SLOVENSKI STANDARD
SIST EN 487:2009

01-oktober-2009

Nadomeġļa:
SIST EN 487:1998

Aluminij in aluminijeve zlitine - Brame za valjanje - Specifikacije

Aluminium and aluminium alloys - Rolling ingots - Specifications

Aluminium und Aluminiumlegierungen - Walzbarren - Spezifikationen

Aluminium et alliages d'aluminium - Plaques de laminage - Spécifications

Ta slovenski standard je istoveten z: EN 487:2009

ICS:

77.150.10	Aluminijski izdelki	Aluminium products

SIST EN 487:2009 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 487

August 2009

ICS 77.150.10

Supersedes EN 487:1993

English Version

Aluminium and aluminium alloys - Rolling ingots - Specifications

Aluminium et alliages d'aluminium - Plaques de laminage - Spécifications

Aluminium und Aluminiumlegierungen - Walzbarren - 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 487:2009) 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of an identical text or by endorsement, at the latest by February 2010, and conflicting national standards shall be withdrawn at the latest by February 2010.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 487:1993.

Within its programme of work, Technical Committee CEN/TC 132 entrusted CEN/TC 132/WG 2 "Extrusion billets and rolling ingots" to revise EN 487:1993.

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 rolling ingots of aluminium or aluminium alloys obtained by semi-continuous vertical casting.

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

4 Ordering information

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

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

b) the designation of the aluminium or aluminium alloy according to EN 573-1 and 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 homogenizing parameters should be agreed between the supplier and the purchaser;

d) the number of this European Standard;

e) the dimensions and shape of the product:

1) nominal thickness (expressed in millimetres);

2) nominal width (expressed in millimetres);

3) nominal length and tolerance if different from standard (expressed in millimetres);

4) cross sectional profile details or drawing number (expressed in millimetres);

f) sawing code (see 5.6.4);

g) whether rolling ingots are to be supplied scalped or not;

h) whether the rolling ingots are scalped or not before hot rolling;

i) end use (e.g. foil, packaging) (see 5.1);

j) quantity:

1) mass (in metric tonnes) or number of pieces;

2) quantity tolerances if required;

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

l) any additional requirements agreed between supplier and purchaser (see Clause 7).

5 Requirements

5.1 Production and manufacturing processes

The product requirements as formulated in this clause normally are not sufficient for rolling ingots to meet the purchaser's requirements for rolled products. Therefore, the purchaser shall give the manufacturer full details concerning the end use requirements, so that the manufacturing conditions of the manufacturer may best be adjusted to fulfil the requirements.

It is recommended that trial quantities be produced to confirm that the end use 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 is recommended that tighter composition limits than those given in EN 573-3 be agreed between purchaser and supplier as required.

Control of alkali metals and other specific trace elements is recommended:

a) sodium and calcium for magnesium alloys;

b) lithium for foil end use alloys;

c) beryllium.

The maximum hydrogen content and the related measuring method should be agreed between supplier and purchaser.

5.3 Surface and internal quality

To be suitable for rolling, after scalping or not as required, and subsequent processing, rolling ingots shall:

a) have low level of casting surface defects, protruding metal, handling marks, oil, dirt and corrosion;

b) have low level of inclusions, porosity, shrinkage cavities and cracks;

c) have a suitable metallurgical structure (e.g. grain size, shell zone depth, fir-tree structure).

The level of quality should be agreed between purchaser and supplier.

5.4 Tolerances on dimensions

5.4.1 Cross-section

The shape of the cross-section is left to the discretion of the purchaser, who shall give the supplier a dimensional drawing.

5.4.2 Thickness

The thickness is measured on both sides of the ingot at a distance of 100 mm from the edges. The tolerance on the thickness thus measured is ± 5 mm excluding (see Figure 1):

a) a distance from the bottom butt of the unsawn rolling ingot of 80 % of the nominal thickness (distance measured before sawing, if any);

NOTE For ingots more than 2 m wide, the distance is equal to the thickness.

b) a distance from the bottom end of the sawn rolling ingot of 50 % of the nominal thickness.

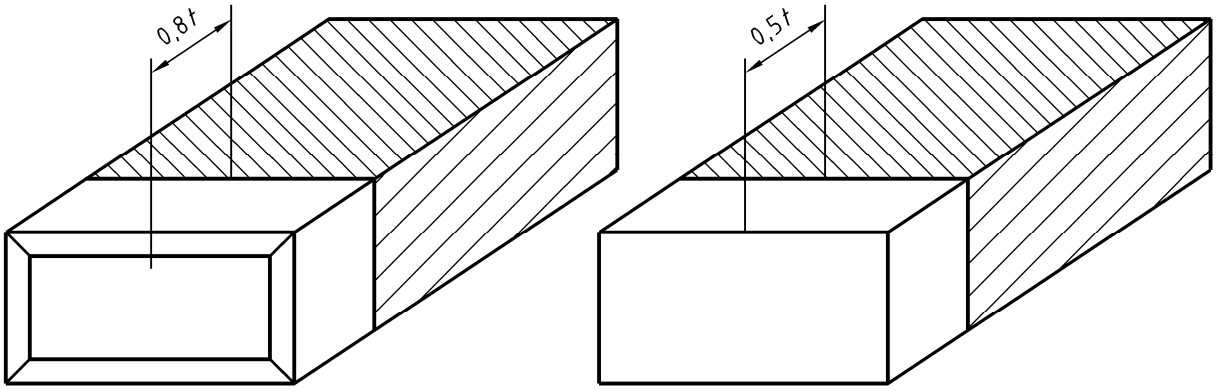
The tolerance on thickness in the zones defined above and measured at the centre of the cross-section is:

c) 4 % of the nominal thickness for sawn ingots;

d) to be agreed between the purchaser and the supplier for unsawn ingots.

Other tolerances and measuring positions can be specified between the supplier and the purchaser.

The difference between the thinnest and the thickest parts of the sawn ingot measured anywhere on the ingot at a distance greater than 100 mm from the edges shall not exceed 5 % of the nominal thickness.



a) Unsawn rolling ingot **b) Sawn rolling ingot**

Key

t nominal thickness

NOTE The hatching corresponds to the zone in which thickness, width and deflections are measured.

Figure 1 — Rolling ingot type

5.4.3 Width

The width is measured overall. The tolerance on width is $^{+10}_{0}$ mm excluding a distance from the bottom butt of the rolling ingot of 80 % of the nominal thickness (ingot with unsawn butt) or 50 % of the nominal thickness (ingot with sawn butt) (see Figure 1).

Other tolerances may be agreed between the purchaser and the supplier as required.

5.4.4 Length

The length is measured overall. The tolerance on length is:

a) ± 25 mm for sawn ingots;

b) ± 50 mm for unsawn ingots;

unless otherwise stated in the ordering information.

5.5 Tolerances of form

5.5.1 Lateral deflection

The lateral deflection is the deflection measured along an edge in the casting direction, at the middle of the edge.

The maximum permissible deflection on the length of the rolling ingot is 6 mm (see Figure 2).

5.5.2 Longitudinal deflection

The longitudinal deflection is the deflection measured along a rolling face in the casting direction, at 100 mm from one corner.