

HARDOX®
WEAR PLATE

HARDOX GUARANTEES



SSAB

Hardox guarantees

SSAB continuously works to improve the production processes in order to develop new and better products. This has resulted in the ability to guarantee both closer tolerances and improved workshop properties.

SSAB's Hardox guarantees include tight thickness tolerances, tight flatness tolerances, as well as tight bending guarantees. These product guarantees have been made in order to further enhance our promise of workshop performance. You can find the relevant tolerance class for each steel grade in the respective data sheet.

Thickness guarantee - hot rolled plate

The thickness tolerances according to SSAB's thickness guarantee are closer than those specified in EN 10 029 except for ≥ 80 mm, for which the tolerance range is according to standard.

Nominal thickness (mm)	Steel thickness (mm)		
	Min	Max	Within plate
3.2 - 4.9	-0.3	+0.3	0.4
5.0 - 7.9	-0.3	+0.4	0.5
8.0 - 14.9	-0.5	+0.4	0.6
15.0 - 24.9	-0.6	+0.4	0.6
25.0 - 39.9	-0.7	+0.8	0.7
40.0 - 79.9	-0.9	+1.4	1.2
80.0 - 160.0	-1.1	+2.1	1.5

Other tolerance classes within the above defined tolerance ranges can be supplied after agreement.

Thickness tolerance - extra close can be supplied after special agreement for plate.

Thickness guarantee - hot rolled cut-to-length sheet

The thickness tolerances according to SSAB's thickness guarantee are closer than those specified in EN 10 051 for cut-to-length sheet products.

Nominal thickness (mm)	Nominal width (mm)		
	≤ 1200	1200 ≤ 1500	1500 ≤ 1800
$t \leq 2.00$	± 0.12	± 0.14	± 0.15
$2.00 < t \leq 2.50$	± 0.13	± 0.15	± 0.16
$2.50 < t \leq 3.00$	± 0.14	± 0.16	± 0.17
$3.00 < t \leq 4.00$	± 0.16	± 0.17	± 0.18
$4.00 < t \leq 5.00$	± 0.17	± 0.18	± 0.20
$5.00 < t \leq 6.00$	± 0.18	± 0.20	± 0.21
$6.00 < t \leq 8.00$	± 0.21	± 0.21	± 0.22
$8.00 < t \leq 10.0$	± 0.23	± 0.23	± 0.24
$10.00 < t \leq 12.50$	± 0.25	± 0.25	± 0.26
$12.50 < t \leq 15.00$	± 0.26	± 0.27	± 0.28
$15.00 < t \leq 25.00$	± 0.28	± 0.30	± 0.32

All values in the table conform to 1/2 EN Category D.

Thickness tolerance - extra close can be supplied after special agreement for cut-to-length sheet products.

Thickness guarantee - cold rolled cut-to-length sheet

The thickness tolerances according to SSAB's thickness guarantee are according to those specified in EN 10 131 for cold rolled cut-to-length sheet products.

Nominal thickness (mm)	Nominal width (mm)		
	≤ 1200	>1200 ≤ 1500	>1500
= 0.35 to 0.40	± 0.05	± 0.06	± 0.07
> 0.40 to 0.60	± 0.05	± 0.07	± 0.08
> 0.60 to 0.80	± 0.06	± 0.08	± 0.10
> 0.80 to 1.00	± 0.08	± 0.10	± 0.11
> 1.00 to 1.20	± 0.10	± 0.11	± 0.13
> 1.20 to 1.60	± 0.13	± 0.14	± 0.16
> 1.60 to 2.00	± 0.16	± 0.17	± 0.19
> 2.00 to 2.50	± 0.19	± 0.20	± 0.22
> 2.50 to 3.00	± 0.22	± 0.23	± 0.24

Other tolerance classes within the above defined tolerance ranges can be supplied after agreement.

Flatness guarantee

SSAB has five classes of flatness tolerances which depend on the type of product and material strength. All classes conform to, or are closer than, EN 10 029. Classes A and B also conform to, or are closer than, EN 10 051.

Class	Nominal thickness (mm)	Flatness (mm/1m ruler)
		Steel flatness
A	1.5 - 2.9	3
	3.0 - 4.9	3
	5.0 - 7.9	3
	8.0 - 14.9	3
	15.0 - 24.9	3
B	0.7 - 2.9	6
	3.0 - 4.9	6
	5.0 - 7.9	6
	8.0 - 14.9	6
	15.0 - 29.9	6
C	3.2 - 3.9	10
	4.0 - 4.9	5
	5.0 - 7.9	4
	8.0 - 39.9	3
	40.0 - 160.0	3
D	3.2 - 3.9	15
	4.0 - 4.9	7
	5.0 - 5.9	5
	6.0 - 19.9	4
	20.0 - 130.0	3
E	4.0 - 4.9	12
	5.0 - 7.9	11
	8.0 - 24.9	10
	25.0 - 39.9	9
	40.0 - 65.0	8

Flatness is measured according to standard EN 10 029 for classes C, D and E and EN 10 051 for classes A and B. Information on which class applies to each grade is provided in the respective data sheet.

Bending guarantee

SSAB has six bending guarantee classes for plate and cut-to-length products according to the table below. Information on which class applies to each grade is provided in the respective data sheet. All Classes conform to, or are closer than, the requirements in EN 10 025-6. The Bending Guarantees also conform to EN ISO 7438.

Class	Nominal thickness (mm)	Punch radius minimum R/t ¹⁾	
		Bending direction ²⁾	
		⊥ ²⁾	∥ ²⁾
A	2 ≤ t < 4	3.0	4.0
	4 ≤ t < 8	3.0	3.5
B	2 ≤ t < 4	3.0	4.0
	4 ≤ t < 8	3.0	3.5
C	0.35 ≤ t < 3	4.0 ³⁾	4.0 ³⁾
	3 ≤ t < 6.5	3.5	4.0
D	t < 8	2.5	3.0
	8 ≤ t < 15	3.0	4.0
	15 ≤ t < 20	3.0	4.0
	20 ≤ t < 50	4.0	5.0
E	t < 8	3.0	3.5
	8 ≤ t < 15	3.5	4.5
	15 ≤ t < 20	3.5	4.5
	t ≥ 20	4.5	5.0
F	t < 8	3.5	4.5
	8 ≤ t < 15	4.0	4.5
	15 ≤ t < 20	4.5	5.0
	t ≥ 20	5.5	6.0

¹⁾ R/t stands for punch radius (R) divided by thickness (t).

²⁾ The rolling direction

³⁾ Bending guarantees for cold rolled (CR) products are based on fixed die edges and normal friction.

The guaranteed values for bending are valid under conditions given in the brochure Bending of high strength steel.

Carbon equivalent guarantee CET (CEV)

You will find the values and equations for the carbon equivalent for each product on their respective data sheets, which can be found at www.ssab.com/downloads.

SSAB is a Nordic and US-based steel company. SSAB offers value added products and services developed in close cooperation with its customers to create a stronger, lighter and more sustainable world. SSAB has employees in over 50 countries. SSAB has production facilities in Sweden, Finland and the US. SSAB is listed on the Nasdaq OMX Nordic Exchange in Stockholm and has a secondary listing on the Nasdaq OMX in Helsinki.

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