



# SLOVENSKI STANDARD

## SIST EN 573-3:1998

01-april-1998

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### Aluminij in aluminijeve zlitine - Kemična sestava in oblika gnetenih izdelkov - 3. del: Kemična sestava

Aluminium and aluminium alloys - Chemical composition and form of wrought products -  
Part 3: Chemical composition

Aluminium und Aluminiumlegierungen - Chemische Zusammensetzung und Form von  
Halbzeug - Teil 3: Chemische Zusammensetzung

Aluminium et alliages d'aluminium - Composition chimique et forme des produits  
corroyés - Partie 3: Composition chimique

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Ta slovenski standard je istoveten z: EN 573-3:1994

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#### **ICS:**

77.040.30	Kemijska analiza kovin	Chemical analysis of metals
77.150.10	Aluminijski izdelki	Aluminium products

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**en**

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EUROPEAN STANDARD

EN 573-3

NORME EUROPÉENNE

EUROPÄISCHE NORM

August 1994

UDC 669.71:669.715.018.26

Descriptors: Aluminium, aluminium alloys, rolled products, aluminium products, chemical composition, shape, designation, tables (data)

English version

**Aluminium and aluminium alloys - Chemical  
composition and form of wrought products - Part  
3: Chemical composition**

Aluminium et alliages d'aluminium - Composition  
chimique et forme des produits corroyés -  
Partie 3: Composition chimique

Aluminium und Aluminiumlegierungen - Chemische  
Zusammensetzung und Form von Halbzeug - Teil 3:  
Chemische Zusammensetzung

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This European Standard was approved by CEN on 1994-08-17. 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.

**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 drawn up by CEN/TC 132 "Aluminium and aluminium alloys", whose Secretariat is held by the Association Française de Normalisation (AFNOR).

Within its programme of work, Technical Committee CEN/TC 132 has been entrusted to prepare the following standard :

EN 573-3 Aluminium and aluminium alloys - Chemical composition and form of wrought products - Part 3 : Chemical composition.

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

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 573-4 Aluminium and aluminium alloys - Chemical composition and form of wrought products - Part 4 : Forms of products.

**iTeh STANDARD PREVIEW**

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 1995, and conflicting national standards shall be withdrawn at the latest by February 1995.

In accordance with the CEN/CENELEC Internal Regulations, 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 and United Kingdom.

## 1 Scope

This part of EN 573 specifies the chemical composition limits of wrought aluminium and aluminium alloys.

The aluminium or aluminium alloy chemical composition limits specified therein are strictly identical to those registered to the Aluminum Association, Washington DC 20006, USA, for the corresponding alloys.

**NOTE :** Some of the registered alloys may be the subject of patent or patent applications, and their listing herein is not to be construed in any way as the granting of a license under such patent right.

This standard applies to wrought products and to ingots intended to be wrought.

## 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 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. |

## 3 Chemical composition limits

The chemical composition of aluminium and aluminium alloys is specified in percentage by mass in tables 1 to 8. Limits are expressed as a maximum unless shown as a range or a minimum.

Aluminium is specified as minimum for unalloyed aluminium, and as a remainder for aluminium alloys.

Except for "Aluminium" and "Others", analysis normally is made for elements for which specific limits are shown.

## 4 Writing rules

4.1 Standard limits for alloying elements and impurities are expressed in percentage by mass to the following decimal places :

- less than 0,001 % .....	0,000X
- 0,001 % up to less than 0,01 %.....	0,00X
- 0,01 % up to less than 0,10 %	
- unalloyed aluminium made by a refining process.....	0,0XX
- others .....	0,0X
- 0,10 % up to 0,55 % .....	0,XX
- over 0,55 % .....	0,X, X,X, XX,X

Exception : combined Fe + Si limits for 1xxx designations shall be expressed as 0,XX or 1,XX.

4.2 The aluminium content for unalloyed aluminium made by a refining process is the difference between 100,00 % and the sum of all other metallic elements present in amounts of 0,0010 % or more each, expressed to the third decimal before determining the sum, which is rounded to the second decimal before subtracting.

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For unalloyed aluminium not made by a refining process, it is the difference between 100,00 % and the sum of all other metallic elements present in amounts of 0,010 % or more each expressed to the second decimal before determining the sum.

## 5 Alloy designations

The four-figure numerical and the alternative chemical symbol based alloy designation systems are described respectively in EN 573-1 and EN 573-2.

Both the four figure and the chemical symbol based designations are indicated in tables 1 to 8.

The International four figure system is the preferred one. The chemical symbol based designations are indicated for reference only.

## 6 Sequence of elements

Standard limits for alloying elements and impurities are expressed in the following sequence : silicon, iron, copper, manganese, magnesium, chromium, nickel, zinc, ..., titanium, other elements each, other elements total, aluminium.

Additional specified elements having limits are inserted in alphabetical order of their chemical symbols between zinc and titanium, or are specified in footnotes.

## 7 Rounding rules for determination of compliance

In recording chemical analysis test results, the number representing the result for any element specified in this standard shall be expressed to the same number of decimal places as the corresponding number in this standard. For unalloyed aluminium, the aluminium content is derived as described in 4.2.

The following rounding rules shall be used for determination of compliance with this standard :

- a) when the figure immediately after the last figure to be retained is less than 5, the last figure to be retained remains unchanged ;
- b) when the figure immediately after the last figure to be retained is greater than 5, or equal to 5 and followed by at least one figure other than zero, the last figure to be retained is increased by one ;
- c) when the figure immediately after the last figure to be retained is equal to 5 and followed by zeros only, the last figure to be retained remains unchanged if even and is increased by one if odd.

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Table 1 : Aluminium - 1000 series

Alloy designation		Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ga	V	Remarks	Ti	Others (4)		Aluminium min.
Numerical	Chemical symbols													Each	Total (1)	
EN AW-1199	EN AW-Al 99,99	0,006	0,006	0,006	0,002	0,006	...	...	0,006	0,005	0,005	...	0,002	...	...	99,99 3)
EN AW-1098	EN AW-Al 99,98	0,010	0,006	0,003	...	...	...	...	0,015	...	...	...	0,003	...	...	99,98 3)
EN AW-1198	EN AW-Al 99,98(A)	0,010	0,006	0,006	0,006	...	...	...	0,010	0,006	...	...	0,003	...	...	99,98 3)
EN AW-1090	EN AW-Al 99,90	0,07	0,02	0,02	0,01	0,01	...	...	0,03	0,03	0,05	...	0,01	...	...	99,90 2)
EN AW-1085	EN AW-Al 99,85	0,10	0,12	0,03	0,02	0,02	...	...	0,03	0,03	0,05	...	0,02	...	...	99,85 2)
EN AW-1080A	EN AW-Al 99,8(A)	0,15	0,15	0,03	0,02	0,02	...	...	0,06	0,03	...	...	0,02	...	...	99,80 2)
EN AW-1070A	EN AW-Al 99,7	0,20	0,25	0,03	0,03	0,03	...	...	0,07	...	...	...	0,03	...	...	99,70 2)
EN AW-1370	EN AW-EAl 99,7	0,10	0,25	0,02	0,01	0,02	0,01	...	0,04	0,03	...	0,02 B; 0,02 V+Ti	...	...	...	99,70 2)
EN AW-1060	EN AW-Al 99,6	0,25	0,35	0,05	0,03	0,03	...	...	0,05	...	0,05	...	0,03	0,10	...	99,60 2)
EN AW-1050A	EN AW-Al 99,5	0,25	0,40	0,05	0,05	0,05	...	...	0,07	...	...	...	0,03	...	...	99,60 2)
EN AW-1350	EN AW-EAl 99,5	0,10	0,40	0,05	0,01	...	0,01	...	0,05	0,03	...	0,05 B; 0,02 V+Ti	...	0,10	...	99,50 2)
EN AW-1350A	EN AW-EAl 99,5(A)	0,25	0,40	0,02	...	...	...	...	0,05	...	...	0,03 Cr+Mn+Ti+V	...	...	...	99,50 2)
EN AW-1450	EN AW-Al 99,5Ti	0,25	0,40	0,05	...	0,05	...	...	0,07	...	...	...	0,10-0,20	...	...	99,50 2)
EN AW-1235	EN AW-Al 99,35	0,65 Si+Fe	0,05	0,05	0,05	0,05	...	...	0,10	...	0,05	...	0,06	...	...	99,35 2)
EN AW-1200	EN AW-Al 99,0	1,00 Si+Fe	0,05	0,05	0,05	...	...	...	0,10	...	...	...	0,05	0,15	...	99,00 2)
EN AW-1200A	EN AW-Al 99,0(A)	1,00 Si+Fe	0,10	0,10	0,30	0,30	0,10	...	0,10	...	...	...	...	0,15	...	99,00 2)
EN AW-1100	EN AW-Al 99,0Cu	0,95 Si+Fe	0,05-0,20	...	...	...	...	...	0,10	...	...	4)	...	0,05	0,15	99,00 2)

Table 2 : Aluminium alloys - 2000 series - Al Cu

Alloy designation		Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ga	V	Remarks	Ti	Others (4)		Aluminium min.
Numerical	Chemical symbols													Each	Total (1)	
EN AW-2001	EN AW-Al Cu5,5MgMn	0,20	0,20	5,2-6,0	0,15-0,50	0,20-0,45	0,10	0,05	0,10	...	...	0,05 Zr (15)	0,20	0,05	0,15	Remainder
EN AW-2007	EN AW-Al Cu4PbMgMn	0,8	0,8	3,3-4,6	0,50-1,0	0,40-1,8	0,10	0,20	0,8	...	...	1)	0,20	0,10	0,30	Remainder
EN AW-2011	EN AW-Al Cu6BiPb	0,40	0,7	5,0-6,0	...	...	...	...	0,30	...	...	5)	...	0,05	0,15	Remainder
EN AW-2011A	EN AW-Al Cu6BiPb(A)	0,40	0,50	4,5-6,0	...	...	...	...	0,30	...	...	5)	...	0,05	0,15	Remainder
EN AW-2014	EN AW-Al Cu4SiMg	0,50-1,2	0,7	3,9-5,0	0,40-1,2	0,20-0,8	0,10	...	0,25	...	...	6)	0,15	0,05	0,15	Remainder
EN AW-2014A	EN AW-Al Cu4SiMg(A)	0,50-0,9	0,50	3,9-5,0	0,40-1,2	0,20-0,8	0,10	0,10	0,25	...	...	0,20 Zr+Ti	0,15	0,05	0,15	Remainder
EN AW-2214	EN AW-Al Cu4SiMg(B)	0,50-1,2	0,30	3,9-5,0	0,40-1,2	0,20-0,8	0,10	...	0,25	...	...	6)	0,15	0,05	0,15	Remainder
EN AW-2017A	EN AW-Al Cu4MgSi(A)	0,20-0,8	0,7	3,5-4,5	0,40-1,0	0,40-1,0	0,10	...	0,25	...	...	0,25 Zr+Ti	...	0,05	0,15	Remainder
EN AW-2117	EN AW-Al Cu2,5Mg	0,8	0,7	2,2-3,0	0,20	0,20-0,50	0,10	...	0,25	...	...	...	...	0,05	0,15	Remainder
EN AW-2618A	EN AW-Al Cu2Mg1,5Ni	0,15-0,25	0,9-1,4	1,8-2,7	0,25	1,2-1,8	...	0,8-1,4	0,15	...	...	0,25 Zr+Ti	0,20	0,05	0,15	Remainder
EN AW-2219	EN AW-Al Cu6Mn	0,20	0,30	5,8-6,8	0,20-0,40	0,02	...	...	0,10	...	0,05-0,15	0,10-0,25 Zr	0,02-0,10	0,05	0,15	Remainder
EN AW-2319	EN AW-Al Cu6Mn(A)	0,20	0,30	5,8-6,8	0,20-0,40	0,02	...	...	0,10	...	0,05-0,15	0,10-0,25 Zr 4)	0,10-0,20	0,05	0,15	Remainder
EN AW-2024	EN AW-Al Cu4Mg1	0,50	0,50	3,8-4,9	0,30-0,9	1,2-1,8	0,10	...	0,25	...	...	6)	0,15	0,05	0,15	Remainder
EN AW-2124	EN AW-Al Cu4Mg1(A)	0,20	0,30	3,8-4,9	0,30-0,9	1,2-1,8	0,10	...	0,25	...	...	6)	0,15	0,05	0,15	Remainder
EN AW-2030	EN AW-Al Cu4PbMg	0,8	0,7	3,3-4,5	0,20-1,0	0,50-1,3	0,10	...	0,50	...	...	0,20 Bi; 0,8-1,5 Pb	0,20	0,10	0,30	Remainder
EN AW-2031	EN AW-Al Cu2,5NiMg	0,50-1,3	0,6-1,2	1,8-2,8	0,50	0,6-1,2	...	0,6-1,4	0,20	...	...	...	0,20	0,05	0,15	Remainder
EN AW-2091	EN AW-Al Cu2Li2Mg1,5	0,20	0,30	1,8-2,5	0,10	1,1-1,9	0,10	...	0,25	...	...	0,04-0,16 Zr 13)	0,10	0,05	0,15	Remainder