SLOVENSKI STANDARD
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Aluminij in aluminijeve zlitine - Izkovki - 1. del: Tehnični pogoji za prevzem in dobavo

Aluminium and aluminium alloys - Forgings - Part 1: Technical conditions for inspection and delivery

Aluminium und Aluminiumlegierungen - Schmiedestücke - Teil 1: Technische Lieferbedingungen

Aluminium et alliages d'aluminium - Pieces forgées - Partie 1: Conditions techniques de contrôle et de livraison

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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 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of an identical text or by endorsement, at the latest by February 1998, and conflicting national standards shall be withdrawn at the latest by February 1998.

Within its programme of work, Technical Committee CEN/TC 132 entrusted CEN/TC 132/WG 3 "Forgings and cast and wrought forging stock" to prepare the following standard :

EN 586-1 Aluminium and aluminium alloys - Forgings - Part 1 : Technical conditions for inspection and delivery

This standard is part of a set of three standards.

The other standards deal with :

EN 586-2 Aluminium and aluminium alloys - Forgings - Part 2 : Mechanical properties and additional property requirements

EN 586-3 Aluminium and aluminium alloys - Forgings - Part 3 : Tolerances on dimensions and form

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

1 Scope

This part of EN 586 specifies the technical conditions for inspection and delivery of aluminium and aluminium alloy forgings for general engineering applications.

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 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 586-2	Aluminium and aluminium alloys - Forgings - Part 2 : Mechanical properties and additional property requirements
prEN 586-3	Aluminium and aluminium alloys - Forgings - Part 3 : Tolerances on dimensions and form
EN 10002-1	Metallic materials - Tensile testing - Part 1 : Method of test (at ambient temperature)
EN 10204	Metallic products - Types of inspection documents

3 Definitions

For the purposes of this European Standard, the following definitions apply :

3.1 forging : Wrought products formed by hammering or pressing, usually when hot, between open dies (hand forging) or closed dies (drop or die forging).

3.2 cast : Quantity of product cast simultaneously from the same melt. The different ingots of a cast may have different dimensions.

NOTE : This term is not used for castings.

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

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

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

3.6 test piece : Piece taken from each specimen and suitably prepared for test.

3.7 test : 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 details :

a) the form of the product (die forging, hand forging etc.) ;

b) the type and temper condition of the material :

- the designation of the aluminium and aluminium alloy ;

- the temper condition for delivery in accordance with EN 515 (as-forged or heat treated) and, if different, the temper condition for use ;

c) the number of this European Standard ;

d) the dimensions and shape of the product (thickness, width, length, diameter) and/or reference to a drawing defining the product ;

e) quantity and, where applicable, quantity tolerances (see 5.7) ;

f) any requirements for inspection documents ;

g) any special requirements agreed purchaser and supplier.

5 Requirements

5.1 Production and manufacturing processes

The production and manufacturing processes shall be left to the discretion of the producer. Unless it is explicitly stated otherwise in 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 European Standard or 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 given 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 purchaser and supplier.

5.4 Mechanical properties

The mechanical properties shall comply with those given in EN 586-2.

5.5 Surface finish

Unless otherwise agreed at the time of ordering forgings shall be cleaned by pickling in an aqueous solution of NaOH prior to surface inspection. The product shall be free from defects detrimental to its use. Whilst an operation designed to mask a defect shall not be permitted, the elimination of a superficial surface defect shall be permissible, provided that the dimensional tolerances continue to be observed.

5.6 Tolerances on dimensions and form

Tolerances on dimensions and form shall comply with prEN 586-3.

NOTE : The purchaser can only reject those products having dimensions not complying with the specified tolerances.

5.7 Quantity tolerance

The quantity tolerance shall be ± 10 % unless otherwise agreed between purchaser and supplier.

5.8 Internal quality

The forgings shall be free from internal defects which may be detrimental to their use. If special inspections or tests are required, these shall be agreed between purchaser and supplier.

5.9 Special properties

Additional property requirements in respect of hardness and electrical conductivity tests shall be met in accordance with EN 586-2 when agreed between purchaser and supplier.

6 Test method

6.1 Sampling

6.1.1 Specimens for chemical analysis

The specimens for chemical analysis shall be taken at the time of casting. Their shape and condition of production (mould design, cooling rate, mass, etc. ..) shall be so designed that their composition is homogenous and be suitable for the method of analysis. At least one specimen shall be taken to represent each cast. An overcheck on chemical analysis can be undertaken at the discretion of the forging manufacturer on a sample selected to represent the inspection lot.

6.1.2 Specimens for mechanical testing

6.1.2.1 Location and size

Specimens shall be taken from samples in such a way that it is possible to orientate the test pieces in relation to the product, as specified in 6.1.2.2.

The specimens shall be sufficiently large to allow manufacture of the test pieces necessary to carry out the required tests, and shall include sufficient metal to allow manufacture of test pieces for any retests.

6.1.2.2 Orientation of specimens

Specimens shall be taken in the longitudinal direction. If the dimension is insufficient to obtain a longitudinal specimen, the specimens shall be taken in the transverse direction.

6.1.2.3 Identification of specimens

Each specimen shall be marked in such a manner that, after removal, it is still possible to identify the product from which it was taken, and, if required, its location and orientation. If, during the course of subsequent operations, removal of the markings cannot be avoided, new markings shall be made before the originals are removed.

6.1.2.4 Preparation of specimens

Specimens shall be taken from the sample after completion of all the mechanical and heat treatments that the product has to undergo before delivery and which may influence the mechanical properties of the metal. In cases where this is not possible, the sample or specimens may be taken at an earlier stage, but they shall be submitted to the same treatment as that to which it is intended to submit the product concerned.

Specimens of heat treatable material ordered for supply in an alternative temper condition shall be heat treated in accordance with the recommended heat treatment practice for the temper condition of final use.

Specimens of heat treatable material supplied in the heat treated condition shall be heat treated with the material they represent.