INTERNATIONAL STANDARD

ISO 6362-5

Second edition
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Wrought aluminium and aluminium alloy extruded rods/bars, tubes and profiles —

Part 5: Extruded round, square and hexagonal bars — Tolerances on shape and dimensions

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

Partie 5: Barres rondes, carrées et hexagonales filées — Tolérances sur dimensions et forme

Reference number
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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 3.

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 part of ISO 6362 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 6362-5 was prepared by Technical Committee ISO/TC 79, *Light metals and their alloys*, Subcommittee SC 6, *Wrought aluminium and aluminium alloys*.

This second edition cancels and replaces the first edition (ISO 6362-5:1991), which has been technically revised.

ISO 6362 consists of the following parts, under the general title *Wrought aluminium and aluminium alloy 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: Extruded profiles — Tolerances on shape and dimensions*

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

Annex A of this part of ISO 6362 is for information only.

Wrought aluminium and aluminium alloy extruded rods/bars, tubes and profiles —

Part 5:
Extruded round, square and hexagonal bars — Tolerances on shape and dimensions

1 Scope

This part of ISO 6362 specifies the tolerances on shape and dimensions of wrought aluminium and aluminium alloy extruded round bars having diameters in the range from 8 mm up to and including 350 mm, square and hexagonal bars having widths across flats in the range from 10 mm up to an including 220 mm.

For extruded bars, the technical conditions for inspection and delivery and the mechanical properties are as specified in ISO 6362-1 and ISO 6362-2.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 6362. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 6362 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 6362-1:1986, *Wrought aluminium and aluminium alloy extruded rods/bars, tubes and profiles — Part 1: Technical conditions for inspection and delivery*.

ISO 6362-2:1990, *Wrought aluminium and aluminium alloy extruded rods/bars, tubes and profiles — Part 2: Mechanical properties*.

3 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 annex A.

4 Tolerances on form and dimensions

4.1 Dimensional tolerances

4.1.1 Tolerances on diameter and width across flats

Tolerances on diameter and width across flats shall be in accordance with Table 1.

Table 1 — Dimensional tolerances

Dimensions in millimetres

Diameter or width across flats b	Tolerances	
	Alloy group I [a]	Alloy group II [a]
$8 < b \leqslant 18$	± 0,22	± 0,30
$18 < b \leqslant 25$	± 0,25	± 0,35
$25 < b \leqslant 40$	± 0,30	± 0,40
$40 < b \leqslant 50$	± 0,35	± 0,45
$50 < b \leqslant 65$	± 0,40	± 0,50
$65 < b \leqslant 80$	± 0,45	± 0,70
$80 < b \leqslant 100$	± 0,55	± 0,90
$100 < b \leqslant 120$	± 0,65	± 1,0
$120 < b \leqslant 150$	± 0,80	± 1,2
$150 < b \leqslant 180$	± 1,0	± 1,4
$180 < b \leqslant 220$	± 1,15	± 1,7
$220 < b \leqslant 270$	± 1,3	± 2,0
$270 < b \leqslant 320$	± 1,6	± 2,5
$320 < b \leqslant 350$	± 2,1	± 3,0

[a] See clause 3.

4.1.2 Circularity of round bars

Circularity is measured by the difference between the maximum and minimum diameters measured in the same cross-section.

The permissible circularity is included in the tolerance on diameter specified in Table 1.

4.1.3 Corner radii of square and hexagonal bars

The maximum corner radii of square and hexagonal bars shall be in accordance with Table 2.

Table 2 — Maximum corner radii

Dimensions in millimetres

Width across flats b	Maximum corner radii for square bars		Maximum corner radii for hexagonal bars
	Alloy group I	Alloy group II	
$10 < b \leqslant 25$	1,0	1,5	1,5
$25 < b \leqslant 50$	1,5	2,0	2,0
$50 < b \leqslant 80$	2,0	3,0	3,0
$80 < b \leqslant 120$	2,5	3,0	3,0
$120 < b \leqslant 180$	2,5	4,0	4,0
$180 < b \leqslant 220$	3,5	5,0	5,0

4.1.4 Fixed-length tolerances

If fixed lengths are to be supplied, this shall be agreed between supplier and purchaser. The permissible tolerances on fixed lengths are given in Table 3.

The squareness of a cut shall be within the fixed length tolerance.

Table 3 — Fixed-length tolerances

Dimensions in millimetres

Diameter or width across flats b	Tolerances on fixed lengths		
	$L \leqslant 2\,000$	$2\,000 < L \leqslant 5\,000$	$5\,000 < L \leqslant 8\,000$
$8 < b \leqslant 100$	$^{+5}_{0}$	$^{+7}_{0}$	$^{+10}_{0}$
$100 < b \leqslant 200$	$^{+7}_{0}$	$^{+9}_{0}$	$^{+10}_{0}$
$200 < b \leqslant 350$	$^{+8}_{0}$	$^{+11}_{0}$	$^{+14}_{0}$

4.2 Form tolerances

The form tolerances specified in 4.2.1 to 4.2.3 apply to all tempers, except tempers M, O, and T×510.

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

4.2.1 Straightness tolerances

The straightness tolerances shall be in accordance with Table 4.

The deviations from straightness h_{1i} and h_{2i} shall be measured in accordance with Figure 1.

4.2.2 Convexity – Concavity

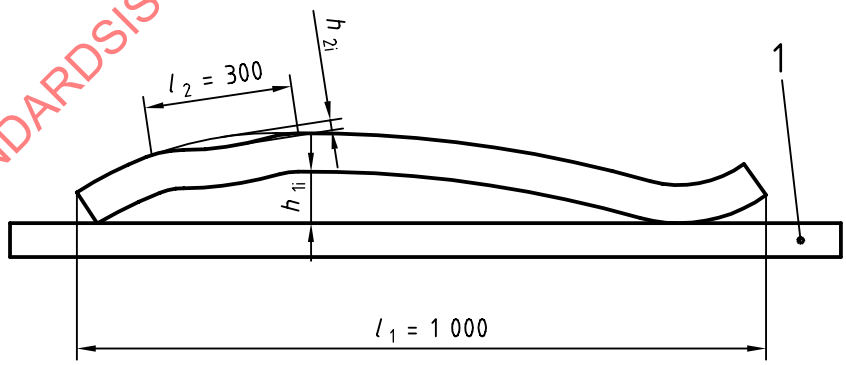
The convexity concavity for bars shall be included within the width across flats tolerances.

Table 4 — Straightness tolerances

Dimensions in millimetres

Diameter or width across flats b	Straightness tolerances	
	Per 1 000 mm of length (l_1) h_1	In any 300 mm (l_2) h_2
$8 < b \leqslant 80$	2	0,8
$80 < b \leqslant 120$	2	1,0
$120 < b \leqslant 220$	3	1,5
$220 < b \leqslant 350$	6	3

Dimensions in millimetres



Key

1 Base plate

Figure 1 — Measurement of deviation from straightness

4.2.3 Twist tolerances for square and hexagonal bars

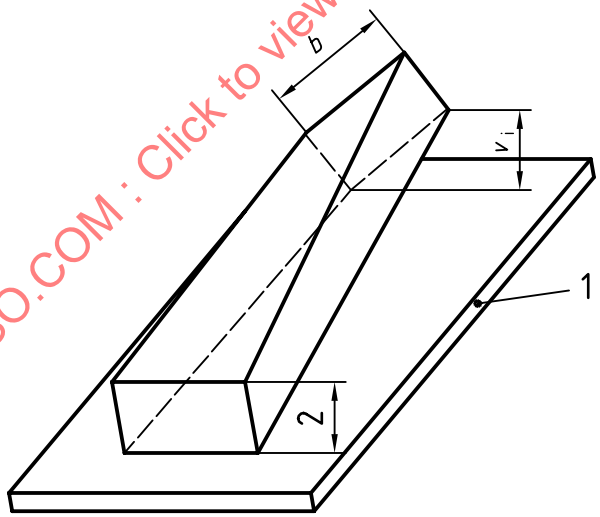
Twist tolerances shall be in accordance with Table 5.

Table 5 — Twist tolerances

Dimensions in millimetres

Width across flats b	Twist tolerances, v			
	Square bars		Hexagonal bars	
	Per 1 000 mm of length	Over the total length	Per 1 000 mm of length	Over the total length
$10 < b \leqslant 30$	1	3	1	1,5
$30 < b \leqslant 50$	1,5	4	1,5	2,5
$50 < b \leqslant 120$	2	5	2	3
$120 < b \leqslant 220$	3	6	2,5	4

The twist v_i shall be measured in accordance with Figure 2.



Key

1 Base plate
2 Thickness

Figure 2 — Measurement of twist deviation