



# SLOVENSKI STANDARD

## SIST EN 755-2:2014

01-februar-2014

Nadomešča:  
SIST EN 755-2:2008

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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

Ta slovenski standard je istoveten z: **EN 755-2:2013**

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#### **ICS:**

77.150.10      Aluminijski izdelki                      Aluminium products

**SIST EN 755-2:2014**                                      **en,fr,de**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 755-2**

October 2013

ICS 77.150.10

Supersedes EN 755-2:2008

English Version

## 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 European Standard was approved by CEN on 22 August 2013.

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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.

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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 755-2:2013) 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of an identical text or by endorsement, at the latest by April 2014, and conflicting national standards shall be withdrawn at the latest by April 2014.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.

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

This document supersedes EN 755-2:2008.

CEN/TC 132 decided to revise EN 755-2:2008 as follows:

- addition of the alloys EN AW-6026 and EN AW-6064A in new Tables 25 and 26;
- EN 10002-1 was replaced by EN ISO 6892-1;
- editorial corrections in Tables 7, 22, 47, 49, 54 and 59.

EN 755 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*

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 755-2:2013 (E)****1 Scope**

This European Standard 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, 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 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 Mechanical property limits**

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**3.1 General**

The mechanical properties shall be in conformity with those specified in Table 1 to Table 59 or those agreed upon between supplier and purchaser, and stated in the order document.

Table 1 to Table 59 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 standard.

Brinell hardness values given in Table 1 to Table 59 expressed as *HBW* values are for information only.

**3.2 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.

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

<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> 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 % min.	$A_{50\text{ mm}}$ % min.	Hardness Typical value HBW
	$D^a$	$S^b$	min.	max.	min.	max.			
F <sup>c</sup> , H112	all	all	60	-	23		25	23	18
Extruded tube Not specified									
Extruded profile Not specified									
<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> F Temper: property values are for information only.									

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

Extruded rod/bar									
Temper	Dimensions mm		$R_m$ MPa		$R_{p0,2}$ MPa		A % min.	$A_{50\text{ mm}}$ % min.	Hardness Typical value HBW
	$D^a$	$S^b$	min.	max.	min.	max.			
F <sup>c</sup> , H112	all	all	75	-	25	-	20	18	23
Extruded tube									
Temper	Wall thickness $t$ mm		$R_m$ MPa		$R_{p0,2}$ MPa		A % min.	$A_{50\text{ mm}}$ % min.	Hardness Typical value HBW
	min.	max.	min.	max.					
F <sup>c</sup> , H112	all	all	75	-	25		20	18	23
Extruded profile									
Temper	Wall thickness $t$ mm		$R_m$ MPa		$R_{p0,2}$ MPa		A % min.	$A_{50\text{ mm}}$ % min.	Hardness Typical value HBW
	min.	max.	min.	max.					
F <sup>c</sup> , H112	all		75	-	25		20	18	23

<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> F Temper: property values are for information only.

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

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

<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> F Temper: property values are for information only.

<sup>d</sup> Electrical conductivity  $\gamma \geq 35,4$  MS/m.

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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 <sup>c</sup>	$\leq 80$	$\leq 80$	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 <sup>c</sup>	$\leq 25$		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 <sup>c</sup>	$\leq 30$		370	-	250	-	8	6	95
<sup>a</sup> $D$ = Diameter for round bar. <span style="float: right;">SIST EN 755-2:2014</span> <sup>b</sup> $S$ = Width across flats for square and hexagonal bar, thickness for rectangular bar. <span style="float: right;"><a href="https://standards.iteh.ai/catalog/standards/sist/e9ed698-15fb-45e9-93c1-a9b5339eb475/sist-en-755-2-2014">https://standards.iteh.ai/catalog/standards/sist/e9ed698-15fb-45e9-93c1-a9b5339eb475/sist-en-755-2-2014</a></span> <sup>c</sup> 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 % min.	$A_{50\text{ mm}}$ % min.	Hardness Typical value HBW
	$D^a$	$S^b$	min.	max.	min.	max.			
T4 <sup>c</sup>	≤ 200	≤ 60	275	-	125	-	14	12	95
T6 <sup>c</sup>	≤ 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 % min.	$A_{50\text{ mm}}$ % min.	Hardness Typical value HBW
	min.	max.	min.	max.					
T6 <sup>c</sup>	≤ 25		310	-	230	-	6	4	110
Extruded profile Not specified									
<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 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	$\leq 200$	$\leq 200$	-	250	-	135	12	10	45
T4, T4510, T4511	$\leq 25$	$\leq 25$	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	$\leq 25$	$\leq 25$	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.	min.	
O, H111	$\leq 20$		-	250	-	135	12	10	45
T4, T4510, T4511	$\leq 20$		370	-	230	-	11	10	110
T6, T6510, T6511	$\leq 10$		415	-	370	-	7	5	140
	$10 < t \leq 40$		450	-	400	-	6	4	140
Extruded profile <sup>c</sup>									
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	-	135	12	10	45
T4, T4510, T4511	$\leq 25$		370	-	230	-	11	10	110
	$25 < t \leq 75$		410	-	270	-	10	-	110
T6, T6510, T6511	$\leq 25$		415	-	370	-	7	5	140
	$25 < t \leq 75$		460	-	415	-	7	-	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.

<sup>c</sup> If a profile cross section is comprised of 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.