



SLOVENSKI STANDARD

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Aluminium and aluminium alloys - Sheet, strip and plate - Part 1: Technical conditions for inspection and delivery

Aluminium und Aluminiumlegierungen - Bänder, Bleche und Platten - Teil 1: Technische Lieferbedingungen

Aluminium et alliages d'aluminium - Tôles, bandes et tôles épaisses - Partie 1: Conditions techniques de contrôle et de livraison

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This European Standard was approved by CEN on 1993-10-08. 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.

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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 was prepared by CEN/TC 132 "Aluminium and aluminium alloys", the secretariat of which is held by AFNOR.

Within its programme of work, Technical Committee CEN/TC 132 entrusted CEN/TC 132/WG 7 "Sheet, strip and plate" to work out the following standard :

EN 485-1 "Aluminium and aluminium alloys - Sheet, strip and plate - Part 1 : Technical conditions for inspection and delivery".

This standard is part of a set of four standards. The other standards deal with :

EN 485-2 "Aluminium and aluminium alloys - Sheet, strip and plate - Part 2 : Mechanical properties".

EN 485-3 "Aluminium and aluminium alloys - Sheet, strip and plate - Part 3 : Tolerances on dimensions and form for hot-rolled products".

EN 485-4 "Aluminium and aluminium alloys - Sheet, strip and plate - Part 4 : Tolerances on dimensions and form for cold-rolled products".

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 April 1994, and conflicting national standards shall be withdrawn at the latest by April 1994.

The Standard was approved and in accordance with 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 standard specifies the technical conditions for inspection and delivery of wrought aluminium and aluminium alloy sheet, strip and plate for general engineering applications.

It applies to products with a thickness over 0,20 mm up to and including 200 mm.

It does not apply to semi-finished rolled products in coiled form to be subjected to further rolling (reroll stock) or to special applications such as aerospace, can stock, finstock, etc. which are dealt with in separate European Standards.

2 Normative references

This European Standard incorporates by dated or 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 485 - 2	Aluminium and aluminium alloys - Sheet, strip and plate - Part 2 : Mechanical properties
EN 485 - 3	Aluminium and aluminium alloys - Sheet, strip and plate - Part 3 : Tolerances on dimensions and form for hot-rolled products
EN 485 - 4	Aluminium and aluminium alloys - Sheet, strip and plate - Part 4 : Tolerances on dimensions and form for cold-rolled products
EN 515	Aluminium and aluminium alloys - Wrought products - Temper designations
EN 573 - 3	Aluminium and aluminium alloys - Chemical composition and form of wrought products - Part 3 : Chemical composition
EN 2004 - 1	Aerospace series - Test methods for aluminium and aluminium alloy products - Part 1 : Determination of electrical conductivity of wrought aluminium alloys
EN 10002 - 1	Metallic materials - Tensile testing - Part 1 : Method of test (at ambient temperature)
EN 10204	Metallic products - Types of inspection documents
ISO 6506	Metallic materials - Hardness test - Brinell test
ISO 6507 - 1	Metallic materials - Hardness test - Vickers test - Part 1 : HV 5 to HV 100
ISO 6507 - 2	Metallic materials - Hardness test - Vickers test - Part 2 : HV 0,2 to less than HV 5

ISO 7438	Metallic materials - Bend test
ISO 8490	Metallic materials - Sheet and strip - Modified Erichsen cupping test

3 Definitions

For the purpose of this standard the following definitions apply.

3.1 sheet : A flat rolled product of rectangular cross-section with uniform thickness over 0,20 mm, supplied in straight lengths (i.e. flat) usually with trimmed or sawn edges. The thickness does not exceed one-tenth of the width.

NOTE 1 :

Corrugated, embossed (with patterns, for example grooves, ribs, checkers, tears, buttons, lozenges), coated, edge conditioned and perforated products in this general form when derived from sheet as defined above are classified as sheet.

NOTE 2 :

In some countries, "sheet" of a thickness greater than 6 mm is called "plate".

3.2 strip : A flat rolled product of rectangular cross-section with uniform thickness over 0,20 mm, supplied in coils usually with trimmed edges. The thickness does not exceed one-tenth of the width.

NOTE 1 :

Corrugated, embossed (with patterns, for example grooves, ribs, checkers, tears, buttons, lozenges), coated, edge conditioned and perforated products in this general form when derived from strip as defined above are classified as strip.

NOTE 2 :

"Strip" is sometimes called "coil".

3.3 hot-rolled sheet and strip : Sheet or strip whose final thickness is obtained by hot rolling.

3.4 cold-rolled sheet and strip : Sheet or strip whose final thickness is obtained by cold rolling.

3.5 inspection lot : Consignment, or a part thereof, submitted for inspection, comprising products of the same grade or alloy, form, temper, thickness or cross-section, and processed in the same manner.

3.6 heat-treatment batch or lot : A quantity of products of the same grade or alloy, form, thickness or cross-section and produced in the same way, heat-treated in one furnace load, or such products so solution-treated and subsequently precipitation-treated in one furnace load. More than one solution-treatment lot may be included in a furnace load.

For the heat-treatment in a continuous furnace, the products heat-treated during a period of time less than 8 h may be considered belonging to the same heat-treatment lot ¹⁾.

3.7 sample : One or more products taken from an inspection lot.

3.8 specimen : One or more pieces taken from each product in the sample, for the purpose of producing test pieces.

1) This limit of 8h may be exceeded, in the case of a heavy plate solution-treated in a continuous furnace.

3.9 test piece : A piece taken from each specimen and suitably prepared for the test.

3.10 test : An operation to which the test piece is subjected in order to measure or classify a property.

4 Orders or tenders

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

a) the form and type of product :

- the form of the product (sheet, strip, plate, etc.).
- the designation of the aluminium or aluminium alloy;
- when subsequent decorative anodizing by the customer is intended, this shall be expressly stated on the order. In all other cases, indication of the customer application is recommended;

b) the metallurgical temper of the material for delivery according to EN 515 and, if different, the metallurgical temper for use;

c) the number of this European Standard or a specification number, or, where none exists, the properties agreed between the supplier and the purchaser;

d) the dimensions and shape of the product :

- thickness,
- width,
- length (in the rolling direction),

NOTE : Unless otherwise agreed, the length is the largest dimension.

- internal and external diameters of the coil;

e) tolerances on the dimensions and form, with reference to the appropriate European Standard;

f) quantity :

- mass or number of pieces,
- quantity tolerances if required;

g) any requirements for inspection documents;

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h) any special requirements agreed between the supplier and the purchaser :

- marking of products,
- references to drawings, etc.

i) for products intended for decorative anodizing by the customer the order shall also contain the following information :

- the intended particular surface treatment (according to the relevant European Standard)

- whether a decorative appearance after anodizing is required for both sides and, if only one side, its position with respect to the strip (inside or outside of the coil) or the sheet or plate (upside or downside)

It is also recommended that products intended to form a specific area (such as a façade) be ordered in a single batch.

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 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 the performance of all inspection and tests required by the relevant 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 notify the supplier at the time of placing the order.

5.3 Chemical composition

The chemical composition shall comply with the requirements as specified in EN 573-3.

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

5.4 Mechanical properties

The mechanical properties shall be in conformity with those specified in EN 485-2 or those agreed upon between the supplier and the purchaser and stated on the order.

5.5 Freedom from defects

The product shall be free from defects prejudicial to its suitable and proper use.

It shall have a smooth and clean rolling surface. However small surface defects such as light scratches, indentations, laminations, stripes, roll marks, discolourations and non-uniform surface appearance resulting from heat treatment, etc., which cannot always be totally avoided, are generally permitted on both sides of the product.

Whilst an operation designed to mask a fault is not permitted, the elimination of a superficial fault is permissible, provided that the dimensional tolerances and material properties continue to meet the specifications.

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For products intended for decorative anodizing, the superficial defects (discolouration, mechanical or structural defects) may not be so extensive as to impair the decorative appearance after the agreed surface treatment. Limiting samples may be agreed between supplier and customer.

5.6 Dimensional tolerances

The dimensions and form tolerances shall be in conformity with the European Standards listed below :

- EN 485-3 : Hot-rolled sheet, strip and plate