INTERNATIONAL STANDARD

ISO 6362-3

Third edition
2012-07-01

Wrought aluminium and aluminium alloys — Extruded rods/bars, tubes and profiles —

Part 3: Extruded rectangular bars — Tolerances on shape and dimensions

Aluminium et alliages d'aluminium corroyés — Barres, tubes et profilés filés —

Partie 3: Barres rectangulaires filées — Tolérances sur forme et dimensions

Reference number
ISO 6362-3:2012(E)

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Published in Switzerland

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 6362-3 was prepared by Technical Committee ISO/TC 79, *Light metals and their alloys*, Subcommittee SC 6, *Wrought aluminium and aluminium alloys*.

This third edition cancels and replaces the second edition (ISO 6362-3:2001), which has been technically revised.

ISO 6362 consists of the following parts, under the general title *Wrought aluminium and aluminium alloys — Extruded rods/bars, tubes and profiles*:

— *Part 1: Technical conditions for inspection and delivery*

— *Part 2: Mechanical properties*

— *Part 3: Extruded rectangular bars — Tolerances on shape and dimensions*

— *Part 4: Profiles — Tolerances on shape and dimensions*

— *Part 5: Round, square and hexagonal bars — Tolerances on shape and dimensions*

— *Part 6: Round, square, rectangular and hexagonal tubes — Tolerances on shape and dimensions*

— *Part 7: Chemical composition*

Wrought aluminium and aluminium alloys — Extruded rods/ bars, tubes and profiles —

Part 3: Extruded rectangular bars — Tolerances on shape and dimensions

1 Scope

This part of ISO 6362 specifies the tolerances on dimensions and shape of wrought aluminium and aluminium alloy extruded rectangular bars, having thicknesses in the range from 2 mm up to 240 mm and widths in the range from 10 mm up to 600 mm.

It applies to extruded rectangular bars.

2 Normative references

The following referenced documents are indispensable for the application 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.

ISO 6362-1, *Wrought aluminium and aluminium alloys — Extruded rods/bars, tubes and profiles — Part 1: Technical conditions for inspection and delivery*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 6362-1 apply.

4 Materials

For the purposes of this part of ISO 6362, wrought aluminium and aluminium alloys are divided 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.

Grouping of other alloys is subject to agreement between the purchaser and supplier.

Table 1 — Alloy group

Group I	1070, 1070A, 1060, 1050, 1050A, 1350, 1100, 1200 3102, 3003, 3103 5005, 5005A, 5051A, 5251 6101, 6101A, 6101B, 6005, 6005A, 6005C, 6110A, 6012, 6018, 6023, 6351, 6060, 6360, 6061, 6261, 6262, 6262A, 6063, 6063A, 6463, 6065, 6081, 6082, 6182
Group II	2007, 2011, 2011A, 2014, 2014A, 2017, 2017A, 2024, 2030 5019, 5049,5052, 5154A, 5454, 5754, 5056, 5083, 5086 7003, 7204, 7005, 7108, 7108A, 7020, 7021, 7022, 7049A, 7050, 7075
NOTE The four-digit numbers listed are taken from the Registration of International Alloy Designations and Chemical Composition Limits for Wrought Aluminium Alloys, published by the Aluminum Association, 1525 Wilson Boulevard, Suite 600, Arlington, VA 22209, USA (known as “Teal Sheets”).	

5 Tolerances on shape and dimensions

5.1 Dimensional tolerances

5.1.1 Tolerances on width and thickness

Tolerances on width and thickness shall be in accordance with Table 2 and Table 3.

Table 2 — Tolerances on width and thickness for alloy group I

Dimensions in millimetres

Width b		Thickness t tolerances for thickness ranges								
Range	Tolerances	$2 \le t \le 6$	$6 < t \le 10$	$10 < t \le 18$	$18 < t \le 30$	$30 < t \le 50$	$50 < t \le 80$	$80 < t \le 120$	$120 < t \le 180$	$180 < t \le 240$
$10 \le b \le 18$	± 0,25	± 0,20	± 0,25	± 0,25	—	—	—	—	—	—
$18 < b \le 30$	± 0,30	± 0,20	± 0,25	± 0,30	± 0,30	—	—	—	—	—
$30 < b \le 50$	± 0,40	± 0,25	± 0,25	± 0,30	± 0,35	± 0,40	—	—	—	—
$50 < b \le 80$	± 0,60	± 0,25	± 0,30	± 0,35	± 0,40	± 0,50	± 0,60	—	—	—
$80 < b \le 120$	± 0,80	± 0,30	± 0,35	± 0,40	± 0,45	± 0,60	± 0,70	± 0,80	—	—
$120 < b \le 180$	± 1,0	± 0,40	± 0,45	± 0,50	± 0,55	± 0,60	± 0,70	± 0,90	± 1,0	—
$180 < b \le 240$	± 1,4	—	± 0,55	± 0,60	± 0,65	± 0,70	± 0,80	± 1,0	± 1,2	± 1,4
$240 < b \le 350$	± 1,8	—	± 0,65	± 0,70	± 0,75	± 0,80	± 0,90	± 1,1	± 1,3	± 1,5
$350 < b \le 450$	± 2,2	—	—	± 0,80	± 0,85	± 0,90	± 1,0	± 1,2	± 1,4	± 1,6
$450 < b \le 600$	± 3,0	—	—	—	—	± 0,90	± 1,0	± 1,4	—	—
When the tolerance is specified either all plus or minus side, the value in this table shall be doubled.										

Table 3 — Tolerances on width and thickness for alloy group II

Dimensions in millimetres

Width b		Thickness t tolerances for thickness ranges								
Range	Tolerances	$2 \le t \le 6$	$6 < t \le 10$	$10 < t \le 18$	$18 < t \le 30$	$30 < t \le 50$	$50 < t \le 80$	$80 < t \le 120$	$120 < t \le 180$	$180 < t \le 240$
$10 \le b \le 18$	± 0,35	± 0,25	± 0,30	± 0,35	—	—	—	—	—	—
$18 < b \le 30$	± 0,40	± 0,25	± 0,30	± 0,40	± 0,40	—	—	—	—	—
$30 < b \le 50$	± 0,50	± 0,30	± 0,30	± 0,40	± 0,50	± 0,50	—	—	—	—
$50 < b \le 80$	± 0,70	± 0,30	± 0,35	± 0,45	± 0,60	± 0,70	± 0,70	—	—	—
$80 < b \le 120$	± 1,0	± 0,35	± 0,40	± 0,50	± 0,60	± 0,70	± 0,80	± 1,0	—	—
$120 < b \le 180$	± 1,4	± 0,45	± 0,50	± 0,55	± 0,70	± 0,80	± 1,0	± 1,1	± 1,4	—
$180 < b \le 240$	± 1,8	—	± 0,60	± 0,65	± 0,70	± 0,90	± 1,1	± 1,3	± 1,6	± 1,8
$240 < b \le 350$	± 2,2	—	± 0,70	± 0,75	± 0,80	± 0,90	± 1,2	± 1,4	± 1,7	± 1,9
$350 < b \le 450$	± 2,8	—	—	± 0,90	± 1,0	± 1,1	± 1,4	± 1,8	± 2,1	± 2,3
$450 < b \le 600$	± 3,5	—	—	—	—	± 1,2	± 1,4	± 1,8	—	—
When the tolerance is specified either all plus or minus side, the value in this table shall be doubled.										

5.1.2 Corner radii

Maximum corner radii shall be in accordance with Table 4.

Table 4 — Maximum value of corner radii

Dimensions in millimetres

Thickness t	Maximum value of corner radii	
	Alloy group I	Alloy group II
$2 \leq t \leq 10$	0,6	1,0
$10 < t \leq 30$	1,0	1,5
$30 < t \leq 80$	1,8	2,5
$80 < t \leq 120$	2,0	3,0
$120 < t \leq 180$	2,5	4,0
$180 < t \leq 240$	3,5	5,0

5.1.3 Fixed-length tolerances

If fixed lengths are supplied, it shall be stated in the order. The permissible tolerances on fixed lengths are given in Table 5.

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

Table 5 — Fixed-length tolerances

Dimensions in millimetres

Width b	Tolerances on fixed length		
	$L \leq 2\,000$	$2\,000 < L \leq 5\,000$	$L > 5\,000$
$b \leq 100$	$^{+5}_{0}$	$^{+7}_{0}$	$^{+10}_{0}$
$100 < b \leq 200$	$^{+7}_{0}$	$^{+9}_{0}$	$^{+12}_{0}$
$200 < b \leq 450$	$^{+8}_{0}$	$^{+11}_{0}$	$^{+14}_{0}$
$450 < b \leq 600$	$^{+9}_{0}$	$^{+12}_{0}$	$^{+16}_{0}$

5.1.4 Squareness of cut ends

The squareness of cut ends shall be within half of the fixed-length tolerance range specified in Table 5 for both fixed and random lengths. For example, for a fixed-length tolerance of $^{+10}_{0}$ mm, the squareness of cut ends shall be within 5 mm.

5.2 Shape tolerances

5.2.1 General

The shape tolerances specified in 5.2.2 to 5.2.4 apply to all tempers, except tempers O and TX510 type tempers.

The deviation shall be measured with the bar supported on a horizontal base plate, such that the deviation is minimized by the weight of the bar.

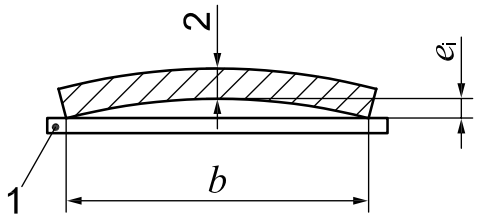
5.2.2 Flatness tolerances

Flatness tolerances shall be in accordance with Table 6. The deviation from flatness e shall be measured in accordance with Figure 1.

Table 6 — Flatness tolerances

Dimensions in millimetres

Width b	Tolerances for convexity or concavity e
$10 \leq b \leq 30$	0,2
$30 < b \leq 50$	0,3
$50 < b \leq 80$	0,4
$80 < b \leq 120$	0,6
$120 < b \leq 180$	0,9
$180 < b \leq 240$	1,2
$240 < b \leq 350$	1,5
$350 < b \leq 450$	2,0
$450 < b \leq 600$	2,5



Key

1 base plate
2 thickness
b width
e_i deviation from flatness

Figure 1 — Measurement of deviation from flatness

5.2.3 Straightness tolerances

For rectangular bars of thickness equal to or greater than 10 mm, the straightness tolerances shall be in accordance with Table 7.

Table 7 — Straightness tolerances

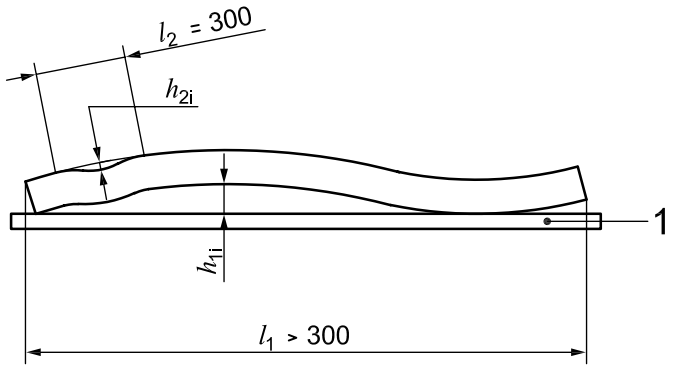
Dimensions in millimetres

Width b	Thickness t	Straightness tolerances	
		Per 1 000 mm of total length (l_1) h_1	In any 300 mm (l_2) h_2
$10 \leq b \leq 80$	$10 \leq t \leq 80$	2	1
$80 < b \leq 120$	$10 \leq t \leq 50$	2	1
	$50 < t \leq 120$	3	1,5
$120 < b \leq 180$	$10 \leq t \leq 50$	3	1,5
	$50 < t \leq 180$	4	2
$180 < b \leq 350$	$10 \leq t \leq 50$	4	2
	$50 < t \leq 240$	6	4
$350 < b \leq 450$	$10 \leq t \leq 240$	6	4
$450 < b \leq 600$	$30 < t \leq 120$	6	4

For rectangular bars of thickness less than 10 mm, the straightness tolerances shall be agreed upon between the supplier and purchaser.

The deviations from straightness h_1 and h_2 shall be measured as shown in Figure 2, with the bar placed on a horizontal base plate so that its mass decreases the deviation.

Dimensions in millimetres



Key

1 base plate

Figure 2 — Measurement of deviation from straightness

5.2.4 Twist tolerances

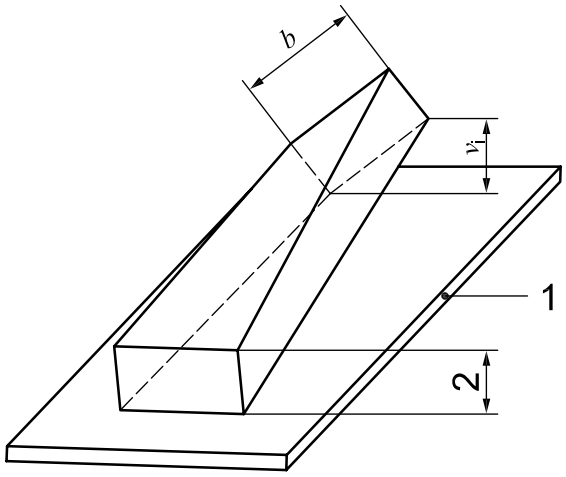
Twist tolerances shall be in accordance with Table 8.

The twist v_1 shall be measured in accordance with Figure 3.

Table 8 — Twist tolerances

Dimensions in millimetres

Width b	Tolerances on twist v_i	
	Per 1 000 mm of length	Over the total length
$10 \leq b \leq 30$	1	3
$30 < b \leq 50$	1,5	4
$50 < b \leq 120$	2	5
$120 < b \leq 240$	3	8
$240 < b \leq 350$	4	10
$350 < b \leq 450$	5	12
$450 < b \leq 600$	6	14



Key

1 base plate
2 thickness
b width
v_i twist

Figure 3 — Measurement of twist

5.2.5 Squareness tolerances

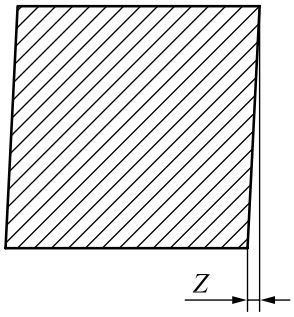
Squareness tolerances are specified in Table 9.

The deviation from square shall be measured as shown in Figure 4.

Table 9 — Squareness tolerances

Dimensions in millimetres

Thickness t	Maximum deviation from square Z
$2 \leq t \leq 10$	0,1
$10 < t \leq 100$	$0{,}01 \times t$
$100 < t \leq 180$	1,0
$180 < t \leq 240$	1,5



Key

Z maximum deviation from square

Figure 4 — Measurement of deviation from square (cross-section)

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