



SLOVENSKI STANDARD

SIST EN 755-7:2008

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SIST EN 755-7:1999

Aluminij in aluminijeve zlitine - Iztiskane palice/drogovi, cevi in profili - 7. del: Nevarjene (narejene iz celega) cevi, tolerance mer in oblike

Aluminium and aluminium alloys - Extruded rod/bar, tube and profiles - Part 7: Seamless tubes, tolerances on dimensions and form

Aluminium und Aluminiumlegierungen - Stranggepresste Stangen, Rohre und Profile - Teil 7: Nahtlose Rohre, Grenzabmaße und Formtoleranzen

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Aluminium et alliage d'aluminium - Barres, tubes et profilés - Partie 7 : Tubes filés sur aiguille, tolérances sur dimensions et forme

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English Version

Aluminium and aluminium alloys - Extruded rod/bar, tube and profiles - Part 7: Seamless tubes, tolerances on dimensions and form

Aluminium et alliages d'aluminium - Barres, tubes et profilés filés - Partie 7: Tubes filés sur aiguille, tolérances sur dimensions et forme

Aluminium und Aluminiumlegierungen - Stranggepresste Stangen, Rohre und Profile - Teil 7: Nahtlose Rohre, Grenzabmaße und Formtoleranzen

This European Standard was approved by CEN on 10 February 2008.

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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 Management Centre has the same status as the official versions.

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Foreword

This document (EN 755-7:2008) 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of an identical text or by endorsement, at the latest by September 2008, and conflicting national standards shall be withdrawn at the latest by September 2008.

This document supersedes EN 755-7:1998.

Within its programme of work, Technical committee CEN/TC 132 entrusted CEN/TC 132/WG 5 "*Extruded and drawn products*" to revise EN 755-7:1998.

The following technical modifications have been introduced during the revision:

- Clause 1: Scope is clarified with respect to what is not included
- Clause 2: Alloys EN AW-3102, EN AW-6008, EN AW-6014, EN AW-6360 are added in Group I
- Alloys EN AW-5049, EN AW-6110A, EN AW-6023, EN AW-7108, EN AW-7108A and EN AW-7021 are added in Group II
- Subclauses 3.4 and Table 4: Requirements to wall thickness variation (eccentricity) is introduced
- Annex A: Informative Annex A is added explaining wall thickness variation (eccentricity)

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*

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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 the United Kingdom.

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1 Scope

This document specifies the tolerances on dimensions and form for aluminium and aluminium alloy extruded seamless tubes with an outside diameter (OD) from 8 mm to 450 mm (round tube, see Figure 1) or with a cross section contained within a circumscribing circle (CD) from 10 mm to 350 mm (other than round tube, see Figure 2), supplied in straight lengths.

This standard only applies to tube produced by the seamless die/mandrel method of extrusion. This standard applies to extruded seamless tube for general engineering applications only.

The temper designations used in this part are according to EN 515.

This European Standard does not apply to:

- extruded tubes produced by porthole/bridge method (EN 755-8),
- tubes delivered in coils (prEN 13957),
- coiled tubes cut to length (prEN 13957).

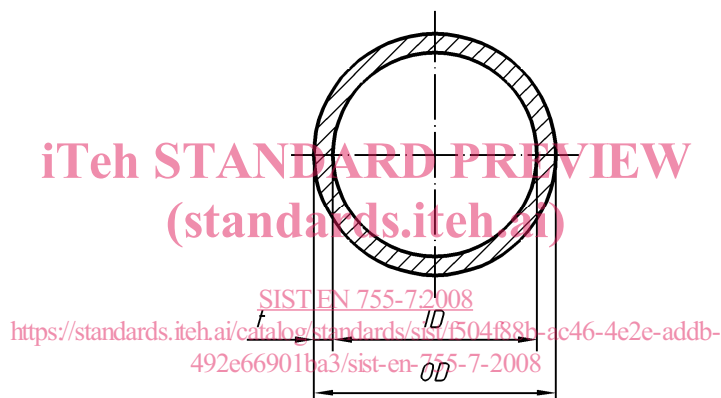


Figure 1 — Round tube

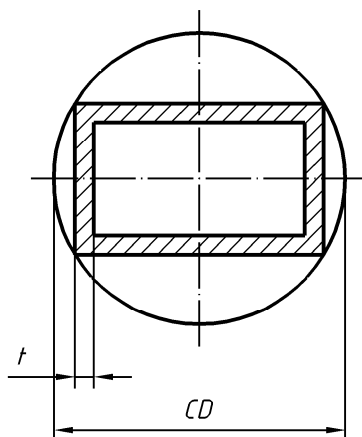


Figure 2 — Circumscribing circle for other than round tube

2 Alloy groups

For the purposes of this European Standard, the alloys are distributed into two groups which correspond to varying degrees of difficulty when manufacturing the products.

The division into group I and group II of the most commonly used general engineering alloys is specified in Table 1. Grouping of other alloys is subject to agreement between supplier and purchaser.

Table 1 — Alloy groups

Group I	EN AW-1050A, EN AW-1070A, EN AW-1200, EN AW-1350 EN AW-3102, EN AW-3003, EN AW-3103 EN AW-5005, EN AW-5005A EN AW-6101A, EN AW-6101B, EN AW-6005, EN AW-6005A, EN AW-6106, EN AW-6008 EN AW-6014, EN AW-6060, EN AW-6360, EN AW-6063, EN AW-6063A, EN AW-6463
Group II	EN AW-2007, EN AW-2011, EN AW-2011A, EN AW-2014, EN AW-2014A, EN AW-2017A, EN AW-2024, EN AW-2030 EN AW-5019, EN AW-5049, EN AW-5051A, EN AW-5251, EN AW-5052, EN AW-5154A, EN AW-5454, EN AW-5754, EN AW-5083, EN AW-5086 EN AW-6110A, EN AW-6012, EN AW-6018, EN AW-6023, EN AW-6351, EN AW-6061, EN AW-6261, EN AW-6262, EN AW-6081, EN AW-6082 EN AW-7003, EN AW-7005, EN AW-7108, EN AW-7108A, EN AW-7020, EN AW-7021, EN AW-7022, EN AW-7049A, EN AW-7075

3 Tolerances on dimensions

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3.1 General

When outside diameter *OD*, inside diameter *ID*, and wall thickness *t*, (or their equivalent dimensions in other than round tube) are all specified, standard tolerances shall apply to any two of these dimensions, but not to all three. As a result, the purchaser shall only state two nominal dimensions on any given order.

3.2 Diameter - Round tube

Mean diameter is defined as the average of two diameter measurements taken at right angles to each other at any position along the length.

The tolerances on diameter are specified in Table 2.

Table 2 — Tolerances on diameter for round tube

Dimensions in millimetres

Diameter (OD or ID)		Tolerance on diameter			
		Maximum allowable deviation of mean diameter from specified diameter ^d	Maximum allowable deviation of diameter at any point from specified diameter ^a		
Over	Up to and including		Tempers F and H112	Heat treated tube ^b	Tempers O, H111 and Tx510
≥ 8	18	± 0,25 ^c	± 0,40 ^c	± 0,60 ^c	± 1,5 ^c
18	30	± 0,30	± 0,50	± 0,70	± 1,8
30	50	± 0,35	± 0,60	± 0,90	± 2,2
50	80	± 0,40	± 0,70	± 1,1	± 2,6
80	120	± 0,60	± 0,90	± 1,4	± 3,6
120	200	± 0,90	± 1,4	± 2,0	± 5,0
200	350	± 1,4	± 1,9	± 3,0	± 7,6
350	450	± 1,9	± 2,8	± 4,0	± 10,0

^a Not applicable to tubes having a wall thickness less than 2,5 % of the specified outside diameter. The tolerance for tubes with wall thickness less than 2,5 % of the specified outside diameter shall be determined by multiplying the applicable tolerance as follows :

- wall thickness over 2,0 % up to and including 2,5 % of outside diameter: 1,5 x tolerance;
- wall thickness over 1,5 % up to and including 2,0 % of outside diameter: 2,0 x tolerance;
- wall thickness over 1,0 % up to and including 1,5 % of outside diameter: 3,0 x tolerance;
- wall thickness over 0,5 % up to and including 1,0 % of outside diameter: 4,0 x tolerance.

^b Applies to all alloys in T4, T5, T6, T64, T66 and Tx511 tempers.

^c This tolerance applies for outside diameter only, i.e. tube in this size range can only be specified as "Outside Diameter x Wall Thickness".

^d Not applicable to Tx510 or Tx511 tempers.

3.3 Width, depth or width across flats - squares, rectangles, hexagons, octagons

The tolerances on width, depth or width across flats are specified in Table 3.

Table 3 — Tolerances on width, depth or width across flats

Dimensions in millimetres

Width, depth or width across flats		Tolerances on width, depth or width across flats ^{a b}							
		$CD \leq 100$		$100 < CD \leq 200$		$200 < CD \leq 300$		$300 < CD \leq 350$	
Over	Up to and including	Alloy group I	Alloy group II	Alloy group I	Alloy group II	Alloy group I	Alloy group II	Alloy group I	Alloy group II
-	10	± 0,25	± 0,40	± 0,30	± 0,50	± 0,35	± 0,55	± 0,40	± 0,60
10	25	± 0,30	± 0,50	± 0,40	± 0,70	± 0,50	± 0,80	± 0,60	± 0,90
25	50	± 0,50	± 0,80	± 0,60	± 0,90	± 0,80	± 1,0	± 0,90	± 1,2
50	100	± 0,70	± 1,0	± 0,90	± 1,2	± 1,1	± 1,3	± 1,3	± 1,6
100	150	-	-	± 1,1	± 1,5	± 1,3	± 1,7	± 1,5	± 1,8
150	200	-	-	± 1,3	± 1,9	± 1,5	± 2,2	± 1,8	± 2,4
200	300	-	-	-	-	± 1,7	± 2,5	± 2,1	± 2,8
300	350	-	-	-	-	-	-	± 2,8	± 3,5

^a Not applicable to tubes having a wall thickness less than 2,5 % of the specified outside width, depth or width across flats. The tolerance for tubes with wall thickness less than 2,5 % of the specified width, depth or width across flats shall be determined by multiplying the applicable tolerance as follows:

- wall thickness over 2,0 % up to and including 2,5 % of outside parameter : 1,5 x tolerance;
- wall thickness over 1,5 % up to and including 2,0 % of outside parameter : 2,0 x tolerance;
- wall thickness over 1,0 % up to and including 1,5 % of outside parameter : 3,0 x tolerance;
- wall thickness over 0,5 % up to and including 1,0 % of outside parameter : 4,0 x tolerance.

^b These tolerances do not apply to tempers O and Tx510. For these tempers the tolerances shall be subject to agreement between supplier and purchaser.

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3.4 Wall thickness variation (eccentricity)

The tolerances on wall thickness variation (eccentricity) are specified in Table 4 for round tubes and in Table 5 for other than round tubes.

Table 4 — Tolerances on wall thickness variation (eccentricity) for round tubes

Nominal wall thickness t mm		Tolerance on of wall thickness variation (eccentricity) % ^a
Over	Up to and including	
-	3	± 10
3	5	± 9
5	-	± 8

^a For OD greater than 150 mm together with and OD/t ratio of more than 10, the tolerance on wall thickness variation shall be subjected to agreement between supplier and purchaser.

NOTE Round tube dimensions can be expressed in three different ways i.e. outside diameter (OD) \times wall thickness (t), inside diameter (ID) $\times t$ (where t is the nominal wall thickness) and $OD \times ID$. Depending of the way of ordering the tube the values in Table 4 should be understood as follows (see Annex A for further explanation):

- for tubes specified as $OD \times t$ or $ID \times t$ the values are allowable variation at any point.
- for tubes specified as $OD \times ID$ the above values are allowable variation from the calculated mean wall thickness.

Table 5 — Tolerances on wall thickness for other than round tubes

Dimensions in millimetres

Nominal wall thickness t		Tolerances on wall thickness for circumscribing circle CD					
		$CD \leq 100$		$100 < CD \leq 300$		$300 < CD \leq 350$	
Over	Up to and including	Alloy group I	Alloy group II	Alloy group I	Alloy group II	Alloy group I	Alloy group II
≥ 0,5	1,5	± 0,25	± 0,35	± 0,35	± 0,50	-	-
1,5	3	± 0,30	± 0,45	± 0,50	± 0,65	± 0,75	± 0,90
3	6	± 0,50	± 0,60	± 0,75	± 0,90	± 1,0	± 1,2
6	10	± 0,75	± 1,0	± 1,0	± 1,3	± 1,2	± 1,5
10	15	± 1,0	± 1,3	± 1,2	± 1,7	± 1,5	± 1,9
15	20	± 1,5	± 1,9	± 1,9	± 2,2	± 2,0	± 2,5
20	30	± 1,9	± 2,2	± 2,2	± 2,7	± 2,5	± 3,1
30	40	-	-	± 2,5	-	± 2,7	-

3.5 Length

If fixed lengths are to be supplied, this shall be stated on the order. The maximum allowable tolerances on fixed length are specified in Table 6.