



SLOVENSKI STANDARD
oSIST prEN 755-2:2023
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**Aluminij in aluminijeve zlitine - Iztiskane palice/drogovi, cevi in profili - 2. del:
Mehanske lastnosti**

Aluminium and aluminium alloys - Extruded rod/bar, tube and profiles - Part 2:
Mechanical properties

Aluminium und Aluminiumlegierungen - Stranggepresste Stangen, Rohre und Profile -
Teil 2: Mechanische Eigenschaften

Aluminium et alliages d'aluminium - Barres, tubes et profilés filés - Partie 2 :
Caractéristiques mécaniques

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Aluminium and aluminium alloys - Extruded rod/bar, tube and profiles - Part 2: Mechanical properties

Aluminium et alliages d'aluminium - Barres, tubes et
profilés filés - Partie 2 : Caractéristiques mécaniques

Aluminium und Aluminiumlegierungen -
Stranggepresste Stangen, Rohre und Profile - Teil 2:
Mechanische Eigenschaften

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 132.

If this draft becomes a European Standard, 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.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (prEN 755-2:2023) has been prepared by Technical Committee CEN/TC 132 “Aluminium and aluminium alloys”, the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 755-2:2016.

Within its programme of work, Technical Committee CEN/TC 132 entrusted CEN/TC 132/WG 5 “Extruded and drawn products” to revise EN 755-2:2016.

The main changes compared to the previous edition are listed below:

- addition of the alloy EN AW-2033 in Table 11;
- addition of the alloy EN AW-2077 in Table 12;
- addition of the alloy EN AW-6050 in Table 39;
- modification of the order of alloys to conform with Aluminium Association System;
- addition of the terms required by the latest CCMC template;
- addition of Clause 3 compulsory from the latest CCMC template;
- deletion of former Clause 3.3 as part of the table of contents in this document;
- correction to temper of EN AW-2024 alloy in Table 10.

The EN 755 series comprises the following parts under the general title “Aluminium and aluminium alloys — Extruded rod/bar, tube and profiles”:

- Part 1: Technical conditions for inspection and delivery
- Part 2: Mechanical properties
- Part 3: Round bars, tolerances on dimensions and form
- Part 4: Square bars, tolerances on dimensions and form
- Part 5: Rectangular bars, tolerances on dimensions and form
- Part 6: Hexagonal bars, tolerances on dimensions and form
- Part 7: Seamless tubes, tolerances on dimensions and form
- Part 8: Porthole tubes, tolerances on dimensions and form
- Part 9: *Profiles, tolerances on dimensions and form*

EN 755-2:2023 (E)**1 Scope**

This document specifies the mechanical property limits resulting from tensile testing applicable to aluminium and aluminium alloy extruded rod/bar, tube and profile.

Technical conditions for inspection and delivery, including product and testing requirements, are specified in EN 755-1. Temper designations are defined in EN 515. The chemical composition limits for these materials are given in EN 573-3.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 755-1, *Aluminium and aluminium alloys - Extruded rod/bar, tube and profiles - Part 1: Technical conditions for inspection and delivery*

EN ISO 6892-1, *Metallic materials - Tensile testing - Part 1: Method of test at room temperature (ISO 6892-1)*

3 Terms and definitions

No terms and definitions are listed in this document.

4 Mechanical property limits**4.1 General**

The mechanical properties shall be in conformity with those specified in Table 1 to Table 64 or those agreed upon between supplier and purchaser and stated in the order document.

Table 1 to Table 64 contain limits of mechanical property values obtained by tensile testing according to EN ISO 6892-1 after sampling and test piece preparation according to EN 755-1.

NOTE The mechanical properties refer to test pieces taken in the longitudinal direction. Mechanical properties of test pieces taken in other directions can differ from those for the longitudinal direction quoted in this document.

Brinell hardness values given in Table 1 to Table 64 expressed as HBW values are for information only.

4.2 Elongation

If not otherwise agreed, the A value shall be used.

The A value for elongation is the % elongation measured over a gauge length of $5,65\sqrt{S_0}$ (where S_0 is the initial cross-sectional area of the test-piece), and expressed in percent.

For certain products the supplier may choose (if not otherwise specified in the order documents) to use the elongation based on $A_{50\text{mm}}$. Consequently, values for the $A_{50\text{mm}}$ are included in the following tables.

The $A_{50\text{mm}}$ value is the elongation measured over a gauge length of 50 mm and expressed in percent.

Test pieces and their location in the specimen are given in EN 755-1.

4.3 Tables of mechanical properties

Table 1 — Aluminium EN AW-1050A [Al 99,5]

Extruded rod/bar									
Temper	Dimensions mm		R_m MPa		$R_{p0,2}$ MPa		A %	$A_{50 \text{ mm}}$ %	Hardness Typical value HBW
	D^a	S^b	min.	max.	min.	max.	min.	min.	
F ^c , H112	all	all	60	-	20	-	25	23	20
O, H111	all	all	60	95	20	-	25	23	20
Extruded tube									
Temper	Wall thickness t mm		R_m MPa		$R_{p0,2}$ MPa		A %	$A_{50 \text{ mm}}$ %	Hardness Typical value HBW
	min.	max.	min.	max.	min.	max.	min.	min.	
F ^c , H112	all	all	60	-	20	-	25	23	20
O, H111	all	all	60	95	20	-	25	23	20
Extruded profile									
Temper	Wall thickness t mm		R_m MPa		$R_{p0,2}$ MPa		A %	$A_{50 \text{ mm}}$ %	Hardness Typical value HBW
	min.	max.	min.	max.	min.	max.	min.	min.	
F ^c , H112	all	all	60	-	20	-	25	23	20

^a D = Diameter for round bar.

^b S = Width across flats for square and hexagonal bar, thickness for rectangular bar.

^c F Temper: property values are for information only.

Table 2 — Aluminium EN AW-1070A [Al 99,7]

Extruded rod/bar									
Temper	Dimensions mm		R_m MPa		$R_{p0,2}$ MPa		A %	$A_{50 \text{ mm}}$ %	Hardness Typical value HBW
	D^a	S^b	min.	max.	min.	max.	min.	min.	
F ^c , H112	all	all	60	-	23	-	25	23	18
Extruded tube									
Not specified									
Extruded profile									
Not specified									

^a D = Diameter for round bar.

^b S = Width across flats for square and hexagonal bar, thickness for rectangular bar.

^c F Temper: property values are for information only.

Table 3 — Aluminium EN AW-1200 [Al 99,0]

Extruded rod/bar									
Temper	Dimensions mm		R_m MPa		$R_{p0,2}$ MPa		A %	$A_{50\text{ mm}}$ %	Hardness Typical value HBW
	D^a	S^b	min.	max.	min.	max.	min.	min.	
F ^c , H112	all	all	75	-	25	-	20	18	23
Extruded tube									
Temper	Wall thickness t mm		R_m MPa		$R_{p0,2}$ MPa		A %	$A_{50\text{ mm}}$ %	Hardness Typical value HBW
	min.	max.	min.	max.	min.	max.	min.	min.	
F ^c , H112	all	all	75	-	25		20	18	23
Extruded profile									
Temper	Wall thickness t mm		R_m MPa		$R_{p0,2}$ MPa		A %	$A_{50\text{ mm}}$ %	Hardness Typical value HBW
	min.	max.	min.	max.	min.	max.	min.	min.	
F ^c , H112	all		75	-	25		20	18	23
^a D = Diameter for round bar. ^b S = Width across flats for square and hexagonal bar, thickness for rectangular bar. ^c F Temper: property values are for information only.									

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Table 4 — Aluminium EN AW-1350 [Al 99,5]

Extruded rod/bar ^d									
Temper	Dimensions mm		R_m MPa		$R_{p0,2}$ MPa		A %	$A_{50\text{ mm}}$ %	Hardness Typical value HBW
	D^a	S^b	min.	max.	min.	max.	min.	min.	
F ^c , H112	all	all	60	-	-	-	25	23	20
Extruded tube ^d									
Temper	Wall thickness t mm		R_m MPa		$R_{p0,2}$ MPa		A %	$A_{50\text{ mm}}$ %	Hardness Typical value HBW
	min.	max.	min.	max.	min.	max.	min.	min.	
F ^c , H112	all		60	-	-	-	25	23	20
Extruded profile ^d									
Temper	Wall thickness t mm		R_m MPa		$R_{p0,2}$ MPa		A %	$A_{50\text{ mm}}$ %	Hardness Typical value HBW
	min.	max.	min.	max.	min.	max.	min.	min.	
F ^c , H112	all		60	-	-	-	25	23	20

^a D = Diameter for round bar.

^b S = Width across flats for square and hexagonal bar, thickness for rectangular bar.

^c F Temper: property values are for information only.

^d Electrical conductivity $\gamma \geq 35,4$ MS/m.

Table 5 — Alloy EN AW-2007 [Al Cu4PbMgMn]

Extruded rod/bar									
Temper	Dimensions mm		R_m MPa		$R_{p0,2}$ MPa		A %	$A_{50\text{ mm}}$ %	Hardness Typical value HBW
	D^a	S^b	min.	max.	min.	max.	min.	min.	
T4, T4510, T4511 ^c	≤ 80	≤ 80	370	-	250	-	8	6	95
	$80 < D \leq 200$	$80 < S \leq 200$	340	-	220	-	8	-	
	$200 < D \leq 250$	$200 < S \leq 250$	330	-	210	-	7	-	
Extruded tube									
Temper	Wall thickness t mm		R_m MPa		$R_{p0,2}$ MPa		A %	$A_{50\text{ mm}}$ %	Hardness Typical value HBW
			min.	max.	min.	max.	min.	min.	
T4, T4510, T4511 ^c	≤ 25		370	-	250	-	8	6	95
Extruded profile									
Temper	Wall thickness t mm		R_m MPa		$R_{p0,2}$ MPa		A %	$A_{50\text{ mm}}$ %	Hardness Typical value HBW
			min.	max.	min.	max.	min.	min.	
T4, T4510, T4511 ^c	≤ 30		370	-	250	-	8	6	95

^a D = Diameter for round bar.

^b S = Width across flats for square and hexagonal bar, thickness for rectangular bar.

^c Properties may be obtained by press quenching.

Table 6 — Alloy EN AW-2011 [Al Cu6BiPb] and Alloy EN AW-2011A [Al Cu6BiPb(A)]

Extruded rod/bar									
Temper	Dimensions mm		R_m MPa		$R_{p0,2}$ MPa		A %	$A_{50\text{ mm}}$ %	Hardness Typical value HBW
	D^a	S^b	min.	max.	min.	max.	min.	min.	
T4 ^c	≤ 200	≤ 60	275	-	125	-	14	12	95
T6 ^c	≤ 75	≤ 60	310	-	230	-	8	6	110
	75 < D ≤ 200	-	295	-	195	-	6	-	110
Extruded tube									
Temper	Wall thickness t mm		R_m MPa		$R_{p0,2}$ MPa		A %	$A_{50\text{ mm}}$ %	Hardness Typical value HBW
	min.	max.	min.	max.	min.	max.	min.	min.	
T6 ^c	≤ 25		310	-	230	-	6	4	110
Extruded profile Not specified									
^a D = Diameter for round bar. ^b S = Width across flats for square and hexagonal bar, thickness for rectangular bar. ^c Properties may be obtained by press quenching.									

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Table 7 — Alloy EN AW-2014 [Al Cu4SiMg] and Alloy EN AW-2014A [Al Cu4SiMg(A)]

Drawn rod/bar									
Temper	Dimensions mm		R_m MPa		$R_{p0,2}$ MPa		A %	$A_{50\text{ mm}}$ %	Hardness Typical value HBW
	D^a	S^b	min.	max.	min.	max.	min.	min.	
O, H111	≤ 200	≤ 200	-	250	-	135	12	10	45
T4, T4510, T4511	≤ 25	≤ 25	370	-	230	-	13	11	110
	$25 < D \leq 75$	$25 < S \leq 75$	410	-	270	-	12	-	110
	$75 < D \leq 150$	$75 < S \leq 150$	390	-	250	-	10	-	110
	$150 < D \leq 200$	$150 < S \leq 200$	350	-	230	-	8	-	110
T6, T6510, T6511	≤ 25	≤ 25	415	-	370	-	6	5	140
	$25 < D \leq 75$	$25 < S \leq 75$	460	-	415	-	7	-	140
	$75 < D \leq 150$	$75 < S \leq 150$	465	-	420	-	7	-	140
	$150 < D \leq 200$	$150 < S \leq 200$	430	-	350	-	6	-	140
	$200 < D \leq 250$	$200 < S \leq 250$	420	-	320	-	5	-	140
Extruded tube									
Temper	Wall thickness t mm		R_m MPa		$R_{p0,2}$ MPa		A %	$A_{50\text{ mm}}$ %	Hardness Typical value HBW
	min.	max.	min.	max.	min.	max.	min.	min.	
O, H111	≤ 20		-	250	-	135	12	10	45
T4, T4510, T4511	≤ 20		370	-	230	-	11	10	110
T6, T6510, T6511	≤ 10		415	-	370	-	7	5	140
	$10 < t \leq 40$		450	-	400	-	6	4	140
Extruded profile ^c									
Temper	Wall thickness t mm		R_m MPa		$R_{p0,2}$ MPa		A %	$A_{50\text{ mm}}$ %	Hardness Typical value HBW
	min.	max.	min.	max.	min.	max.	min.	min.	
O, H111	all		-	250	-	135	12	10	45
T4, T4510, T4511	≤ 25		370	-	230	-	11	10	110
	$25 < t \leq 75$		410	-	270	-	10	-	110
T6, T6510, T6511	≤ 25		415	-	370	-	7	5	140
	$25 < t \leq 75$		460	-	415	-	7	-	

^a D = Diameter for round bar.

^b S = Width across flats for square and hexagonal bar, thickness for rectangular bar.

^c If a profile cross section comprises different thicknesses which fall in more than one set of specified mechanical property values, the lowest specified value shall be considered as valid for the whole profile cross section.

Table 8 — Alloy EN AW-2017A [Al Cu4MgSi(A)]

Extruded rod/bar									
Temper	Dimensions mm		R_m MPa		$R_{p0,2}$ MPa		A %	$A_{50 \text{ mm}}$ %	Hardness Typical value HBW
	D^a	S^b	min.	max.	min.	max.	min.	min.	
O, H111	≤ 200	≤ 200	-	250	-	135	12	10	45
T4, T4510, T4511 ^c	≤ 25	≤ 25	380	-	260	-	12	10	105
	$25 < D \leq 75$	$25 < S \leq 75$	400	-	270	-	10	-	105
	$75 < D \leq 150$	$75 < S \leq 150$	390	-	260	-	9	-	105
	$150 < D \leq 200$	$150 < S \leq 200$	370	-	240	-	8	-	105
	$200 < D \leq 250$	$200 < S \leq 250$	360	-	220	-	7	-	105
Extruded tube									
Temper	Wall thickness t mm		R_m MPa		$R_{p0,2}$ MPa		A %	$A_{50 \text{ mm}}$ %	Hardness Typical value HBW
			min.	max.	min.	max.	min.	min.	
O, H111	≤ 20		-	250	-	135	12	10	45
T4, T4510, T4511 ^c	≤ 10		380	-	260	-	12	10	105
	$10 < t \leq 75$		400	-	270	-	10	8	105
Extruded profile									
Temper	Wall thickness t mm		R_m MPa		$R_{p0,2}$ MPa		A %	$A_{50 \text{ mm}}$ %	Hardness Typical value HBW
			min.	max.	min.	max.	min.	min.	
T4, T4510, T4511 ^c	≤ 30		380	-	260	-	10	8	105
^a D = Diameter for round bar. ^b S = Width across flats for square and hexagonal bar, thickness for rectangular bar. ^c Properties may be obtained by press quenching.									

Table 9 — Alloy EN AW-2618A [Al Cu2Mg1.5Ni]

Extruded rod/bar									
Temper	Dimensions mm		R_m MPa		$R_{p0,2}$ MPa		A %	$A_{50\text{ mm}}$ %	Hardness Typical value HBW
	D^a	S^b	min.	max.	min.	max.	min.	min.	
T6, T6511	$D \leq 10$	$S \leq 10$	410	-	330	-	6	4	140
T6, T6511	$10 < D \leq 100$	$10 < S \leq 100$	420	-	360	-	7	5	145
Extruded tube									
Temper	Wall thickness t mm		R_m MPa		$R_{p0,2}$ MPa		A %	$A_{50\text{ mm}}$ %	Hardness Typical value HBW
	min.	max.	min.	max.	min.	max.	min.	min.	
T6, T6511	≤ 10		410	-	330	-	6	4	140
T6, T6511	$10 < t \leq 100$		420	-	360	-	7	5	145
Extruded profile ^c									
Temper	Wall thickness t mm		R_m MPa		$R_{p0,2}$ MPa		A %	$A_{50\text{ mm}}$ %	Hardness Typical value HBW
	min.	max.	min.	max.	min.	max.	min.	min.	
T6, T6511	≤ 10		410	-	330	-	6	4	140
T6, T6511	$10 < t \leq 100$		420	-	360	-	7	5	145

^a D = Diameter for round bar.

^b Width across flats for square and hexagonal bar, thickness for rectangular bar.

^c If a profile cross section comprises different thickness which fall in more than one set of specified mechanical property values, the lowest specified value shall be considered as valid for the whole profile cross section.

Table 10 — Alloy EN AW-2024 [Al Cu4Mg1]

Extruded rod/bar									
Temper	Dimensions mm		R_m MPa		$R_{p0,2}$ MPa		A %	$A_{50\text{ mm}}$ %	Hardness Typical value HBW
	D^a	S^b	min.	max.	min.	max.	min.	min.	
O, H111	≤ 200	≤ 200	-	250	-	150	12	10	47
T4, T4510, T4511	≤ 50	≤ 50	450	-	310	-	8	6	120
	$50 < D \leq 100$	$50 < S \leq 100$	440	-	300	-	8	-	120
	$100 < D \leq 200$	$100 < S \leq 200$	420	-	280	-	8	-	120
	$200 < D \leq 250$	$200 < S \leq 250$	400	-	270	-	8	-	120
T6, T6510, T8511	≤ 150	≤ 150	455	-	380	-	5	4	130
Extruded tube									
Temper	Wall thickness t mm		R_m MPa		$R_{p0,2}$ MPa		A %	$A_{50\text{ mm}}$ %	Hardness Typical value HBW
			min.	max.	min.	max.	min.	min.	
O, H111	≤ 30		-	250	-	150	12	10	47
T4, T4510, T4511	≤ 30		420	-	290	-	8	6	120
T6, T6510, T6511	≤ 30		455	-	380	-	5	4	130
Extruded profile ^c									
Temper	Wall thickness t mm		R_m MPa		$R_{p0,2}$ MPa		A %	$A_{50\text{ mm}}$ %	Hardness Typical value HBW
			min.	max.	min.	max.	min.	min.	
O, H111	all		-	250	-	150	12	10	47
T4, T4510, T4511	≤ 15		395	-	290	-	8	6	120
	$15 < t \leq 50$		420	-	290	-	8	-	120
T6, T6510, T6511	≤ 50		455	-	380	-	5	4	130
^a D = Diameter for round bar. ^b S = Width across flats for square and hexagonal bar, thickness for rectangular bar. ^c If a profile cross section comprises different thickness which fall in more than one set of specified mechanical property values, the lowest specified value shall be considered as valid for the whole profile cross section.									