

Aluminium and aluminium alloys — Extruded rod/bar, tube and profiles —

**Part 3: Round bars, tolerances on
dimensions and form**

ICS 77.150.10

National foreword

This British Standard is the UK implementation of EN 755-3:2008. It supersedes BS EN 755-3:1996 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee NFE/35, Light metals and their alloys.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Foreword

This document (EN 755-3:2008) 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of an identical text or by endorsement, at the latest by September 2008, and conflicting national standards shall be withdrawn at the latest by September 2008.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 755-3:1995.

Within its programme of work, Technical committee CEN/TC 132 entrusted CEN/TC 132/WG 5 "*Extruded and drawn products*" to revise EN 755-3:1995.

The following technical modifications have been introduced during the revision:

- Clause 2: Alloy EN AW-3102, EN AW-6008, EN AW-6010A, EN AW-6014, EN AW-6023, EN AW-6360, EN AW-6262A, EN AW-6065 and EN AW-6182 are added in Group I
- Clause 2: Alloy EN AW-5049, EN AW-7108, EN AW-7108A and EN AW-7021 are added in Group II

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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1 Scope

This document specifies the tolerances on dimensions and form for aluminium and aluminium alloy extruded round bars having diameters in the range from 8 mm up to 320 mm.

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

2 Alloy groups

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 group

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-5051A, EN AW-5251 EN AW-6101A, EN AW-6101B, EN AW-6005, EN AW-6005A, EN AW-6106, EN AW-6008, EN AW-6010A, EN AW-6012, EN AW-6014, EN AW-6018, EN AW-6023, EN AW-6351, EN AW-6060, EN AW-6360, EN AW-6061, EN AW-6261, EN AW-6262, EN AW-6262A, EN AW-6063, EN AW-6063A, EN AW-6463, EN AW-6065, EN AW-6081, EN AW-6082, EN AW-6182
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-5052, EN AW-5154A, EN AW-5454, EN AW-5754, EN AW-5083, EN AW-5086 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

3.1 Diameter

The tolerances on diameter are specified in Table 2:

For the purpose of this document the alloys are distributed into two groups which correspond to varying 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.

Table 2 — Diameter tolerances

Dimensions in millimetres

Diameter <i>D</i>		Tolerances	
Over	Up to and including	Alloy group I	Alloy group II
≥ 8	18	± 0,22	± 0,30
18	25	± 0,25	± 0,35
25	40	± 0,30	± 0,40
40	50	± 0,35	± 0,45
50	65	± 0,40	± 0,50
65	80	± 0,45	± 0,70
80	100	± 0,55	± 0,90
100	120	± 0,65	± 1,0
120	150	± 0,80	± 1,2
150	180	± 1,0	± 1,4
180	220	± 1,15	± 1,7
220	270	± 1,3	± 2,0
270	320	± 1,6	± 2,5

3.2 Length

If fixed lengths are to be supplied, this shall be stated in the order document. The fixed length tolerances are specified in Table 3.

Table 3 — Fixed length tolerances

Dimensions in millimetres

Diameter <i>D</i>		Tolerances on length		
Over	Up to and including	$L \leq 2000$	$2000 < L \leq 5000$	$L > 5000$
-	100	+5 0	+7 0	+10 0
100	200	+7 0	+9 0	+12 0
200	320	+8 0	+11 0	-

If no fixed or minimum length is specified in the order document, round extruded bars may be delivered in random lengths. The actual lengths and tolerances on random-lengths shall be agreed between supplier and purchaser.

3.3 Squareness of cut ends

The squareness of cut ends shall be within half of the fixed length tolerance range (Table 3) for both fixed and random lengths, (e.g. for a fixed length tolerance of ${}^{+10}_0$ mm the squareness of cut ends shall be within 5 mm).

4 Tolerances on form

4.1 Ovality

Ovality is the difference between the maximum and minimum diameters measured in one cross-section.

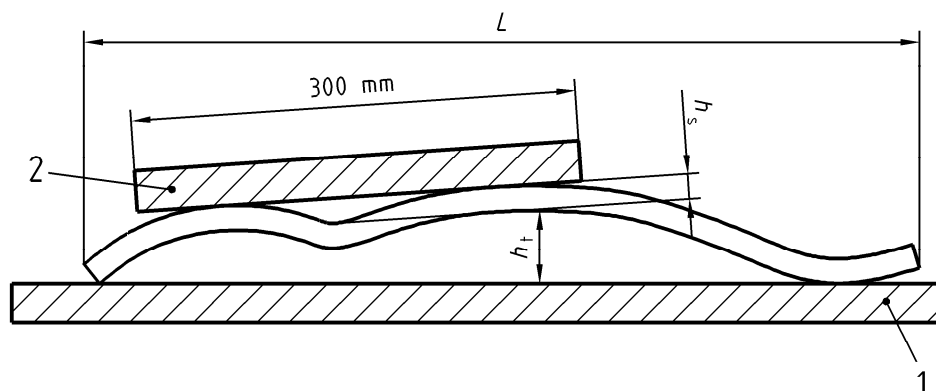
The maximum permissible ovality is 50 % of the tolerance range specified in Table 2 (e.g. for a diameter tolerance of $\pm 0,22$ mm, the maximum permissible ovality is 0,22 mm).

4.2 Straightness

Deviations from straightness, h_s and h_t , shall be measured as shown in Figure 1 with the round bar placed on a horizontal base plate so that its mass decreases the deviation.

The straightness tolerances are specified in Table 4 (The straightness tolerance h_t applies to the whole length, e.g. for a length of 6 m the maximum deviation from straightness h_t is the value given in the table multiplied by 6 m).

The straightness tolerances apply to round bars in all tempers except O and Tx510. If a straightness tolerance is required for either O or Tx510 temper, it shall be agreed between supplier and purchaser.



Key

- 1 base plate
- 2 straight edge

Figure 1 — Measurement of deviation from straightness

Table 4 — Straightness tolerances

Dimensions in millimetres

Diameter D		Maximum deviation from straightness per metre length $h_l/length$ mm/m	Maximum localised kink in any 300 mm portion h_s
Over	Up to and including		
≥ 8	80	2	0,6
80	120	2	1,0
120	200	3	1,5
200	320	6	3,0

Bibliography

- [1] EN 515, *Aluminium and aluminium alloys — Wrought products — Temper designations*

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