



SLOVENSKI STANDARD

SIST EN 573-3:2014

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Nadomešča:
SIST EN 573-3:2009

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 573-3:2013

ICS:

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

SIST EN 573-3:2014

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EUROPEAN STANDARD

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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 15 August 2013.

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-CENELEC 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-CENELEC Management Centre has the same status as the official versions.

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



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

This document (EN 573-3:2013) 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 April 2014, and conflicting national standards shall be withdrawn at the latest by April 2014.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 573-3:2009.

CEN/TC 132 affirms its policy that if a patentee refuses to grant licenses on standardized products under reasonable and not discriminatory conditions, this product will be removed from the corresponding document.

Within its programme of work, Technical Committee CEN/TC 132 entrusted CEN/TC 132/WG 7 "Sheets, strips and plates" to revise EN 573-3:2009.

CEN/TC 132 has decided to revise this European Standard as follows:

- addition of the alloy EN AW-4115 in Table 4 and Table A.4;
- addition of the alloy EN AW-5449A in Table 5 and Table A.5;
- addition of the alloys EN AW-6026 and EN AW-6064A in Table 6 and Table A.6;
- correction of a typing error in the chemical symbol of EN AW-6023 in Table A.6.

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*

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

EN 573-3:2013 (E)**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.

Guidelines for the introduction of new wrought aluminium and wrought aluminium alloys in standards are presented in Annex B.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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 Table 1 to Table 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].

Analysis shall be made for elements which are specified, for example Pb, Sn, Bi, Sb, Zr.

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 %	0,000 X;
— 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 0,001 0 % or more each, 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 Table 1 to Table 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 European Standard:

- when the figure immediately after the last figure to be retained is less than 5, the last figure to be retained remains unchanged;
- 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;
- 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.

EN 573-3:2013 (E)

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(A)	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	0,05	0,15	99,00 ^c
EN AW-1110	EN AW-AI 99,1	0,30	0,8	0,04	0,01	0,25	0,01	-	-	-	-	-	0,02B; 0,03V + Ti	0,03	0,15	99,10 ^c
EN AW-1198	EN AW-AI 99,98(A)	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(A)	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(A)	0,25	0,40	0,02	-	0,05	-	-	0,05	-	-	-	0,03 Cr + Mn + Ti + V	0,03	-	99,50 ^c

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-Al 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-Al 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 "Others" includes listed elements for which no specific limit is shown as well as unlisted metallic elements. The producer may analyse samples for trace elements not specified in the registration or specification. However, such analysis is not required and may not cover all metallic "Other" elements. Should any analysis by the producer or the purchaser establish that an "Others" element exceeds the limit of "Each" or that the aggregate of several "Others" elements exceeds the limit of "Total", the material shall be considered non-conforming.

^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 0,000 3 max. Be for welding electrode, welding rod and filler wire only.

EN 573-3:2013 (E)

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(A)	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(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	0,15	-	-	0,20 Zr+Ti	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-2024	EN AW-Al Cu4Mg1	0,50	0,50	3,8-4,9	0,30-0,9	0,2-1,8	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	0,10	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(A)	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(B)	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

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(A)	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 "Others" includes listed elements for which no specific limit is shown as well as unlisted metallic elements. The producer may analyse samples for trace elements not specified in the registration or specification. However, such analysis is not required and may not cover all metallic "Other" elements. Should any analysis by the producer or the purchaser establish that an "Others" element exceeds the limit of "Each" or that the aggregate of several "Others" elements exceeds the limit of "Total", the material shall be considered non-conforming.

^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 0,000 3 max. Be for welding electrode, welding rod and filler wire only.

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Table 3 — Aluminium alloys — 3 000 series — Al Mn

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-3002	EN AW-Al Mn0,2Mg0,1	0,08	0,10	0,15	0,05-0,25	0,05-0,20	-	-	0,05	0,03	-	0,05	-	0,03	0,10	Remainder
EN AW-3003	EN AW-Al Mn1Cu	0,6	0,7	0,05-0,20	1,0-1,5	-	-	-	0,10	-	-	-	-	0,05	0,15	Remainder
EN AW-3004	EN AW-Al Mn1Mg1	0,30	0,7	0,25	1,0-1,5	0,8-1,3	-	-	0,25	-	-	-	-	0,05	0,15	Remainder
EN AW-3005	EN AW-Al Mn1Mg0,5	0,6	0,7	0,30	1,0-1,5	0,20-0,6	0,10	-	0,25	0,10	-	-	-	0,05	0,15	Remainder
EN AW-3005A	EN AW-Al Mn1Mg0,5(A)	0,7	0,8	0,30	1,0-1,5	0,20-0,6	0,10	-	0,40	0,10	-	-	-	0,05	0,15	Remainder
EN AW-3017	EN AW-Al Mn1Cu0,3	0,25	0,25-0,45	0,25-0,40	0,8-1,2	0,10	0,15	-	0,10	0,05	-	-	-	0,05	0,15	Remainder
EN AW-3102	EN AW-Al Mn0,2	0,40	0,7	0,10	0,05-0,40	0,30	0,10	-	0,30	0,10	-	-	-	0,05	0,15	Remainder
EN AW-3103	EN AW-Al Mn1	0,50	0,7	0,10	0,9-1,5	0,30	0,10	-	0,20	-	-	-	0,10 Zr+Ti ^c	0,05	0,15	Remainder
EN AW-3103A	EN AW-Al Mn1(A)	0,50	0,7	0,10	0,7-1,4	0,30	0,10	-	0,20	0,10	-	-	0,10 Zr+Ti	0,05	0,15	Remainder
EN AW-3104	EN AW-Al Mn1Mg1Cu	0,6	0,8	0,05-0,25	0,8-1,4	0,8-1,3	0,20	-	0,25	0,10	0,05	0,05	-	0,05	0,15	Remainder
EN AW-3105	EN AW-Al Mn0,5Mg0,5	0,6	0,7	0,30	0,30-0,8	0,20-0,8	0,20	-	0,40	0,10	-	-	-	0,05	0,15	Remainder
EN AW-3105A	EN AW-Al Mn0,5Mg0,5(A)	0,6	0,7	0,30	0,30-0,8	0,20-0,8	0,20	-	0,25	0,10	-	-	-	0,05	0,15	Remainder
EN AW-3105B	EN AW-Al Mn0,6Mg0,5	0,7	0,9	0,30	0,30-0,9	0,20-0,8	0,20	-	0,50	0,10	-	-	0,10 Pb	0,05	0,15	Remainder
EN AW-3207	EN AW-Al Mn0,6	0,30	0,45	0,10	0,40-0,8	0,10	-	-	0,10	-	-	-	-	0,05	0,10	Remainder
EN AW-3207A	EN AW-Al Mn0,6(A)	0,35	0,6	0,25	0,30-0,8	0,40	0,20	-	0,25	-	-	-	-	0,05	0,15	Remainder

^a "Others" includes listed elements for which no specific limit is shown as well as unlisted metallic elements. The producer may analyse samples for trace elements not specified in the registration or specification. However, such analysis is not required and may not cover all metallic "Other" elements. Should any analysis by the producer or the purchaser establish that an "Others" element exceeds the limit of "Each" or that the aggregate of several "Others" elements exceeds the limit of "Total", the material shall be considered non-conforming.

^b The sum of those "Others" metallic elements 0,010 % or more each, expressed to the second decimal place before determining the sum.

^c 0,000 3 max. Be for welding electrode, welding rod and filler wire only.