



**SLOVENSKI STANDARD**  
**oSIST prEN 754-2:2023**  
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**Aluminij in aluminijeve zlitine - Hladno vlečene palice/drogovi in cevi - 2. del:  
Mehanske lastnosti**

Aluminium and aluminium alloys - Cold drawn rod/bar and tube - Part 2: Mechanical properties

Aluminium und Aluminiumlegierungen - Gezogene Stangen und Rohre - Teil 2:  
Mechanische Eigenschaften

Aluminium et alliages d'aluminium - Barres et tubes étirés - Partie 2: Caractéristiques mécaniques

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**Ta slovenski standard je istoveten z: prEN 754-2**

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**ICS:**

77.150.10      Alumijski izdelki      Aluminium products

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
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**DRAFT**  
**prEN 754-2**

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ICS 77.150.10

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English Version

## Aluminium and aluminium alloys - Cold drawn rod/bar and tube - Part 2: Mechanical properties

Aluminium et alliages d'aluminium - Barres et tubes  
étirés - Partie 2: Caractéristiques mécaniques

Aluminium und Aluminiumlegierungen - Gezogene  
Stangen und Rohre - 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

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## iTeh STANDARD PREVIEW (standards.iteh.ai)

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## European foreword

This document (prEN 754-2:2023) 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 754-2:2016.

Within its programme of work, Technical Committee CEN/TC 132 entrusted CEN/TC 132/WG 5 “Extruded and drawn products” to revise EN 754-2:2016.

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 27;
- 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;

The EN 754 series comprises the following parts under the general title “Aluminium and aluminium alloys — Cold drawn rod/bar and tube”:

- *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*

## 1 Scope

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

Technical conditions for inspection and delivery, including product and testing requirements, are specified in EN 754-1. 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 754-1:2016, *Aluminium and aluminium alloys - Cold drawn rod/bar and tube - 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 40 or those agreed upon between supplier and purchaser and stated in the order document.

For all alloys the condition F (as fabricated) can be used, but without guaranteed mechanical properties.

Table 1 to Table 37 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 754-1.

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 40 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 754-1.

## 4.3 Detailed tables of mechanical properties

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

Drawn rod/bar									
Temper	Dimensions mm		$R_m$ MPa		$R_{p0,2}$ MPa		$A$ %	$A_{50mm}$ %	$HBW$ Typical value
	$D^a$	$S^b$	min.	max.	min.	max.	min.	min.	
O, H111	≤ 80	≤ 60	60	95	-	-	25	22	20
H14	≤ 40	≤ 10	100	135	70	-	6	5	30
H16	≤ 15	≤ 5	120	160	105	-	4	3	35
H18	≤ 10	≤ 3	145	-	125	-	3	3	43
Drawn tube									
Temper	Wall thickness $t$ mm	$R_m$ MPa		$R_{p0,2}$ MPa		$A$ %	$A_{50mm}$ %	$HBW$ Typical value	
		min.	max.	min.	max.	min.	min.		
O, H111	≤ 20	60	95	-	-	25	22	20	
H14	≤ 10	100	135	70	-	6	5	30	
H16	≤ 5	120	160	105	-	4	3	35	
H18	≤ 3	145	-	125	-	3	3	43	
<sup>a</sup> $D$ = Diameter for round bar. <sup>b</sup> $S$ = Width across flats for square and hexagonal bar, thickness for rectangular bar.									

Table 2 — Aluminium EN AW-1200 [Al 99,0]

Drawn rod/bar									
Temper	Dimensions mm		$R_m$ MPa		$R_{p0,2}$ MPa		$A$ %	$A_{50mm}$ %	$HBW$ Typical value
	$D^a$	$S^b$	min.	max.	min.	max.	min.	min.	
O, H111	≤ 80	≤ 60	70	105	-	-	20	16	23
H14	≤ 40	≤ 10	110	145	80	-	5	4	37
H16	≤ 15	≤ 5	135	170	115	-	3	3	45
H18	≤ 10	≤ 3	150	-	130	-	3	3	50
Drawn tube									
Temper	Wall thickness $t$ mm	$R_m$ MPa		$R_{p0,2}$ MPa		$A$ %	$A_{50mm}$ %	$HBW$ Typical value	
		min.	max.	min.	max.	min.	min.		
O, H111	≤ 20	70	105	-	-	20	16	23	
H14	≤ 10	110	145	80	-	5	4	37	
H16	≤ 5	135	170	115	-	3	3	45	
H18	≤ 3	150	-	130	-	3	3	50	
<sup>a</sup> $D$ = Diameter for round bar. <sup>b</sup> $S$ = Width across flats for square and hexagonal bar, thickness for rectangular bar.									

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Table 3 — Alloy EN AW-2007 [Al Cu4PbMgMn]

Drawn rod/bar									
Temper	Dimensions mm		$R_m$ MPa		$R_{p0,2}$ MPa		$A$ %	$A_{50mm}$ %	$HBW$ Typical value
	$D^a$	$S^b$	min.	max.	min.	max.	min.	min.	
T3 <sup>c</sup>	≤ 30	≤ 30	370	-	240	-	7	5	95
	30 < $D$ ≤ 80	30 < $S$ ≤ 80	340	-	220	-	6	-	95
T351 <sup>c</sup>	≤ 80	≤ 80	370	-	240	-	5	3	95
Drawn tube									
Temper	Wall thickness $t$ mm		$R_m$ MPa		$R_{p0,2}$ MPa		$A$ %	$A_{50mm}$ %	$HBW$ Typical value
			min.	max.	min.	max.	min.	min.	
T3 <sup>c</sup>	≤ 20		370	-	250	-	7	5	95
T3510 <sup>c</sup> , T3511 <sup>c</sup>	≤ 20		370	-	240	-	5	3	95
<sup>a</sup> $D$ = Diameter for round bar. <sup>b</sup> $S$ = Width across flats for square and hexagonal bar, thickness for rectangular bar. <sup>c</sup> Properties may be obtained by press quenching.									

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Table 4 — Alloy EN AW-2011 [Al Cu6BiPb]

Drawn rod/bar									
Temper	Dimensions mm		$R_m$ MPa		$R_{p0,2}$ MPa		$A$ %	$A_{50mm}$ %	$HBW$ Typical value
	$D^a$	$S^b$	min.	max.	min.	max.	min.	min.	
T3	$\leq 40$	$\leq 40$	320	-	270	-	10	8	90
	$40 < D \leq 50$	$40 < S \leq 50$	300	-	250	-	10	-	90
	$50 < D \leq 80$	$50 < S \leq 80$	280	-	210	-	10	-	90
T8	$\leq 80$	$\leq 80$	370	-	270	-	8	6	115
Drawn tube									
Temper	Wall thickness $t$ mm		$R_m$ MPa		$R_{p0,2}$ MPa		$A$ %	$A_{50mm}$ %	$HBW$ Typical value
			min.	max.	min.	max.	min.	min.	
T3 <sup>c</sup>	$\leq 5$		310	-	260	-	10	8	90
	$5 < t \leq 20$		290	-	240	-	8	6	90
T8	$\leq 20$		370	-	275	-	8	6	115
<sup>a</sup> $D$ = Diameter for round bar. <sup>b</sup> $S$ = Width across flats for square and hexagonal bar, thickness for rectangular bar. <sup>c</sup> Properties may be obtained by press quenching.									

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Table 5 — Alloy EN AW-2011A [Al Cu6BiPb(A)]

Drawn rod/bar									
Temper	Dimensions mm		$R_m$ MPa		$R_{p0,2}$ MPa		$A$ %	$A_{50mm}$ %	$HBW$ Typical value
	$D^a$	$S^b$	min.	max.	min.	max.	min.	min.	
T3	$\leq 40$	$\leq 40$	320	-	270	-	10	8	90
	$40 < D \leq 50$	$40 < S \leq 50$	300	-	250	-	10	-	90
	$50 < D \leq 80$	$50 < S \leq 80$	280	-	210	-	10	-	90
T8	$\leq 80$	$\leq 80$	370	-	270	-	8	6	115
Drawn tube									
Temper	Wall thickness $t$ mm		$R_m$ MPa		$R_{p0,2}$ MPa		$A$ %	$A_{50mm}$ %	$HBW$ Typical value
			min.	max.	min.	max.	min.	min.	
T3 <sup>c</sup>	$\leq 5$		310	-	260	-	10	8	90
	$5 < t \leq 20$		290	-	240	-	8	6	90
T8	$\leq 20$		370	-	275	-	8	6	115
<sup>a</sup> $D$ = Diameter for round bar. <sup>b</sup> $S$ = Width across flats for square and hexagonal bar, thickness for rectangular bar. <sup>c</sup> Properties may be obtained by press quenching.									

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Table 6 — Alloy EN AW-2014 [Al Cu4SiMg]

Drawn rod/bar									
Temper	Dimensions mm		$R_m$ MPa		$R_{p0,2}$ MPa		$A$ %	$A_{50mm}$ %	$HBW$ Typical value
	$D^a$	$S^b$	min.	max.	min.	max.	min.	min.	
O, H111	≤ 80	≤ 80	-	240	-	125	12	10	45
T3	≤ 80	≤ 80	380	-	290	-	8	6	110
T351	≤ 80	≤ 80	380	-	290	-	6	4	110
T4	≤ 80	≤ 80	380	-	220	-	12	10	110
T451	≤ 80	≤ 80	380	-	220	-	10	8	110
T6	≤ 80	≤ 80	450	-	380	-	8	6	140
T651	≤ 80	≤ 80	450	-	380	-	6	4	140
Drawn tube									
Temper	Wall thickness $t$ mm	$R_m$ MPa		$R_{p0,2}$ MPa		$A$ %	$A_{50mm}$ %	$HBW$ Typical value	
		min.	max.	min.	max.	min.	min.		
O, H111	≤ 20	-	240	-	125	12	10	45	
T3	≤ 20	380	-	290	-	8	6	110	
T3510, T3511	≤ 20	380	-	290	-	6	4	110	
T4	≤ 20	380	-	240	-	12	10	110	
T4510, T4511	≤ 20	380	-	240	-	10	8	110	
T6	≤ 20	450	-	380	-	8	6	140	
T6510, T6511	≤ 20	450	-	380	-	6	4	140	
<sup>a</sup> $D$ = Diameter for round bar. <sup>b</sup> $S$ = Width across flats for square and hexagonal bar, thickness for rectangular bar.									

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

Drawn rod/bar									
Temper	Dimensions mm		$R_m$ MPa		$R_{p0,2}$ MPa		$A$ %	$A_{50mm}$ %	$HBW$ Typical value
	$D^a$	$S^b$	min.	max.	min.	max.	min.	min.	
O, H111	≤ 80	≤ 80	-	240	-	125	12	10	45
T3	≤ 80	≤ 80	380	-	290	-	8	6	110
T351	≤ 80	≤ 80	380	-	290	-	6	4	110
T4	≤ 80	≤ 80	380	-	220	-	12	10	110
T451	≤ 80	≤ 80	380	-	220	-	10	8	110
T6	≤ 80	≤ 80	450	-	380	-	8	6	140
T651	≤ 80	≤ 80	450	-	380	-	6	4	140
Drawn tube									
Temper	Wall thickness $t$ mm	$R_m$ MPa		$R_{p0,2}$ MPa		$A$ %	$A_{50mm}$ %	$HBW$ Typical value	
		min.	max.	min.	max.	min.	min.		
O, H111	≤ 20	-	240	-	125	12	10	45	
T3	≤ 20	380	-	290	-	8	6	110	
T3510, T3511	≤ 20	380	-	290	-	6	4	110	
T4	≤ 20	380	-	240	-	12	10	110	
T4510, T4511	≤ 20	380	-	240	-	10	8	110	
T6	≤ 20	450	-	380	-	8	6	140	
T6510, T6511	≤ 20	450	-	380	-	6	4	140	
<sup>a</sup> $D$ = Diameter for round bar. <sup>b</sup> $S$ = Width across flats for square and hexagonal bar, thickness for rectangular bar.									