spezifikationen

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 486:2009) 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of an identical text or by endorsement, at the latest by February 2010, and conflicting national standards shall be withdrawn at the latest by February 2010.

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

This document supersedes EN 486:1993.

Within its programme of work, Technical Committee CEN/TC 132 entrusted CEN/TC 132/WG 2 "Extrusion billets and rolling ingots" to revise EN 486:1993.

CEN/TC 132 affirms its policy that in the case when a patentee refuses to grant licences on standardised standard products under reasonable and not discriminatory conditions, then this product shall be removed from the corresponding standard.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European Standard specifies the general requirements to be met by extrusion ingots of aluminium and aluminium alloys obtained by semi-continuous or continuous casting, from primary or recycled metal, for general engineering applications.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 573-1, *Aluminium and aluminium alloys — Chemical composition and form of wrought products — Part 1: Numerical designation system*

EN 573-2, *Aluminium and aluminium alloys — Chemical composition and form of wrought products — Part 2: Chemical symbol based designation system*

EN 573-3, *Aluminium and aluminium alloys — Chemical composition and form of wrought products — Part 3: Chemical composition*

EN 10204, *Metallic products — Types of inspection documents*

EN 12258-1:1998, *Aluminium and aluminium alloys — Terms and definitions — Part 1: General terms*

EN 14242, *Aluminium and aluminium alloys — Chemical analysis — Inductively coupled plasma optical emission spectral analysis*

EN 14726, *Aluminium and aluminium alloys — Chemical analysis — Guideline for spark optical emission spectrometric analysis*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12258-1:1998 and the following apply.

3.1
heat
quantity of liquid metal that has simultaneously undergone the same preparatory treatment in the furnace before the casting operation

3.2
bundle
set of ingots held together by suitable means for their transport

4 Ordering information

The ordering information shall define the product required and shall contain the following:

a) the form of the product (extrusion ingot);

b) the designation of the aluminium or aluminium alloy according to EN 573-1 and EN 573-2 (or the purchaser alloy designation after agreement between supplier and purchaser). Tighter limits than the composition limits stated in EN 573-3 may be specified as required;

c) whether as cast or homogenized; the word "homogenized" can be replaced by the abbreviation "HO". Other abbreviations shall be agreed between the supplier and the purchaser;

d) the number of this European standard;

e) the nominal dimensions of the product (i.e. diameter and length) expressed in millimetres. For hollow ingots and ingots other than round, dimensions and tolerances shall be given with reference to a drawing;

f) quantity:

   1) mass (in metric tonnes);

   2) quantity tolerances if required;

g) any requirements for inspection documents (see Clause 7);

h) any additional requirements agreed between supplier and purchaser.

5 Requirements

5.1 Production and manufacturing processes

If no special requirement has been agreed between supplier and purchaser, the manufacturing process, including homogenizing, is the manufacturer's responsibility.

In the case of special requirements, it is recommended that trial quantities be produced to confirm that requirements are met. It is also recommended that the purchaser asks the manufacturer to advise of any significant change in the manufacturing processes which may affect the quality of the final product.

It is recommended that a quality assurance system be implemented as described in EN ISO 9000 and EN ISO 9004.

5.2 Chemical composition

The chemical composition of the ingots shall conform to the compositions specified in EN 573-3. It should preferably conform to the numerical designation.

5.3 Surface and internal quality

Extrusion ingots shall:

a) be free of casting surface defects, handling marks, oil, dirt and corrosion;

b) be free of inclusions, porosity and cracks;

c) have a suitable metallurgical structure;

to a standard suitable for extrusion and subsequent processing.

Unless otherwise agreed between purchaser and supplier, the grain size is not guaranteed.

5.4 Tolerances on dimensions

5.4.1 Diameter (round ingots)

The measurements shall be taken at the two sawn ends, on two diameters 90° apart.

The tolerance on the nominal diameter is:

a) $^{0}_{-2}$ mm for ingot diameters not larger than 200 mm;

b) $^{0}_{-3}$ mm for ingot diameters larger than 200 mm and not larger than 400 mm;

c) $^{0}_{-4}$ mm for ingot diameters larger than or equal to 400 mm.

5.4.2 Length

The length is measured overall after sawing.

The tolerance is:

a) ± 3 mm for ingot lengths not longer than 1 200 mm;

b) ± 15 mm for ingot lengths longer than 1 200 mm.

5.4.3 Squareness

Sawn ends of extrusion ingots shall be square to ± 0,5°.

5.4.4 Straightness

The deflection, measured as arrow height on the centre of the curvature side, shall be less than 3 mm per metre with a maximum of 15 mm over the full length of the ingot.

5.4.5 Other dimensions

For hollow ingots and ingots other than round, tolerances shall comply with the specifications in the order.

6 Test procedures

6.1 Analysis of chemical composition

The analytical samples shall be taken at the discretion of the manufacturer who shall use methods accepted at European level, EN 14242 and EN 14726, or at International level.

The analytical samples shall be taken during the cast, from the metal distribution system, after the grain refiner addition (if any).

The analytical samples shall be suitably machined and when analysed by emission spectrometry, shall be subject to at least two determinations. The sample result is the arithmetic mean of the determinations.

The final result is the arithmetic mean of the results of the taken samples.

For cast acceptance, each sample shall meet the specified composition limits.

The manufacturer shall use analytical methods standardized at European or International level. The choice of appropriate methods is at the discretion of the manufacturer.

6.2 Homogenizing treatment

The homogenizing treatment is generally required.

The manufacturer shall take suitable measures to guarantee the quality and reproducibility of homogenizing, especially by:

a) periodic inspection and testing of the treated metal;

b) periodic checks of the actual temperature of the ingots during treatment;

c) adoption of procedures to achieve satisfactory reproducibility of the treatment.

The homogenizing treatment shall be closely monitored by the manufacturer's quality control system.

6.3 Other tests

If required, other tests should be specified in the order after agreement between supplier and purchaser.

7 Inspection documents

7.1 Certificate of mass and analysis

The supplier shall provide with each delivery a certificate of mass and analysis, which shall contain the following information:

a) the name and address of the supplying company and the name of the manufacturing plant;

b) the name and address of the purchaser;

c) the description of the product as described in 4a), 4b), 4c) and 4e);

d) the cast numbers, the number of extrusion ingots of each cast and, for each cast, the actual analysis of the elements (silicon, iron, copper, manganese, magnesium, chromium, zinc, titanium and other elements specified in EN 573-3 or required in the order) in the sequence given in EN 573-3;

NOTE Horizontal casting of extrusion ingot may comprise several heats per cast. In this case, the above information should be supplied for each heat.

e) the total delivered net mass.

7.2 Inspection certificate

Unless otherwise indicated in the order, the supplier shall deliver an inspection certificate 3.1 according to EN 10204 with at least the result of chemical analysis.

8 Marking