



# SLOVENSKI STANDARD

## SIST EN 12020-1:2022

01-maj-2022

Nadomešča:  
SIST EN 12020-1:2008

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### Aluminij in aluminijeve zlitine - Precizni iztiskani profili v zlitinah EN AW-6060 in EN AW-6063 - 1. del: Tehnični pogoji za pregled in dobavo

Aluminium and aluminium alloys - Extruded precision profiles in alloys EN AW-6060 and EN AW-6063 - Part 1: Technical conditions for inspection and delivery

Aluminium und Aluminiumlegierungen - Stranggepresste Präzisionsprofile aus Legierungen EN AW-6060 und EN AW-6063 - Teil 1: Technische Lieferbedingungen

Aluminium et alliages d'aluminium - Profils de précision filés en alliages EN AW-6060 et EN AW-6063 - Partie 1: Conditions techniques de contrôle et de livraison

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#### **ICS:**

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EUROPEAN STANDARD

EN 12020-1

NORME EUROPÉENNE

EUROPÄISCHE NORM

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ICS 77.150.10

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English Version

## Aluminium and aluminium alloys - Extruded precision profiles in alloys EN AW-6060 and EN AW-6063 - Part 1: Technical conditions for inspection and delivery

Aluminium et alliages d'aluminium - Profils de précision filés en alliages EN AW-6060 et EN AW-6063  
- Partie 1: Conditions techniques de contrôle et de livraison

Aluminium und Aluminiumlegierungen - Stranggepresste Präzisionsprofile aus Legierungen EN AW-6060 und EN AW-6063 - Teil 1: Technische Lieferbedingungen

This European Standard was approved by CEN on 31 January 2022.

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This European Standard exists 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 CEN-CENELEC Management Centre has the same status as the official versions.

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

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## European foreword

This document (EN 12020-1:2022) 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 September 2022, and conflicting national standards shall be withdrawn at the latest by September 2022.

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

This document supersedes EN 12020-1:2008.

The following technical modifications have been introduced during the revision:

- Modification of the scope.

The series EN 12020 comprises the following parts under the general title *Aluminium and aluminium alloys - Extruded precision profiles in alloys EN AW-6060 and EN AW-6063*:

- *Part 1: Technical conditions for inspection and delivery*
- *Part 2: Tolerances on dimensions and form*

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

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

## EN 12020-1:2022 (E)

## 1 Scope

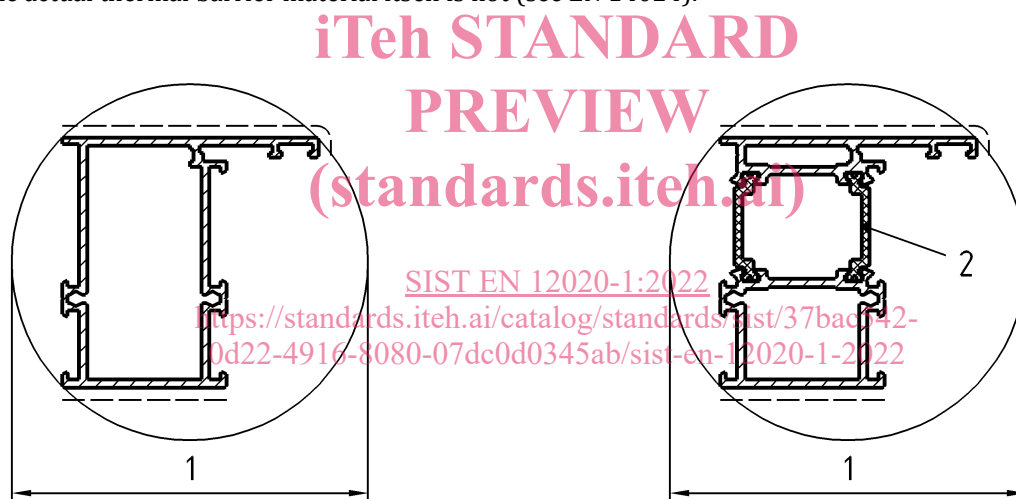
This document specifies technical conditions for inspection and delivery of alloys EN AW-6060 and EN AW-6063 extruded precision profiles manufactured with and without a thermal barrier (see Figures 1 and 2) and without further surface treatment.

Precision profiles for which this document is applicable are distinguished from extruded profiles for general applications covered in EN 755-9 by the following characteristics:

- they are designed with mostly uniform wall-thicknesses;
- they are mainly used for mechanical engineering, architectural and automotive (except crash-elements) applications;
- the maximum weight by meter is 10 kg/m;
- the max. wall-thickness proportion ( $t_{max}/t_{min}$ ) of 3,5.

In the case of profiles, which, due to the complexity of their design are difficult to manufacture and specify, then special agreements between supplier and purchaser may need to be reached.

NOTE The effect of the thermal barrier material on the dimensional tolerances is covered by EN 12020-2 although the actual thermal barrier material itself is not (see EN 14024).



### Key

1 CD maximum 350 mm

Figure 1 — Profile without thermal barrier

### Key

1 CD maximum 350 mm

2 thermal barriers

Figure 2 — Profile containing thermal barrier

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 573-3, *Aluminium and aluminium alloys - Chemical composition and form of wrought products - Part 3: Chemical composition and form of products*

EN 755-1, *Aluminium and aluminium alloys - Extruded rod/bar, tube and profiles - Part 1: Technical conditions for inspection and delivery*

EN 755-2, *Aluminium and aluminium alloys - Extruded rod/bar, tube and profiles - Part 2: Mechanical properties*

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

EN 12020-2, *Aluminium and aluminium alloys - Extruded precision profiles in alloys EN AW-6060 and EN AW-6063 - Part 2: Tolerances on dimensions and form*

EN 12206-1, *Paints and varnishes - Coating of aluminium and aluminium alloys for architectural purposes - Part 1: Coatings prepared from thermosetting coating powder*

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

EN 14361, *Aluminium and Aluminium alloys - Chemical analysis - Sampling from metal melts*

EN ISO 6506-1, *Metallic materials - Brinell hardness test - Part 1: Test method (ISO 6506-1)*

EN ISO 6892-1, *Metallic materials - Tensile testing - Part 1: Method of test at room temperature (ISO 6892-1)*

EN ISO 7599, *Anodizing of aluminium and its alloys - Method for specifying decorative and protective anodic oxidation coatings on aluminium (ISO 7599)*

### 3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

#### 3.1 order document

document or set of documents agreed between supplier and purchaser at the time of ordering

## 4 Ordering information

### 4.1 General

The order document shall contain the following:

- a) the designation of the aluminium alloy (EN AW-6060 or EN AW-6063);
- b) the temper of the material for delivery in accordance with EN 755-2. (The temper designations to be used are according to EN 515);
- c) the application, in particular, when surface treatment is intended; this shall be expressly stated on the order document;
- d) a reference to this document (EN 12020-1);

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- e) reference to a drawing specifying the product (see 4.2), cross sectional dimensions, mass per meter calculated on nominal section dimensions, surface requirements and any other relevant information;
- f) length:
- fixed or random;
  - for random lengths minimum and maximum shall be specified;
  - an allowance for process contact points of surface treatment may be necessary;
- g) quantity:
- mass or number of pieces or total length;
  - tolerance on quantity;
- h) special requirements:
- any special requirements agreed between the supplier and purchaser;
  - agreement on plane parallelism;
  - any requirement for inspection documents;
  - marking of products;
  - reference to other standards, if tolerances on dimensions and form differ from those specified in EN 12020-2;
  - additional or special testing;
  - installation length;
  - surface protection;
- i) packaging information:
- pack mass/size.

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**4.2 Reference to a drawing**

On the basis of the order document, the manufacturer shall prepare drawings, which are to be checked by the purchaser for accuracy, and approved, the profiles then being manufactured in strict accordance with the approved drawing.

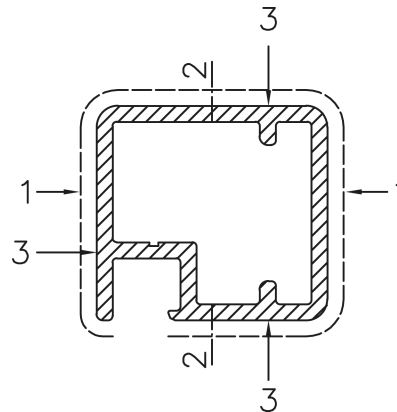
If for dimensions critical to function, tolerances other than those specified in this document are to be used, they shall be entered in the drawing adjacent to the associated nominal size. This also applies to the tolerances on form. Where profiles are intended for later assembly, it is recommended that the manufacturer is provided with a drawing giving appropriate details.

Where for manufacturing reasons weld lines are to be located on visible surfaces their position or approximate area of appearance should be indicated by the manufacturer on the drawing.

Visible surfaces shall be identified, indicating main and, if necessary, secondary order visible surfaces.



Figure 3 presents marking of visible surfaces of approximate area of appearance of weld lines and T-joint streaks.



#### Key

- 1 visible surface
- 2 area of probable appearance of weld lines
- 3 area of probable appearance of T-joint streaks

**Figure 3 — Marking of visible surfaces of approximate area of appearance of weld lines and T-joint streaks.**

For profiles intended for surface treatment, surfaces and areas that are to be so treated should be indicated on the drawing. If the outline of a profile is modified by machining, it is recommended that the final shape is also indicated.

## 5 Requirements

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### 5.1 Production and manufacturing processes

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Unless otherwise specified in the order document, the production and manufacturing processes shall be left to the discretion of the manufacturer. Unless it is explicitly stated in the order document, no obligation shall be placed on the manufacturer to use the same processes for subsequent or similar orders.

### 5.2 Quality control

All inspection and tests shall be carried out according to the relevant European Standard and/or the particular specification prior to shipment of the product. Potential inspection of the product at the manufacturer's works shall be notified at the time of placing the order.

### 5.3 Chemical composition limit

The chemical composition limit shall be in conformity with the requirements specified in EN 573-3.

If the purchaser requires closer limits for elements than those specified in the above standard, these limits shall be according to an agreement between supplier and purchaser and stated in the order document.

**EN 12020-1:2022 (E)****5.4 Mechanical properties**

The mechanical properties shall comply with the requirements of EN 755-2 or those agreed between supplier and purchaser and stated on the order document.

Hardness testing may be used for release purposes subject to agreement between supplier and purchaser.

**5.5 Freedom from surface defects**

The extruded visible surface shall be free from defects prejudicial to its suitable and proper use. Slight scoring and other minor defects are permissible providing that values of  $R_z$  of  $9\ \mu\text{m}$  or  $R_a$  of  $2\ \mu\text{m}$  are not exceeded when determined according to EN ISO 4287 and EN ISO 4288. Any discoloration or minor blemishes that are likely to be eliminated by the intended pretreatment for anodizing according to EN ISO 7599 or by painting according to EN 12206-1 shall be permitted.

Requirements on streaks and surface texture appearance on visible surfaces in mill finish, anodized and painted conditions shall be agreed between supplier and purchaser.

**5.6 Tolerances on dimensions and form**

Tolerances on dimensions and form shall be as specified in EN 12020-2.

**5.7 Section mass**

Specific mass per metre may vary within the minimum and maximum allowances of section dimensions as given in EN 12020-2, if not otherwise agreed between supplier and purchaser.

**6 Test procedures****6.1 Sampling****6.1.1 Samples for chemical analysis**

[SIST EN 12020-1:2022](https://standards.iteh.ai/catalog/standards/sist/37bac542-0122-4916-8989-0711-01034511/EN-12020-1:2022)

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Sampling shall be carried out at the time of casting according to EN 14361. The average content of each sample shall be within the specification for the chemical composition limits.

NOTE EN 14361 includes criteria on how to determine number, volume and shape of samples, about time and location of sampling and about the design and maintenance of the tools, in order to make sure that the average chemical composition of the sample is representative of the average chemical composition of the whole melt.

**6.1.2 Mechanical properties**

Specimens shall be taken from each sample according to EN 755-1.

If required, test pieces for tensile testing shall be prepared according to EN 755-1.

**6.2 Test methods****6.2.1 Chemical composition limit**

The ranges of application and the accuracy of the test procedure used shall be validated and proved by the supplier. In case of dispute concerning the chemical composition limits, referee analysis shall be carried out in accordance with EN 14242.

NOTE For the rapid determination of the chemical composition limit different spectral analysis methods are used (e.g. S-OES, XRF, GDOES). For S-OES see EN 14726.