INTERNATIONAL STANDARD

ISO
6363-5

Second edition
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Wrought aluminium and aluminium alloys — Cold-drawn rods/bars, tubes and wires —

Part 5:
Drawn square and hexagonal bars and wires — Tolerances on form and dimensions

Aluminium et alliages d'aluminium corroyés — Barres, tubes et fils étirés à froid —

Partie 5: Barres carrées et hexagonales et fils étirés — Tolérances sur forme et dimensions

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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 6363-5 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 6363-5:1992), which has been technically revised.

ISO 6363 consists of the following parts, under the general title *Wrought aluminium and aluminium alloys — Cold-drawn rods/bars, tubes and wires*:

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

— *Part 2: Mechanical properties*

— *Part 3: Drawn round bars and wires — Tolerances on form and dimensions (symmetric plus and minus tolerances on diameter)*

— *Part 4: Drawn rectangular bars and wires — Tolerances on form and dimensions*

— *Part 5: Drawn square and hexagonal bars and wires — Tolerances on form and dimensions*

— *Part 6: Drawn round tubes — Tolerances on form and dimensions*

Wrought aluminium and aluminium alloys — Cold-drawn rods/bars, tubes and wires —

Part 5:
Drawn square and hexagonal bars and wires — Tolerances on form and dimensions

1 Scope

This part of ISO 6363 specifies the tolerances on form and dimensions of wrought aluminium and aluminium alloy drawn square and hexagonal bars and wires with widths across flats up to and including 100 mm.

For wires, this part of ISO 6363 does not apply to electrical, welding and aeronautical purposes.

For drawn bars, 4.1 to 4.5 apply, and only 4.1 applies to drawn wires.

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 6363-1, *Wrought aluminium and aluminium alloys — Cold-drawn rods/bars, tubes and wires — 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 6363-1 apply.

4 Tolerances on form and dimensions

4.1 Tolerances on width across flats

Tolerances on width across flats shall be in accordance with the plus and minus tolerances or the minus tolerance given in Table 1. The choice of tolerances depends on the agreement between the purchaser and the supplier.
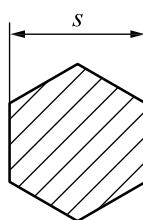
Table 1 — Tolerances on width across flats

Dimensions in millimetres

Width across flats s	Plus and minus tolerances	Maximum allowable deviation
$s \leq 3$	$\pm 0,05$	$0 \atop -0,06$
$3 < s \leq 6$	$\pm 0,05$	$0 \atop -0,08$
$6 < s \leq 10$	$\pm 0,05$	$0 \atop -0,09$
$10 < s \leq 18$	$\pm 0,06$	$0 \atop -0,11$
$18 < s \leq 30$	$\pm 0,08$	$0 \atop -0,13$
$30 < s \leq 50$	$\pm 0,13$	$0 \atop -0,16$
$50 < s \leq 65$	$\pm 0,16$	$0 \atop -0,20$
$65 < s \leq 80$	$\pm 0,20$	$0 \atop -0,30$
$80 < s \leq 100$	$\pm 0,30$	$0 \atop -0,35$
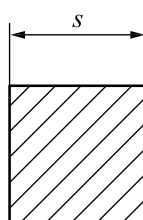
a) Square bar

b) Hexagonal bar

Key

s width across flats

Figure 1 — Widths across flats

4.2   Fixed-length tolerances

If fixed-length bars are ordered, their length tolerances shall be in accordance with Table 2.

Table 2 — Fixed-length tolerances

Dimensions in millimetres

Width across flats s	Tolerances on fixed lengths				
	$L \leq 250$	$250 < L \leq 1\,000$	$1\,000 < L \leq 2\,000$	$2\,000 < L \leq 5\,000$	$5\,000 < L$
$s \leq 30$	+ 1 0	+ 2 0		+ 5 0	By agreement
$30 < s \leq 50$	+ 2 0	+ 3 0	+ 4 0	+ 6 0	
$50 < s \leq 100$	+ 2,5 0	+ 4 0	+ 5 0	+ 7 0	

4.3 Squareness of cut ends

The squareness of cut ends shall be within half of the fixed length tolerance range (Table 2) for both fixed and random lengths. For example, for a fixed length tolerance of $^{+2}_{\ 0}$ mm, the squareness of cut ends shall be within 1 mm.

4.4 Corner radii

The corners of the bars shall be slightly rounded, but the corner radii shall not exceed the values specified in Table 3.

Table 3 — Maximum corner radii

Dimensions in millimetres

| Width across flats s	Maximum corner radii
$s \leq 10$	0,4
$10 < s \leq 40$	0,8
$40 < s \leq 80$	1,2
$80 < s \leq 100$	2,0

4.5 Form tolerances

4.5.1 General

The maximum tolerance values specified in 4.5.2 and 4.5.3 apply to all tempers, except temper O.

Form tolerances are measured by placing the bar on a horizontal plate under its own mass, as shown in Figures 2 and 3.

4.5.2 Straightness tolerances

The maximum allowable straightness tolerance, h_1, for the total length l_1, shall be 2 mm per 1 000 mm of length (see Figure 2). In addition, h_2 shall not exceed 0,6 mm for each section of 300 mm length (l_2).
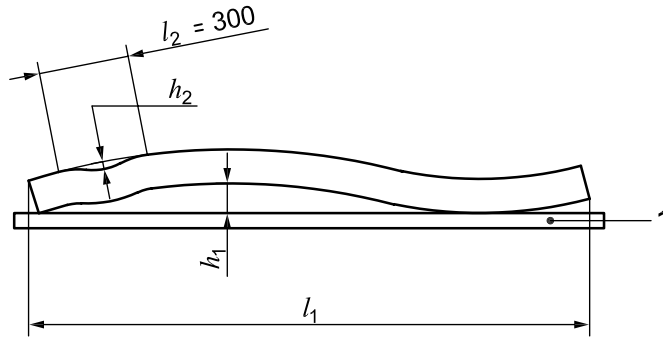
Key

1   base plate

Figure 2 — Measurement of deviation from straightness

4.5.3 Convexity-concavity

The convexity-concavity tolerance for square and hexagonal bars shall be included within the width across flats tolerances as given in Table 1.

4.5.4 Twist tolerances

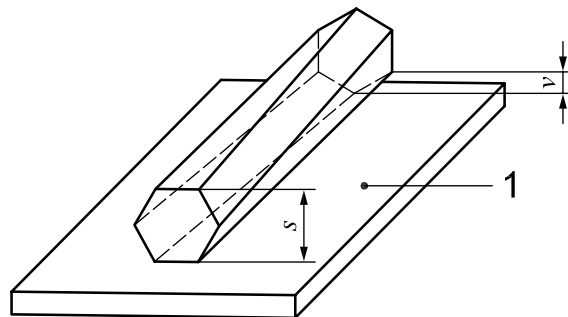The maximum allowable twist tolerances, v, shall be in accordance with Table 4.

The twist shall be measured as shown in Figure 3.

Table 4 — Twist tolerances

Dimensions in millimetres

Width across flats s	Twist tolerances v		
	Per 1 000 mm of length	Over the total length	
		$L \leq 5\ 000$	$5\ 000 < L$
$s \leq 50$	1,5	3	By agreement
$50 < s \leq 100$	2	5	

Key

1   base plate

s width across flats

v twist

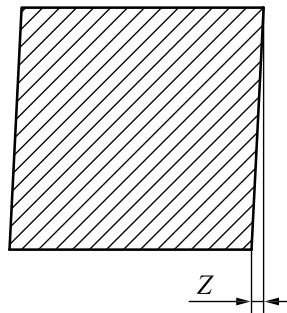**Figure 3 — Measurement of twist**

4.5.5 Squareness tolerances

Squareness tolerances are specified in Table 5.

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

Table 5 — Squareness tolerances

Dimensions in millimetres

Width across flats s	Maximum deviation from square Z
$2 \leq s \leq 100$	$0{,}005 \times s$

Key

Z deviation from square

Figure 4 — Measurement of deviation from square

ICS **77.150.10**

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