



SLOVENSKI STANDARD

SIST EN 573-3:2007

01-december-2007

Nadomešča:
SIST EN 573-3:2004

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

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

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

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

Ta slovenski standard je istoveten z: EN 573-3:2007

ICS:

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

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EUROPEAN STANDARD
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English Version

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

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

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

This European Standard was approved by CEN on 11 July 2007.

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 CEN Management Centre 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 CEN 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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Foreword

This document (EN 573-3:2007) 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 2008, and conflicting national standards shall be withdrawn at the latest by February 2008.

This document supersedes EN 573-3:2003 and EN 573-4:2004.

NOTE EN 573-4:2004 will be withdrawn after the publication of this standard.

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 and form of products.*

EN 573 comprises the following parts under the general title "*Aluminium and aluminium alloys — Chemical composition and form of wrought products*":

- *Part 1: Numerical designation system*
- *Part 2: Chemical symbol based designation system*
- *Part 3: Chemical composition and form of products*
- *Part 5: Codification of standardized wrought products*

CEN/TC 132 has decided to revise this standard every two years if necessary.

The following modifications have been introduced during the revision:

- Clause 8 has been deleted, each footnote not general is now included under the relevant table.
- Table 5: alloys EN AW-5006, EN AW-5026, EN AW-5059, EN AW-5070, EN AW-5088 and EN AW-5456 added ;
- Table 6: alloys EN AW-6012A, EN AW-6014, EN AW-6023, EN AW-6025, EN AW-6065, EN AW-6110A, EN AW-6182, EN AW-6262A and EN AW-6360 added ;
- Table 7 : alloys EN AW-7019 and EN AW-7108A added ;
- Annex A (normative): Form of products Tables A.1 to A.8 Letters A and B deleted and replaced by X ;
- Annex B (normative). Guidelines for the introduction of new wrought aluminium and aluminium alloys in CEN/TC 132 standards ;
- Previous Bibliography deleted and replaced by a new one ;

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- Addition of Footnote to alloys EN AW-1080A, EN AW-1200, EN AW-1450, EN AW-3103, EN AW-4018, EN AW-4046, EN AW-5249, EN AW-5087, EN AW-5754 “ 0,0003 % max Be for welding electrode, welding rod and filler wire”.
- Addition of Footnote, "Be free when used for foodstuff application" for several alloys.

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.

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

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

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1 Scope

This European Standard specifies the chemical composition limits of wrought aluminium and wrought aluminium alloys and form of products.

The chemical composition limits of aluminium and aluminium alloys specified herein are completely identical with those registered with the Aluminum Association, 1525, Wilson Boulevard, Suite 600, Arlington, VA 22209, USA, for the corresponding alloys.

2 Normative references

The following referenced documents are indispensable for the application 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 573-2, *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 of impurities are expressed as a maximum; limits of alloying elements shown as a range aluminium is specified as a minimum for unalloyed aluminium, and as a remainder for aluminium alloys.

The chemical composition of internationally registered wrought aluminium and wrought aluminium alloys not listed in this document can be found in Teal sheet [1].

In the specific chemical composition limits like Pb, Sn, Bi, Sb, Zr, analysis is normally 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 % but less than 0,01 %	0,00X ;
— 0,01 % but less than 0,10 %:	
— unalloyed aluminium made by a refining process	0,0XX ;
— others	0,0X ;
— 0,10 % to 0,55 %	0,XX ;
— over 0,55 %	0,X; X,X; XX,X.

Exception: combined Si + Fe 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,

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expressed to the third decimal place before determining the sum, which is rounded to the second decimal place before subtracting.

For unalloyed aluminium not made by a refining process, the aluminium content 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 place before determining the sum.

5 Alloy designations

The numerical designation systems used in Teal sheets and European Standards for wrought aluminium alloys are identical. As specified in EN 573-1 the prefix EN AW- is added.

The alternative chemical symbol based alloy designation system shall be based on EN 573-2.

Both the numerical and the chemical symbol based designations are indicated in Tables 1 to 8.

The International numerical 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, gallium, vanadium, remarks, other elements each, other elements total, aluminium.

Limits of additional specified elements are inserted in alphabetical order of their chemical symbols under "Remarks".

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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.

Table 1 — Aluminium — 1 000 series

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

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Table 1 — Aluminium — 1 000 series (continued)

Alloy designation		Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ga	V	Remarks	Others ^a		Aluminium min.
Numerical	Chemical symbols													Each	Total ^b	
EN AW-1370	EN AW-AI 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	0,02	0,10	99,70 ^c
EN AW-1450	EN AW-AI 99,5Ti	0,25	0,40	0,05	0,05	0,05	-	-	0,07	0,10-0,20	-	-	e	0,03	-	99,50 ^c

- ^a Includes listed elements for which no specific limit is shown.
- ^b The sum of those "Others" metallic elements 0,010 % or more each, expressed to the second decimal place before determining the sum.
- ^c The aluminium content for unalloyed aluminium not made by a refining process 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 place before determining the sum.
- ^d 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 place before subtracting.
- ^e 0,0003 max. Be for welding electrode, welding rod and filler wire only.
- ^f Be free when used for foodstuff application.

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Table 2 — Aluminium alloys — 2 000 series — Al Cu

Alloy designation		Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ga	V	Remarks	Others ^a		Aluminium min.
Numerical	Chemical symbols													Each	Total ^b	
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	0,20	-	-	0,05 Zr ^c	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	0,20	-	-	d	0,10	0,30	Remainder
EN AW-2011	EN AW-Al Cu6BiPb	0,40	0,7	5,0-6,0	-	-	-	-	0,30	-	-	-	e	0,05	0,15	Remainder
EN AW-2011A	EN AW-Al Cu6BiPb	0,40	0,50	4,5-6,0	-	-	-	-	0,30	-	-	-	e	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	0,15	-	-	f	0,05	0,15	Remainder
EN AW-2014A	EN AW-Al Cu4SiMg	0,50-0,9	0,50	3,9-5,0	0,40-1,2	0,20-0,8	0,10	0,10	0,25	0,15	-	-	0,20 Zr+Ti	0,05	0,15	Remainder
EN AW-2017A	EN AW-Al Cu4MgSi	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-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	0,15	-	-	f	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	-	-	0,20 Bi ; 0,8-1,5 Pb	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	0,10	-	-	0,04-0,16 Zr ^g	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-2124	EN AW-Al Cu4Mg1	0,20	0,30	3,8-4,9	0,30-0,9	1,2-1,8	0,10	-	0,25	0,15	-	-	f	0,05	0,15	Remainder
EN AW-2214	EN AW-Al Cu4SiMg	0,50-1,2	0,30	3,9-5,0	0,40-1,2	0,20-0,8	0,10	-	0,25	0,15	-	-	f	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	0,02-0,10	-	0,05-0,15	0,10-0,25 Zr	0,05	0,15	Remainder

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Table 2 — Aluminium alloys — 2 000 series — Al Cu (continued)

Alloy designation		Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ga	V	Remarks	Others ^a		Aluminium min.
Numerical	Chemical symbols													Each	Total ^b	
EN AW-2319	EN AW-Al Cu6Mn	0,20	0,30	5,8-6,8	0,20-0,40	0,02	-	-	0,10	0,10-0,20	-	0,05-0,15	0,10-0,25 Zr ^h	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	0,20	-	-	0,25 Zr+Ti	0,05	0,15	Remainder

- ^a Includes listed elements for which no specific limit is shown.
- ^b The sum of those "Others" metallic elements 0,010 % or more each, expressed to the second decimal place before determining the sum.
- ^c 0,003 max. Pb.
- ^d 0,20 Bi; 0,8-1,5 Pb; 0,20 Sn.
- ^e 0,20-0,6 Bi; 0,20-0,6 Pb.
- ^f Zr+Ti limit of 0,20 maximum may be used for extruded and forged products if mutually agreed by supplier or manufacturer and purchaser.
- ^g 1,7-2,3 Li.
- ^h 0,0003 max. Be for welding electrode, welding rod and filler wire only.

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