

5`i a]b]^[b`Ui a]b]Yj Y`n]h]bY`I`]h_]!`?Ya] bUgYghUj Ui `]h_cj ž_]gYi dcfUV`Uc`j gh_i`n`y]j]]

Aluminium and aluminium alloys - Castings - Chemical composition of castings for use in contact with foodstuff

Aluminium und Aluminiumlegierungen - Gussstücke - Chemische Zusammensetzung von Gussstücken, die in Kontakt mit Lebensmitteln kommen

Aluminium et alliages d'aluminium - Pièces moulées - Composition chimique des pièces moulées destinées à entrer en contact avec les denrées alimentaires

Ta slovenski standard je istoveten z: EN 601:2004

ICS:

67.250	Materiali in predmeti v stiku z živili	Materials and articles in contact with foodstuffs
77.150.10	Aluminijski izdelki	Aluminium products

SIST EN 601:2004 en

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 601

April 2004

ICS 67.250; 77.150.10

Supersedes EN 601:1994

English version

Aluminium and aluminium alloys - Castings - Chemical composition of castings for use in contact with foodstuff

Aluminium et alliages d'aluminium - Pièces moulées -
Composition chimique des pièces moulées destinées à
entrer en contact avec les denrées alimentaires

Aluminium und Aluminiumlegierungen - Gussstücke -
Chemische Zusammensetzung von Gussstücken, die in
Kontakt mit Lebensmitteln kommen

This European Standard was approved by CEN on 2 February 2004.

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.

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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This document (EN 601:2004) 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 October 2004, and conflicting national standards shall be withdrawn at the latest by October 2004.

Within its programme of work, Technical Committee CEN/TC 132 has entrusted CEN/TC 132 WG 9 "*Aluminium and aluminium alloy cast and wrought products in contact with food*" to prepare a revision of the following standard :

EN 601, *Aluminium and aluminium alloys — Castings — Chemical composition of castings for use in contact with food*.

This revision consists mainly in the addition of a new clause 6.

This document supersedes EN 601:1994.

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

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EN 601:2004 (E)**1 Scope**

This European Standard specifies the maximum mass content of alloying elements and impurities in aluminium and aluminium alloy cast materials and articles designed to be in contact with foodstuff. It contains provisions for the demonstration of conformity of products with the present standard.

NOTE 1 Materials include ingots and liquid metal. Articles are finished goods.

NOTE 2 Some of the products listed in the present standard can be subject to patent or patent applications, and their listing herein does not in anyway imply the granting of a licence under such patent right.

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

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 (including amendments).

EN 1706, *Aluminium and aluminium alloys — Castings — Chemical composition and mechanical properties.*

EN 10204:1991, *Metallic products — Types of inspection documents.*

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

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3 Terms and definitions

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

3.1 aluminium

metal with a minimum content of 99,0 % by mass of aluminium, provided that the content by mass of any other element does not exceed the limit specified in Table 1

Table 1 — Aluminium - Other elements

Element	Maximum content % (by mass)
Iron + Silicon	1,0
Copper	0,10 (if Cr and / or Mn \geq 0,05) 0,20 (if Cr < 0,05 and Mn < 0,05)
Other elements ^a each	0,10
^a Other elements are for example, Cr, Mg, Mn, Ni, Zn.	

3.2

aluminium alloy

metallic substance in which aluminium predominates by mass over each of the other elements, provided that :

- a) the content by mass of at least one of the other elements, or iron plus silicon taken together, is greater than the limits specified in Table 1 ; or
- b) the total content by mass of such other elements exceeds 1,0 %

3.3

casting

unwrought product at or near finished shape, formed by solidification of a metal or alloy in a mould

4 Maximum permissible content of elements for foodstuff application

4.1 Cast aluminium

The content by mass of the other elements which are present in cast aluminium shall not exceed the following limits :

- iron + silicon $\leq 1,0$ % ;
- chromium, magnesium, manganese, nickel, zinc, titanium, tin $\leq 0,10$ % each ;
- copper $\leq 0,10$ %. Copper is permitted in a proportion greater than 0,10 % but not more than 0,20 % and provided that neither the chromium nor manganese content exceeds 0,05 % ;
- other elements $\leq 0,05$ % each.

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4.2 Cast aluminium alloys

The content by mass of the elements which are added to form aluminium alloy cast materials and articles or which are present as impurities, shall not exceed the maximum values given in Table 2.

Table 2 — Aluminium alloys - Maximum content of elements

Element	Maximum content % (by mass)
Silicon	13,5
Iron	2,0
Copper	0,6
Manganese	4,0
Magnesium ^a	11,0
Chromium	0,35
Nickel	3,0
Zinc	0,25
Antimony	0,2
Tin	0,10
Strontium	0,2
Zirconium	0,3
Titanium	0,3
Other elements ^b	0,05 each 0,15 in total

^a Alloys containing more than 5 % magnesium shall not be used for the production of pressure resisting parts in pressure cooking applications.

^b For some alloying elements (e.g. Ag) as mentioned under "Other elements" the maximum content is limited at 0,05 % because of insufficient knowledge about behaviour in contact with food. Higher limits may be introduced when more information is available.

5 Selection of cast aluminium and aluminium alloys

The cast aluminium and aluminium alloys which shall be used for the fabrication of articles for use in contact with foodstuff are those which conform with the requirements in 4.1 or 4.2 as applicable.

For every use of a standardised cast aluminium or aluminium alloy for the fabrication of articles for use in contact with foodstuff, the conformity with this European Standard shall be established by checking the maximum contents specified in EN 1706 against the requirements in 4.1 or 4.2 as applicable.

NOTE It is strongly recommended to use standardised aluminium or aluminium alloys.

The selection of the aluminium or aluminium alloy for a given application shall be the responsibility of the end product manufacturer, depending on the intended final use.