

General Product Information Strenx, Hardox, Armox and Toolox



SSAB

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Tolerances and surface requirements for plate

SSAB was first in the world to introduce a comprehensive precision guarantee on the thickness of heavy plate – AccuRollTech™. This high precision is made possible by the four-high rolling mill, which is designed for very high precision products.

Unless otherwise specified in the material standard or otherwise agreed, plate is delivered with surface condition in accordance with EN 10 163-2, Class A, Sub-class 1, with flatness tolerances that conforms to provision of EN 10 029, Class N, with length and width tolerances to EN 10 029, and with thickness tolerances to AccuRollTech™ that conforms to the provisions of EN 10 029.

Extracts from EN 10 029 adapted to the SSAB dimensional range, thickness and flatness tolerances in accordance with AccuRollTech™.

Thickness tolerances

The thickness tolerances to AccuRollTech™ are closer than those specified in EN 10 029, except for thicknesses ≥ 80 mm, for which the tolerance range is the same. In AccuRollTech™, SSAB guarantee on maximum thickness variation within one plate. The tolerances are applicable to plate in asrolled or heat treated condition. Unless otherwise agreed, tolerance class A for AccuRollTech™.

AccuRolltech™

Nominal thickness (mm)	Tolerance Class A (mm)		Max thickness variation within one plate (mm)
	Min	Max	
- 4.9	- 0.3	+ 0.4	0.5
5.0 - 7.9	- 0.3	+ 0.5	0.6
8.0 - 14.9	- 0.4	+ 0.6	0.7
15.0 - 24.9	- 0.5	+ 0.7	0.8
25.0 - 39.9	- 0.7	+ 0.8	1.0
40.0 - 79.9	- 0.9	+ 1.5	1.1
80.0 -	- 1.0	+ 2.2	1.2

Tolerance class B, C or some other requirement within the AccuRolltech tolerance range for each thickness interval can be supplied.

Class B: Constant minimum tolerance of – 0.3 mm.
Class C: Constant minimum tolerance of 0 mm.

Subject to special agreement, plate with Extra - Close

AccuRollTech™ Extra close

Nominal thickness (mm)	Tolerance Class A (mm)		Max thickness variation within one plate (mm)
	Min	Max	
- 8.0	- 0.2	+ 0.3	0.4
8.1 - 16.0	- 0.2	+ 0.4	0.5
16.1 - 20.0	- 0.3	+ 0.5	0.7
20.1 - 25.0	- 0.3	+ 0.8	0.8

Other tolerance classes within the Extra close tolerance range for each thickness interval can be supplied. If tolerances to AccuRollTech™ Extra Close are specified, only surface requirements in accordance with EN 10 163-2 Class B, Subclass 3 are applied.

Length and width tolerances

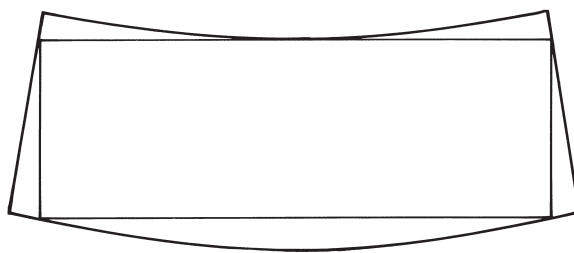
For plate with thickness up to and including 20 mm, plasma cutting enables us to offer closer tolerances on length and width than those tabulated down below.

Nominal length (mm)	Length tolerances (mm)	
	Min	Max
- 4000	0	+ 20
4000 - 5999	0	+ 30
6000 - 7999	0	+ 40
8000 - 9999	0	+ 50
10000 - 14999	0	+ 75
15000 - 18000	0	+ 100

Nominal thickness (mm)	Width tolerances (mm)	
	Min	Max
- 39	0	+ 20
40 - 149	0	+ 25
150	0	+ 30

Edge camber and out-of-squareness

It must be possible to inscribe a rectangle with the dimensions of the plate ordered within the plate supplied. See down below.



Flatness measurement

In addition to hot levelling, our equipment also allows for cold levelling of the plate.

To determine the flatness deviation, the plate is measured automatically by laser. The measurement conforms with manual procedure according to EN 10 029.

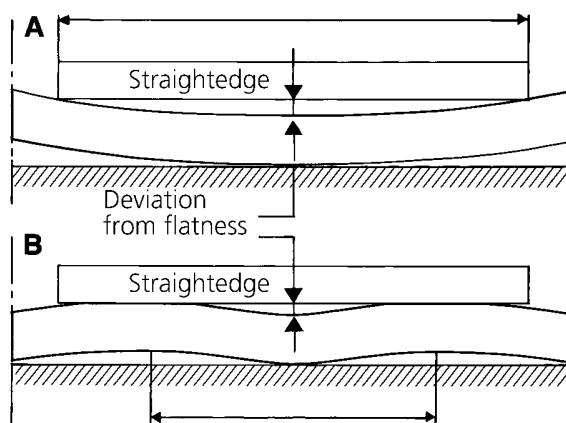
The plate is measured at least 25 mm from the long side of the plate and at least 200 mm from its short side. The vertical height is rounded off to the nearest mm.

The maximum permissible vertical heights for each tolerance class, thickness and measurement length are specified in the table below. Tolerance class S is applied only subject to special agreement.

Nominal thickness (mm)	Normal tolerance, Class N		Special tolerance, class S	
	Measurement length (mm)			
	1000	2000	1000	2000
3.0* - 4.9	9	14	**	**
5.0 - 7.9	8	12	4	8
8.0 - 14.9	7	11	3	6
15.0 - 24.9	7	10	3	6
25.0 - 39.9	6	9	3	6
40.0 - 155.0	5	8	3	6

* Restricted flatness tolerances apply to 3 - 4 mm thick plate. Further information is available from SSAB.

** Subject to special agreement.



Tolerances and surface requirements for Cut to length sheet

Unless otherwise specified in the material standard or otherwise agreed, plate is delivered with surface condition in accordance with EN 10 163-2, Class A, Sub-class 1, with flatness tolerances that conforms to provision of EN 10 051, with length and width tolerances to EN 10 051, and with thickness tolerances that conforms to EN 10 051.

Thickness tolerances

The thickness tolerances offered for cut-to-length sheet products are closer than those specified in EN 10 051, The tolerances are applicable in asrolled with mill edge as standard. Unless otherwise agreed, tolerance class A. The thickness shall be measured at any point situated at least 40 mm from the edges for products with mill edges and at least 25 mm from the edges for products with trimmed/slit edges.

Nominal Thickness (mm)	Nominal Width (mm)		
	≤ 1200	1200 ≤ 1500	1500 ≤ 1800
$t \leq 2.00$	± 0.24	± 0.27	± 0.29
$2.00 < t \leq 2.50$	± 0.25	± 0.29	± 0.32
$2.50 < t \leq 3.00$	± 0.28	± 0.31	± 0.34
$3.00 < t \leq 4.00$	± 0.31	± 0.34	± 0.36
$4.00 < t \leq 5.00$	± 0.34	± 0.36	± 0.39
$5.00 < t \leq 6.00$	± 0.36	± 0.39	± 0.41
$6.00 < t \leq 8.00$	± 0.41	± 0.42	± 0.43
$8.00 < t \leq 10.0$	± 0.45	± 0.46	± 0.48
$10.00 < t \leq 12.50$	± 0.49	± 0.50	± 0.52
$12.50 < t \leq 15.00$	± 0.52	± 0.53	± 0.56
$15.00 < t \leq 25.00$	± 0.56	± 0.59	± 0.63

Length and width tolerances

The length of the cut-to-length sheet is the length of the shorter of both longitudinal edges. The width shall be measured at right angles to the longitudinal axis of the product.

Nominal length (mm)	Tolerances (mm)	
	Lower	Upper
< 2000	0	+ 10
$2000 \leq l < 8000$	0	+ 0.00 x l
$l \geq 8000$	0	+ 40

Nominal width (mm)	Tolerances (mm)			
	Mill edges		Trimmed edges ¹⁾	
	Lower	Upper	Lower	Upper
$w \leq 1200$	0	+ 10	0	+ 3
$1200 < w \leq 1850$	0	+ 20	0	+ 5
$w > 1850$	0	+ 25	0	+ 6

¹⁾ Tolerances for trimmed edges apply to products with nominal thickness $t \leq 10$ mm.

Flatness measurement

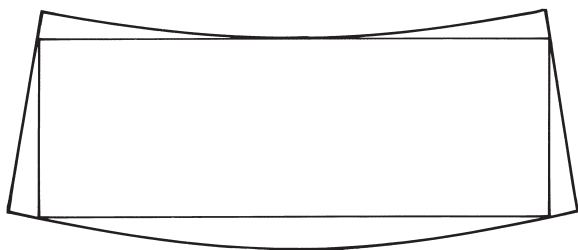
In addition to hot levelling, our equipment also allows for cold levelling of the cut-to-length sheet.

To determine the flatness deviation, the sheet is measured automatically by laser. The measurement conforms with manual procedure according to EN 10 051. Requirements concerning flatness shall be agreed at the time of enquiry and order.

Nominal thickness t	Nominal width w	Tolerances on flatness	Special tolerances on flatness
$t \leq 2.00$	$w \leq 1200$	18	9
	$1200 < w \leq 1500$	20	10
	$w > 1500$	25	13
$2.00 < t \leq 25$	$w \leq 1200$	15	8
	$1200 < w \leq 1500$	18	9
	$w > 1500$	23	12

Edge camber and out-of-squareness

It must be possible to inscribe a rectangle with the dimensions of the sheet ordered within the sheet supplied. See down below.



Hardox and Strenx Guarantees

Hardox and Strenx product are produced according to their Guarantees. See respective brochure on www.ssab.com

Tolerances and surface requirements Tubes and sections

SSAB is a proude producer of high quality tubes and section in most of our product families, But for tubes and sections the tolerances and surface requirement is detailed described in their datasheets under tolerances. For more information on this requiremenst please contact the Brand manager, your local sales representant or Tech support, techsupport@ssab.com.

Testing

Unless otherwise agreed, inspection and testing are carried out and the results are reported as specified in the relevant material standard or in our data sheets. When placing the order, always specify whether the material is to be subjected to special inspection, the scope of such inspection, and also the type of inspection document required.

Mechanical testing

Tensile testing in accordance with ISO 6892-1

Impact testing in accordance with ISO 148-1

Hardness testing in accordance with EN ISO 6506-1, 6508-1 and 10 083.

Tensile testing in the thickness direction in accordance with EN 10 164.

Ultrasonic testing

Ultrasonic testing is preformed on thicknesses ≥ 6 mm

and are used for finding indicating cracks, inclusions,

porosity and similar discontinuities. Unless otherwise agreed,

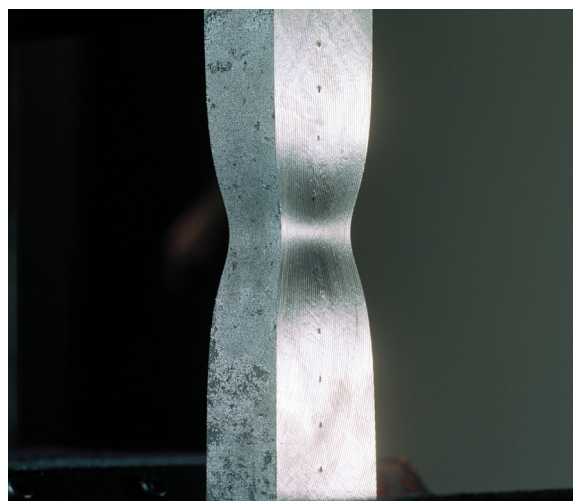
plate is delivered in class E1, S1 for thickness up to and

included 100 mm in accordance with the latest version of EN 10 160. Ultrasonic testing is carried out after

agreement in accordance with EN 10 160, SEL 072, ASTM 435, ASTM 578 or other agreed standard. For plate

thicknesses in excess of 100 mm and requirements stricter than those corresponding to E0, S0, testing for test

certificate is carried out only after special agreement.



Surface Testing ¹⁾

As per EN 10 160	Distance between parallel scanninglines (mm)	Min. defect area to register (mm ²)	Max. permissible defect area (mm ²)	Max. number of local defects (defects/m ²)
-	100	1000	10000	1
S ₀	100	1000	5000	20
S ₁	100	100	1000	15
S ₂	50	50	100	10
S ₃	50	20	50	10

The following types are available:

Inspection certificate 3.1.

The inspection certificate declares that the products delivered conform to the requirements of the purchase agreement. The results of testing are shown on the products that will be delivered or on inspection batches comprising part of the products delivered. The document is validated by an inspection representative who is authorized by the manufacturer and who is independent of the production department.

Inspection certificate 3.2.

The inspection certificate declares that the products delivered conform to the requirements of the purchase agreement. The results of testing are shown on the products that will be delivered or on inspection batches comprising part of the products delivered. Document issued both by the inspection representative authorized by the manufacturer and either by an inspection representative authorized by the customer or by an inspector appointed in accordance with official regulations.

Service and Support

SSAB has an extensive service and support offer.

We have a long tradition of helping customers to develop their steel products and processes with our unique knowledge. Unlike other steel mills SSAB offers two different services, Tech Support and Knowledges Service Center. We offer technical and innovation support as well as technical training, handbooks and tools.

SSAB offers advanced logistic solutions, including stock services world-wide, mill-direct deliveries, processing and logistics management solutions.

Contact information

techsupport@ssab.com
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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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