
**Hot-rolled stainless steel plates —
Tolerances on dimensions and shape**

*Tôles en acier inoxydable laminées à chaud — Tolérances sur les
dimensions et la forme*

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Foreword

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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 18286 was prepared by Technical Committee ISO/TC 17, *Steel*, Subcommittee SC 4, *Heat treatable and alloy steels*.

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Hot-rolled stainless steel plates — Tolerances on dimensions and shape

1 Scope

This International Standard specifies requirements for tolerances for hot-rolled stainless steel plates (quarto plates) made on a reversing mill with the following characteristics:

- a) $4 \text{ mm} \leq \text{nominal thickness} \leq 250 \text{ mm}$;
- b) $\text{nominal width} \geq 600 \text{ mm}$.

Tolerances for plate of width $< 600 \text{ mm}$ cut or slit from plate should be agreed upon between manufacturer and purchaser at the time of enquiry and order.

This International Standard does not include round plates, custom-made plates, checker plate or bulb plate for flooring or wide flats. It does not include continuous process plates (plate made with coiling) because tolerances for these plates are defined in another International Standard (see ISO 9444).

2 Normative references

ISO 18286:2004

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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/TS 15510:2003, *Stainless steels — Chemical composition*

ISO 16143-1:2004, *Stainless steels for general purposes — Part 1: Flat products*

3 Information to be supplied by the purchaser

3.1 General

The following information shall be supplied by the purchaser at the time of enquiry and order:

- a) description of the product (plate);
- b) number of this International standard, i.e. ISO 18286;
- c) nominal thickness, in millimetres;
- d) nominal width, in millimetres;
- e) the letters NK if plate with mill edges is required [see 6.2.2 and Clause 10 a)];
- f) nominal length, in millimetres;

- g) the width and length tolerance class A (in accordance with Tables 2 and 3), B (in accordance with Table 4) or C (in accordance with Table 5), see 6.2;
- h) the flatness tolerance class (see 7.2.1 and Tables 6 and 7);
- i) requirements concerning limits for excess mass (see Clause 8).

3.2 Options

A number of options are listed in Clause 10. In the absence of any specification of these options by the purchaser at the time of enquiry and purchase order, the manufacturer is permitted to deliver in accordance with the basic requirements of this specification (see 5.2).

4 Designation

The designation of products in accordance with 3.1 shall also include the exact designation of the ordered steel grade in accordance with the following examples:

EXAMPLE 1 Plate in accordance with this International Standard with nominal thickness of 20 mm, nominal width 2 000 mm, with trimmed edges, nominal length 4 500 mm, with width and length tolerance class B (in accordance with Table 4), with special flatness tolerances in accordance with Table 7 (class S), grade X2CrNi18-9 as specified in ISO 16143-1 is designated as follows:

plate ISO 18286 - 20 × 2000 × 4500 B S
steel ISO 16143-1 - X2CrNi18-9

EXAMPLE 2 Plate in accordance with this International Standard with nominal thickness of 4,5 mm, nominal width 1 500 mm, with mill edge (NK), with width tolerance – 0/+ 100 mm, nominal length 2 800 mm and length tolerance class A (in accordance with Table 3), with normal flatness tolerances in accordance with Table 6 (class N), grade X2CrNiMo17-12-2 as specified in ISO 16143-1:

plate ISO 18286 - 4,5 × 1500 NK – 0/+100 × 2800 A N,
steel ISO 16143-1 - X2CrNiMo17-12-2

5 Form of supply

5.1 Plate shall be supplied:

- a) with thickness tolerances as specified in Table 1 (see 6.1.1);
- b) with trimmed edges or with mill edges (NK) (see 6.2.2);
- c) with normal (N in Table 6) or with special (S in Table 7) flatness tolerances (see 7.2).

5.2 In the absence of information or code letters, as defined above, in the purchase order, plate shall be supplied as follows:

- a) sheared or flame-cut edges;
- b) normal tolerances for flatness, class N (see Table 6).

5.3 In the absence of specific requirements in the purchase order, the manufacturer is permitted to supply plate with more stringent tolerances than those listed in 5.2.

6 Tolerances on dimensions

6.1 Thickness

6.1.1 Tolerances on thickness are given in Table 1.

6.1.2 Unless otherwise agreed upon in the order, by the manufacturer and purchaser, the thickness of the plate in all areas, including ground areas, shall meet the minimum thickness requirements for the nominal thickness.

Table 1 — Tolerances on thickness

Dimensions in millimetres

Nominal thickness, t^a	Width, w			
	$w < 2\,100$	$2\,100 \leq w < 3\,000$	$3\,000 \leq w < 3\,600$	$w \geq 3\,600$
$t < 10$	+ 1,15	+ 1,30	+ 2,15	—
$10 \leq t < 20$	+ 1,40	+ 1,55	+ 2,15	+ 2,30
$20 \leq t < 25$	+ 1,55	+ 1,65	+ 2,15	+ 2,55
$25 \leq t < 50$	+ 1,80	+ 1,90	+ 2,40	+ 2,95
$50 \leq t < 75$	+ 2,55	+ 2,75	+ 2,95	+ 3,15
$75 \leq t < 100$	+ 2,75	+ 2,95	+ 3,15	+ 3,35
$100 \leq t < 150$	+ 2,95	+ 3,15	+ 3,35	+ 3,55
$150 \leq t < 200$	+ 3,35	+ 3,55	+ 3,75	+ 3,95
$200 \leq t \leq 250$	+ 3,75	+ 3,95	+ 4,15	+ 4,35

^a For plate ≤ 250 mm thickness, the tolerance under the nominal thickness shall be 0,30 mm.

6.2 Width and length

6.2.1 Tolerances on width and length for plate with trimmed edges are given in Tables 2, 3, 4 and 5. At the time of enquiry and purchase order, the purchaser shall specify which width and length tolerance class is applicable to the purchased material, tolerance class A (tolerances on width in accordance with Table 2 and tolerances on length in accordance with Table 3), tolerance class B (tolerances on width and length in accordance with Table 4) or tolerance class C (tolerances on width and length in accordance with Table 5).

Table 2 — Tolerances on width, class A

Dimensions in millimetres

Nominal width, w	Tolerances	
	lower	upper
$600 \leq w < 2\,000$	0	+ 15
$2\,000 \leq w < 3\,000$	0	+ 20
$w \geq 3\,000$	0	+ 25

6.2.2 Tolerances on width for plates with untrimmed edges (NK) shall be the subject of agreement between the manufacturer and purchaser at the time of enquiry and order.

Table 3 — Tolerances on length, class A

Dimensions in millimetres

Nominal length, L	Tolerances	
	lower	upper
$600 \leq L < 4\,000$	0	+ 20
$4\,000 \leq L < 6\,000$	0	+ 30
$6\,000 \leq L < 8\,000$	0	+ 40
$8\,000 \leq L < 10\,000$	0	+ 50
$10\,000 \leq L < 15\,000$	0	+ 75
$15\,000 \leq L \leq 20\,000^a$	0	+ 100
^a Tolerances on plates with a nominal length > 20 000 mm shall be agreed upon at the time of the enquiry and order [see Clause 10 b)].		

Table 4 — Tolerances on width and length for flame-cut plate, class B

Dimensions in millimetres

Nominal thickness, t	Tolerances	
	lower	upper
$t \leq 50$	0	+ 10
$50 < t \leq 75$	0	+ 13
$75 < t \leq 150$	0	+ 19

Table 5 — Tolerances on width and length for abrasive-cut plate, class C

Dimensions in millimetres

Nominal thickness, t	Tolerances ^a
$t \leq 25$	3,2
$25 < t \leq 50$	4,8
$50 < t \leq 75$	6,4
$75 < t \leq 100^b$	7,9
^a The tolerances under nominal width and length are 3,2 mm.	
^b Width and length tolerances for abrasive-cut plates over 100 mm thickness are subject to agreement between manufacturer and purchaser [see Clause 10 c)].	

7 Tolerances on shape

7.1 Edge camber and out-of-squareness

7.1.1 For plate specified with trimmed edges in the enquiry and in the purchase order, the edge camber shall not exceed 0,5 % of the nominal length of the plate and the out-of-squareness shall not exceed 1 % of the nominal width of the plate.

7.1.2 For plate specified with untrimmed edges in the enquiry and in the purchase order, the edge camber and out-of-squareness of the plate shall be limited so that it is possible to inscribe a rectangle of the nominal length and width of the ordered plate within the delivered size.

7.2 Flatness

7.2.1 Tolerances on flatness are given in Tables 6 for normal tolerances (class N) and in Table 7 for special tolerances (class S). At the time of enquiry and purchase order, the purchaser shall specify which of the flatness tolerance tables is applicable to the purchased material. In the absence of such specification by the purchaser, the manufacturer is permitted to deliver a product conforming to any of the flatness tolerance tables.

7.2.2 The steel types in accordance with Tables 6 and 7 are defined as follows:

- steel type A: all stainless steel grades except those covered by the description for steel type B given below;
- steel type B: stainless steel grades with Ni > 20 % or Mo > 2 % or N > 0,11 % (mass fraction).

Table 6 — Normal tolerances for flatness, class N

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Dimensions in millimetres

Nominal thickness, t	Steel type A ^a		Steel type B ^a	
	Measuring length ^b			
	1 000 ^c	2 000	1 000 ^c	2 000
$4 \leq t < 5$	9	14	12	17
$5 \leq t < 8$	8	12	11	15
$8 \leq t < 15$	7	10	10	14
$15 \leq t < 25$	7	10	10	13
$25 \leq t < 40$	6	9	9	12
$40 \leq t < 250$	5	8	8	11

^a See 7.2.2.

^b Unless otherwise specified [see clause 10 d)], the measuring length is left to the discretion of the manufacturer.

^c If the distance between the points of contact of the straight edge and the plate is < 1 000 mm, the permissible deviation from flatness shall comply with the following: for steel type A maximum 1 % or for steel type B maximum 1,5 % of the distance between the points of contact on the plate between 300 mm to 1 000 mm, but not exceeding the values given in Table 6.