

INTERNATIONAL STANDARD

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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 form and dimensions

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

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



Reference number
ISO 6362-5:1991(E)

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.

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.

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

This first edition cancels and replaces International Standard ISO 7273:1981, of which it constitutes a technical revision.

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 dimensions and form*
- Part 4: *Extruded profiles — Tolerances on shape and dimensions*
- Part 5: *Extruded round, square and hexagonal bars — Tolerances on form and dimensions*
- Part 8: *Extruded tubes — Tolerances on form and dimensions*

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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 form and dimensions

1 Scope

This part of ISO 6362 specifies the tolerances on form and dimensions of wrought aluminium and aluminium alloy extruded round, square and hexagonal bars, having diameters or widths across flats in the range from 10 mm up to and including 200 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 standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 6362. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 6362 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO 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

Wrought aluminium and aluminium alloys are divided into two groups:

a) Alloy group 1

- unalloyed aluminium;
- Al Mn alloys;
- Al Mg alloys with a maximum of 2,8 % Mg;
- Al MgSi alloys

b) Alloy group 2

All other aluminium alloys, for example:

- Al Mg alloys with more than 2,8 % Mg;
- Al CuMg alloys;
- Al ZnMg alloys;

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 Width across flats		Tolerances	
over	up to and including	for alloy group 1 ¹⁾	for alloy group 2 ¹⁾
10 (included)	18	$\pm 0,22$	$\pm 0,35$
18	25	$\pm 0,25$	$\pm 0,40$
25	40	$\pm 0,30$	$\pm 0,45$
40	50	$\pm 0,35$	$\pm 0,55$
50	65	$\pm 0,40$	$\pm 0,60$
65	80	$\pm 0,50$	$\pm 0,75$
80	100	$\pm 0,60$	$\pm 0,90$
100	120	$\pm 0,70$	$\pm 1,1$
120	150	$\pm 0,85$	$\pm 1,3$
150	180	$\pm 1,0$	$\pm 1,5$
180	200	$\pm 1,1$	$\pm 1,7$

1) 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		Maximum corner radii	
over	up to and including	for alloy group 1	for alloy group 2
10 (included)	18	1,0	2,0
18	30	1,2	2,5
30	50	1,5	3,0
50	80	1,8	3,5
80	120	2,0	4,0
120	150	2,5	5,0
150	200	3,0	6,0

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 Width across flats		Tolerances on fixed lengths					
over	up to and including	up to and including 250	over 250 up to and including 1 000	over 1 000 up to and including 2 000	over 2 000 up to and including 5 000	over 5 000 up to and including 8 000	over 8 000
10 (included)	30	$+2$ 0	$+4$ 0	$+5$ 0	$+5$ 0	$+7$ 0	By agreement between supplier and purchaser
30	50	$+2$ 0	$+4$ 0	$+5$ 0	$+6$ 0	$+7$ 0	
50	120	$+2,5$ 0	$+5$ 0	$+6$ 0	$+7$ 0	$+8$ 0	
120	200	$+3$ 0	$+6$ 0	$+7$ 0	$+8$ 0	$+10$ 0	

4.2 Form tolerances

The form tolerances specified in 4.2.1 and 4.2.2 apply to all tempers, except tempers M, O, and TX 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 tolerance shall be in accordance with table 4.

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

Table 4 — Straightness tolerances

Dimensions in millimetres

Diameter Width across flats over	up to and including	Straightness tolerances	
		per 1 000 mm of length (l_1) h_1	in any 300 mm (l_2) h_2
10 (included)	80	2	1
80	120	3	1,5
120	200	4	2

4.2.2 Twist tolerances for square and hexagonal bars

Twist tolerances shall be in accordance with table 5.

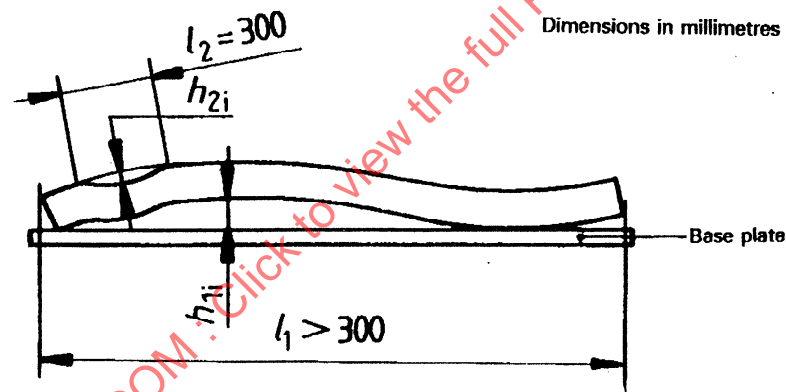


Figure 1 — Measurement of deviation from straightness

Table 5 — Twist tolerances

Dimensions in millimetres

Width across flats, b		per metre of length	Twist tolerances, v	
over	up to and including		over the total length up to and including 5 000	over 5 000
10 (included)	30	1,5	3	By agreement between sup- plier and pur- chaser
30	50	2	4	
50	120	2,5	5	
120	200	3	6	

The twist v_1 shall be measured in accordance with figure 2.

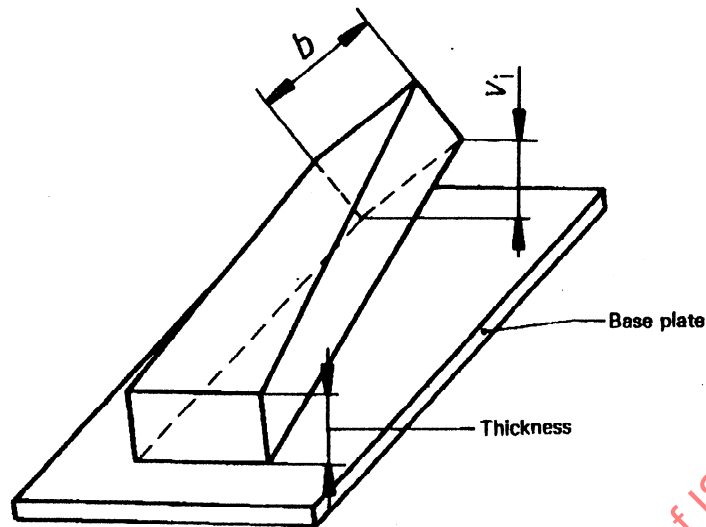


Figure 2 — Measurement of twist deviation