

STRENX®
PERFORMANCE STEEL



STRENX® GUARANTEES

Strengthen your business with premium products made
from high-strength structural steel with guaranteed properties



SSAB

STRENX® GUARANTEES

SSAB continuously improves its production processes in order to develop new and better products. As a result, you get both closer tolerances and improved workshop properties.

Strenx® guarantees include tight thickness tolerances, tight flatness tolerances, and tight bending guarantees. These guarantees act as a complement to the Strenx® datasheets and further enhance our promise of optimal workshop performance.

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STRENX® THICKNESS GUARANTEE

Strenx® thickness guarantee – plate

Thickness tolerances are according to SSAB's thickness guarantee and 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) | Thickness tolerances (mm) | | |
|--------------------------|---------------------------|------|--------------|
| | Min | Max | Within Plate |
| $4.0 \leq t < 5.0$ | -0.3 | +0.3 | 0.4 |
| $5.0 \leq t < 8.0$ | -0.3 | +0.4 | 0.5 |
| $8.0 \leq t < 15.0$ | -0.5 | +0.4 | 0.6 |
| $15.0 \leq t < 25.0$ | -0.6 | +0.4 | 0.6 |
| $25.0 \leq t < 40.0$ | -0.7 | +0.8 | 0.7 |
| $40.0 \leq t < 80.0$ | -0.9 | +1.4 | 1.2 |
| $80.0 \leq t \leq 160.0$ | -1.1 | +2.1 | 1.5 |

Other tolerances can be supplied upon special agreement. Please contact your local sales representative for more information.

Strenx® thickness guarantee – hot rolled strip

Thickness tolerances are according to SSAB's thickness guarantee and are closer than those specified in EN 10 051 strip products. All values in the table conform to 1/2 EN Category D.

| Nominal Thickness (mm) | Thickness tolerances for a nominal width w (mm) | | |
|------------------------|---|----------------------|----------------------|
| | $w \leq 1200$ | $1200 < w \leq 1500$ | $1500 < w \leq 1800$ |
| $t \leq 2.00$ | ± 0.12 | ± 0.13 | ± 0.14 |
| $2.00 < t \leq 2.50$ | ± 0.12 | ± 0.14 | ± 0.16 |
| $2.50 < t \leq 3.00$ | ± 0.14 | ± 0.15 | ± 0.17 |
| $3.00 < t \leq 4.00$ | ± 0.15 | ± 0.17 | ± 0.18 |
| $4.00 < t \leq 5.00$ | ± 0.17 | ± 0.18 | ± 0.19 |
| $5.00 < t \leq 6.00$ | ± 0.18 | ± 0.19 | ± 0.20 |
| $6.00 < t \leq 8.00$ | ± 0.20 | ± 0.21 | ± 0.21 |
| $8.00 < t \leq 10.0$ | ± 0.22 | ± 0.23 | ± 0.24 |
| $10.00 < t \leq 12.50$ | ± 0.24 | ± 0.25 | ± 0.26 |
| $12.50 < t \leq 15.00$ | ± 0.26 | ± 0.26 | ± 0.28 |

Other tolerances can be supplied upon special agreement. Please contact your local sales representative for more information.

Strenx® thickness guarantee – cold rolled strip

Thickness tolerances are according to SSAB's thickness guarantee, which corresponds to 3/4 EN 10 131 normal tolerances for cold rolled products.

| Nominal Thickness (mm) | Thickness tolerances for a nominal width w (mm) | | |
|---------------------------|---|-----------------|----------|
| | w ≤ 1200 | 1200 < w ≤ 1500 | w > 1500 |
| 0.70 ≤ t ≤ 0.80 | ± 0.04 | ± 0.06 | ± 0.07 |
| 0.80 < t ≤ 1.00 | ± 0.06 | ± 0.07 | ± 0.08 |
| 1.00 < t ≤ 1.20 | ± 0.07 | ± 0.08 | ± 0.09 |
| 1.20 < t ≤ 1.60 | ± 0.09 | ± 0.10 | ± 0.12 |
| 1.60 < t ≤ 2.00 | ± 0.12 | ± 0.12 | ± 0.14 |
| 2.00 < t ≤ 2.10 | ± 0.14 | ± 0.15 | ± 0.16 |

Other tolerances can be supplied upon special agreement. Please contact your local sales representative for more information.

STRENX® LENGTH AND WIDTH GUARANTEE

Strenx® length and width guarantee - plate

Length and width tolerances are according to those specified in EN 10 029. According to EN 10 029 the length of the plate is the length of the shorter of both longitudinal edges. The width should be measured perpendicular to the major axis of the plate.

| Nominal Length (mm) | Length Tolerances (mm) | |
|---------------------------|------------------------|-------|
| | Min | Max |
| $l < 4000$ | 0 | + 20 |
| $4000 \leq l < 6000$ | 0 | + 30 |
| $6000 \leq l < 8000$ | 0 | + 40 |
| $8000 \leq l < 10000$ | 0 | + 50 |
| $10000 \leq l < 15000$ | 0 | + 75 |
| $15000 \leq l \leq 18000$ | 0 | + 100 |

| Nominal Thickness (mm) | Width tolerances (mm) | |
|------------------------|-----------------------|------|
| | Min | Max |
| $t < 40$ | 0 | + 20 |
| $40 \leq t < 150$ | 0 | + 25 |
| $150 \leq t \leq 160$ | 0 | + 30 |

Mill edge tolerances upon request. Please contact your local sale representative for more information.

Strenx® length and width guarantee - hot and cold rolled strip

The length and width tolerances are according to those specified in EN 10 051 for hot rolled strip products and according to normal tolerances in EN 10 131 for cold rolled products. The length of the cut-to-length sheet is the length of the shorter of both longitudinal edges. The width should be measured at right angles to the longitudinal axis of the product.

Length and width according to EN 10 051

| Nominal Length (mm) | Length Tolerances (mm) | |
|----------------------|------------------------|-------------|
| | Lower | Upper |
| $l < 2000$ | 0 | + 10 |
| $2000 \leq l < 8000$ | 0 | + 0.005 x l |
| $l \geq 8000$ | 0 | + 40 |

| Nominal Width (mm) | Width Tolerances (mm) | | | |
|----------------------|-----------------------|-------|---------------|-------|
| | Mill Edge | | Trimmed Edges | |
| | Lower | Upper | Lower | Upper |
| $w \leq 1200$ | 0 | + 20 | 0 | + 3 |
| $1200 < w \leq 1850$ | 0 | + 20 | 0 | + 5 |

Length and width according to EN 10 131

| Nominal Length (mm) | Length Tolerances (mm) | |
|---------------------|------------------------|---------------------|
| | Under | Over |
| $l < 2000$ | 0 | + 6 |
| $l \geq 2000$ | 0 | 0.3 % of the length |

| Nominal Width (mm) | Width Tolerances (mm) | |
|----------------------|-----------------------|------|
| | Under | Over |
| $w \leq 1200$ | 0 | + 4 |
| $1200 < w \leq 1500$ | 0 | + 5 |
| $w > 1500$ | 0 | + 6 |

STRENX® PRODUCTS' COMPLIANCE WITH STANDARDS

All our Strenx® products comply with, or exceed, the requirements in EN 10 025-6, EN 10 149-2 or are according to SSAB specifications.

| Product | Conforms to standard | Complies with | Direction of tensile test specimen | Direction of impact toughness test specimen ¹⁾ | Min. guaranteed impact properties |
|--------------------|--------------------------------|---------------|------------------------------------|---|-----------------------------------|
| Strenx® 100 | ASTM A514 | Grade S | Transverse | Transverse | 50 ft-lbs / -40°F |
| Strenx® 100 XF | SSAB specification | - | Transverse | Longitudinal | 20 ft-lbs / -40°F |
| Strenx® 110 XF | ASTM A1011 or A1018 on request | Grade 100 | Transverse | Longitudinal | 20 ft-lbs / -40°F |
| Strenx® 600MC D | EN 10 149-2 | S600MC | Longitudinal | Longitudinal | 40 J / -20°C |
| Strenx® 600MC E | EN 10 149-2 | S600MC | Longitudinal | Longitudinal | 27 J / -40°C |
| Strenx® 650MC D | EN 10 149-2 | S650MC | Longitudinal | Longitudinal | 40 J / -20°C |
| Strenx® 650MC E | EN 10 149-2 | S650MC | Longitudinal | Longitudinal | 27 J / -40°C |
| Strenx® 700 E | EN 10 025-6 | S690QL | Transverse | Transverse | 69 J / -40°C |
| Strenx® 700 F | EN 10 025-6 | S690QLI | Transverse | Transverse | 27 J / -60°C |
| Strenx® 700 OME | EN 10 025-6 | S690QL | Transverse | Transverse | 69 J / -40°C |
| Strenx® 700MC D | EN 10 149-2 | S700MC | Longitudinal | Longitudinal | 40 J / -20°C |
| Strenx® 700MC E | EN 10 149-2 | S700MC | Longitudinal | Longitudinal | 27 J / -40°C |
| Strenx® 700MC Plus | EN 10 149-2 | S700MC | Longitudinal | Longitudinal | 40 J / -60°C |
| Strenx® 700 CR | SSAB specification | - | Longitudinal | - | - |
| Strenx® 900 E | EN 10 025-6 | S890QL | Transverse | Transverse | 27 J / -40°C |
| Strenx® 900 F | EN 10 025-6 | S890QLI | Transverse | Transverse | 27 J / -60°C |
| Strenx® 900MC | EN 10 149-2 | S900MC | Longitudinal | Longitudinal | 27 J / -40°C |
| Strenx® 900 Plus | EN 10 025-6 | S890QL | Longitudinal | Longitudinal | 30 J / -40°C |
| | | | Transverse | Transverse | 27 J / -40°C |
| Strenx® 960 E | EN 10 025-6 | S960QL | Transverse | Transverse | 40 J / -40°C |
| Strenx® 960 F | SSAB specification | - | Transverse | Transverse | 27 J / -60°C |
| Strenx® 960MC | EN 10 149-2 | S960MC | Longitudinal | Longitudinal | 27 J / -40°C |
| Strenx® 960 Plus | EN 10 025-6 | S960QL | Longitudinal | Longitudinal | 30 J / -40°C |
| | | | Transverse | Transverse | 27 J / -40°C |
| Strenx® 960 CR | SSAB specification | - | Longitudinal | - | - |
| Strenx® 1100 E | SSAB specification | - | Transverse | Transverse | 27 J / -40°C |
| Strenx® 1100 F | SSAB specification | - | Transverse | Transverse | 27 J / -60°C |
| Strenx® 1100MC | SSAB specification | - | Longitudinal | Longitudinal | 27 J / -40°C |
| Strenx® 1100 Plus | SSAB specification | - | Longitudinal | Longitudinal | 27 J / -40°C |
| | | | Transverse | Transverse | 27 J / -20°C |
| Strenx® 1100 CR | SSAB specification | - | Longitudinal | - | - |
| Strenx® 1300 E | SSAB specification | - | Transverse | Transverse | 27 J / -40°C |
| Strenx® 1300 F | SSAB specification | - | Transverse | Transverse | 27 J / -60°C |

¹⁾ Charpy V-notch impact test

In the case of discrepancies, the given class in the English version shall prevail.

STRENX® FLATNESS GUARANTEE

SSAB has four classes of flatness tolerances for Strenx, depending on type of product and material strength. All classes conform to, or are better than, the relevant standards. The flatness tolerances for class C and D fulfill the requirements in EN 10 029, class A fulfills both the requirements in EN 10 051 and EN 10 029, and class B fulfills the requirements in EN 10 131.

| Class | Product | Nominal thickness (mm) | Flatness (mm/1m ruler) Steel Flatness |
|-------|--------------------------------------|--------------------------|--|
| A | Strenx® 600MC D/E | $1.5 \leq t \leq 12.7$ | 3 |
| | Strenx® 650MC D/E | | |
| | Strenx® 100 XF | | |
| | Strenx® 110 XF | | |
| | Strenx® 700MC D/E | | |
| | Strenx® 700MC Plus | | |
| | Strenx® 900MC | | |
| | Strenx® 900 Plus | | |
| | Strenx® 960MC | | |
| | Strenx® 960 Plus | | |
| | Strenx® 1100MC | | |
| | Strenx® 1100 Plus | | |
| B | Strenx® 700 CR | $0.7 \leq t \leq 2.1$ | 6 |
| | Strenx® 960 CR | | |
| | Strenx® 1100 CR | | |
| C | Strenx® 100 | $4.0 \leq t < 5.0$ | 5 |
| | Strenx® 700 E/F | $5.0 \leq t < 8.0$ | 4 |
| | Strenx® 700 OME | $8.0 \leq t < 40.0$ | 3 |
| | Strenx® 900 E/F | $40.0 \leq t \leq 160.0$ | 3 |
| | Strenx® 960 E/F | | |
| D | Strenx® 1100 E/F Strenx® 1300 E/F | $4.0 \leq t < 5.0$ | 7 |
| | | $5.0 \leq t < 6.0$ | 5 |
| | | $6.0 \leq t < 20.0$ | 4 |
| | | $20.0 \leq t \leq 40.0$ | 3 |

Class A is closer than EN 10 051 and EN 10 029.

Class B is closer than EN 10 131 special tolerance class.

Classes C and D are closer than EN 10 029 steel type L.

Short waves (300 – 1000 mm) according to EN 10 029. In the case of discrepancies, the given class in the English version shall prevail.

STRENX® BENDING GUARANTEE PLATE

SSAB has four bending guarantee classes for Strenx® plate according to the table below. The bending guarantees for Strenx® plate products are based on dies with rolls and normal friction (no lubrication). These bending guarantees are based on bend tests of one step to 90° after unloading.

All classes conform to or are closer than the requirements in EN 10 025-6. The bending guarantees also conform to and exceed the requirements in EN ISO 7438.

| Class | Product | Nominal thickness (t) (mm) | Punch Radius Minimum Rp/t ¹⁾ | |
|-------|---|----------------------------------|--|--------------------------------------|
| | | | Bending Direction ⊥ ²⁾ | Bending Direction ∥ ²⁾ |
| A | Strenx® 100 Strenx® 700 E/F Strenx® 700 OME | t < 8 | 1.5 | 2.0 |
| | | 8 ≤ t < 15 | 1.5 | 2.0 |
| | | 15 ≤ t < 20 | 2.0 | 2.5 |
| | | t ≥ 20 | 2.0 | 2.5 |
| B | Strenx® 900 E/F Strenx® 960 E/F | t < 8 | 2.5 | 3.0 |
| | | 8 ≤ t < 15 | 2.5 | 3.0 |
| | | 15 ≤ t < 20 | 2.5 | 3.0 |
| | | t ≥ 20 | 3.0 | 3.5 |
| C | Strenx® 1100 E/F | t < 8 | 3.0 | 3.5 |
| | | 8 ≤ t < 15 | 3.0 | 3.5 |
| | | 15 ≤ t < 20 | 3.0 | 3.5 |
| | | t ≥ 20 | 3.5 | 4.0 |
| D | Strenx® 1300 E/F | t < 8 | 3.5 | 4.0 |
| | | 8 ≤ t ≤ 15 | 4.0 | 4.5 |

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

²⁾ The plate rolling direction.

The guaranteed values for bending are valid under conditions given in the brochure Bending of High Strength Steel. In the case of discrepancies, the given class in the English version shall prevail.

STRENX® BENDING GUARANTEE STRIP

For Strenx® strip products, the relationship between the minimum inner radius and thickness (Ri/t) is shown in the table below. These bending guarantees are based on bend tests of one step to 90° after unloading. Die opening widths are guidelines and may vary somewhat without affecting bending results.

Both Strenx® hot rolled and cold rolled strip steels have a guaranteed minimum bending radius valid for both longitudinal and transversal directions. For the hot rolled materials, the guarantees are closer than the requirements in EN 10 149. The guaranteed values can also be found in respective data sheet.

| Product | Nominal thickness (t) (mm) | Inner Radius Minimum Ri/t ¹⁾ | Die opening width (W) Min W/t |
|---|-------------------------------|--|-------------------------------------|
| | | Bending Direction ⊥ ²⁾ | |
| Strenx® 600MC D/E | t ≤ 3.0 | 0.7 | 10 |
| | 3.0 < t ≤ 6.0 | 1.1 | 10 |
| | t > 6.0 | 1.4 | 10 |
| Strenx® 650MC D/E | t ≤ 3.0 | 0.8 | 10 |
| | 3.0 < t ≤ 6.0 | 1.2 | 10 |
| | t > 6.0 | 1.5 | 10 |
| Strenx® 100 XF Strenx® 110 XF Strenx® 700MC D/E | t ≤ 3.0 | 0.8 | 10 |
| | 3.0 < t ≤ 6.0 | 1.2 | 10 |
| | t > 6.0 | 1.6 | 10 |
| Strenx® 700 MC Plus | 3.0 ≤ t ≤ 10.0 | 1.0 | 10 |
| | t > 10.0 | 1.5 | 10 |
| Strenx® 700 CR | 0.7 ≤ t ≤ 2.1 | 2.0 | 10 |
| Strenx® 900MC | 3.0 ≤ t ≤ 8.0 | 3.0 | 12 |
| | t > 8.0 | 3.5 | 12 |
| Strenx® 900 Plus | 2.0 ≤ t ≤ 8.0 | 3.0 | 12 |
| Strenx® 960MC | 3.0 ≤ t ≤ 10.0 | 3.5 | 12 |
| Strenx® 960 Plus | 2.0 ≤ t ≤ 8.0 | 3.5 | 12 |
| Strenx® 960 CR | 0.7 ≤ t ≤ 2.1 | 3.5 | 12 |
| Strenx® 1100 Plus | 4.0 ≤ t ≤ 6.0 | 3.5 | 12 |
| | t > 6.0 | 4.0 | 14 |
| Strenx® 1100MC | 3.0 ≤ t ≤ 8.0 | 4.0 | 14 |
| Strenx® 1100 CR | 0.7 ≤ t ≤ 2.1 | 3.5 | 14 |

¹⁾ Ri/t stands for Inner radius (R) divided by sheet thickness (t).

²⁾ The sheet rolling direction.

The bending guarantees for Strenx® strip products are based on fixed die edges and normal friction (no lubrication). The guaranteed values for bending are valid under conditions given in the brochure Bending of High Strength Steel. In the case of discrepancies, the given class in the English version shall prevail.

FLATNESS, EDGE CAMBER & OUT-OF-SQUARENESS

The information below is a presentation of how to inspect your SSAB deliveries using the product guarantees. This information is according to EN 10 029 for plate, EN 10 051 for hot rolled cut-length-sheet and EN 10131 for cold rolled cut-length-sheet. For more information, please contact your local sales representant or Tech Support at techsupport@ssab.com.

Flatness measurement

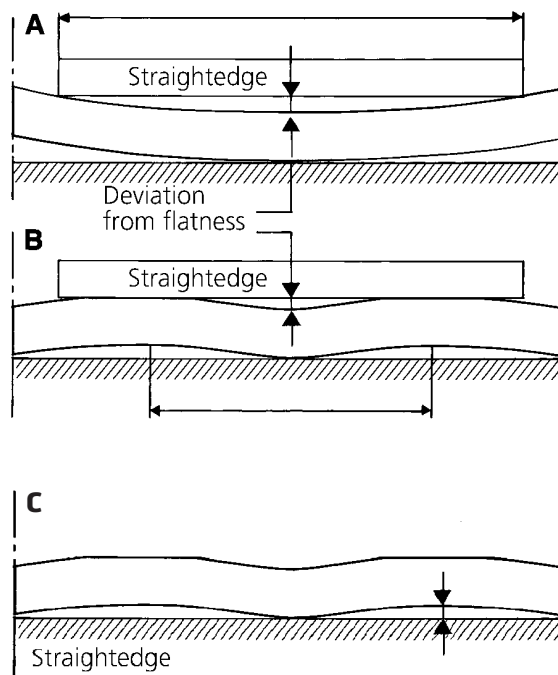
To determine the flatness deviation during production, the plate/sheet is measured manually or by laser. The measurement conforms to the manual procedure according to EN 10 029 and EN 10 051.

Flatness measurement for plate is 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. See figure A and B.

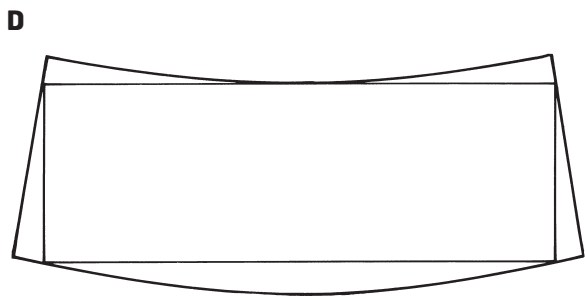
Flatness measurement for cut-to-length sheet is according to EN 10 051. Flatness deviation for sheet is determined by measuring the deviation in distance between the product and a flat horizontal surface on which the sheet is placed.

The vertical height is rounded off to the nearest mm. See figure C.



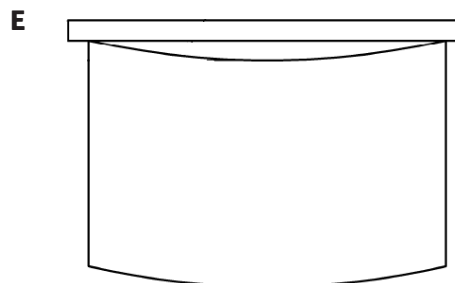
Edge camber and out-of-squareness plate

According to EN 10 029, it must be possible to inscribe a rectangle having the dimensions of the ordered plate within the plate supplied. See figure D.



Edge camber and out-of-squareness sheet

According to EN 10 051, the edge camber is the maximum deviation of a longitudinal edge from a straight edge measuring base applied to it. The camber is measured on the concave edge. See figure E.



STRENX® TUBES & SECTIONS

SSAB is a producer of high-quality tubes and sections in most of our product families. For more information on dimensions, lengths and other requirements, please see the respective data sheets, contact your local sales representative or contact Tech Support at techsupport@ssab.com.

Strenx® tubes

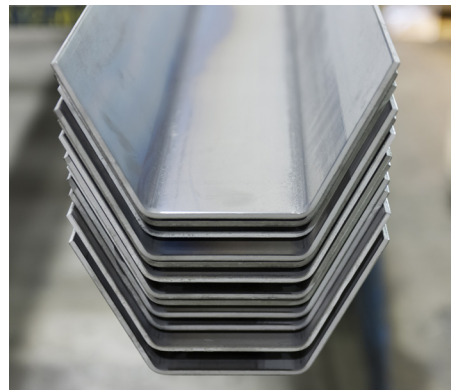
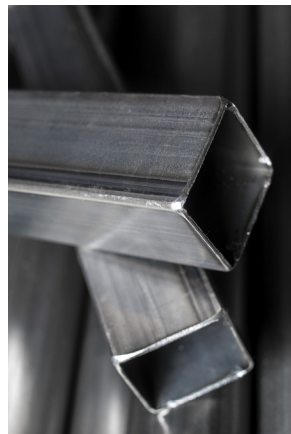
SSAB offers three product types for our Strenx® tubes, MH, MLH and QLH, in different grades, shapes and in several yield strengths. Strenx® tubes MH and MLH material are HF-welded cold-formed structural hollow sections made of hot-rolled high-strength steel. They meet or exceed the requirements of prEN 10 219. CE-marking according to EN 10 90-2 is available up to yield strength 700 MPa. Strenx® tube QLH material comes as plasma-welded, quenched and tempered. It meets or exceeds the requirements of prEN 10 210.



Strenx® sections

Strenx® section is a cold-formed steel section made of hot-rolled, high-strength steel with minimum yield strengths of 650, 700 or 900 MPa. The steel in Strenx® section meets or exceeds the requirements of EN 10 149-2. Strenx® section's tolerances meet or exceed, when applicable, the requirements of EN 10 162.

Strenx® section is available as U-section, but other shapes and variations are available upon request. The maximum length of the sections is 21 meters.



TESTING STRENX® PRODUCTS

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 your order, always specify whether the material requires special inspection, the scope of such an inspection, and the type of inspection document required.

Mechanical testing

Tensile testing in accordance with ISO 6892-1 or appropriate ASTM or national standard.

Impact testing in accordance with ISO 148-1 or appropriate ASTM or national standard.

Tensile testing in the thickness direction in accordance with EN 10 164 or appropriate ASTM or national standard.

Ultrasonic testing

Ultrasonic testing is performed after agreement according to EN 10 160, or equivalent national standard. SSAB guarantees internal soundness corresponding to class E_1, S_1 / EN 10 160 for plates in thickness up to and including 100 mm. For plates above 100 mm thickness, SSAB guarantees internal soundness corresponding to class E_0, S_0 / EN 10 160, unless otherwise agreed. For more information, please contact your local sales representative.

Through thickness testing

Through thickness testing is performed after agreement according to EN 10 164, or equivalent national standard. All Strenx plate products can be delivered with guaranteed properties in the through thickness direction. The available classes depend on product and dimensions. For more information, please contact your local sales representative.

DISTRIBUTION OF INSPECTION DOCUMENTS

SSAB has a certificate system that electronically produces, distributes and records all types of inspection documents. The documents are delivered electronically as PDF files. The certificate system offers excellent opportunities for simple and rational handling of inspection documents.

Inspection documents

Unless otherwise agreed, certificates are issued in English in accordance with SS-EN 10 204:2004. The certificates include the particulars specified in the material standard, which usually include:

- Name of manufacturer.
- Clear reference to the purchase agreement and delivery batch.
- Material designation in accordance with the purchase agreement.
- Description of product.
- Nominal dimensions.
- Quantity.
- Results of inspection.
- Date of issue.

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 for 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 for 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.

MARKING STRENX® PRODUCTS

All products are clearly marked on delivery. The steel grade and the product identity are stamped, unless the relevant standard specifies no stamping or after special agreement. For products with thicknesses of 5 mm or less and if stamping is not carried out for any other reason, stamping is replaced by marking with white paint.

Product identity

All production systems (works, plants, facilities) within the SSAB group have their own production identity systems and identity codes. The product identity code combines numbers, letters and symbols in one text string. The maximum number of characters is 25. The product identity is unique and consists of two groups or three groups of digits, with each group containing up to six or seven digits, respectively. These groups of digits give every product a unique identity. Example of product identities from SSAB are listed below. For certain production facilities, the location of the stamped marking may be shown by two white-painted dots. Contact your local sales representative for more detailed options.

Heat number (6) - Serial number (6 or 7) = 13 - 14 characters.
Example: 095150 - 555621.

Heat number (6) - Serial number (6 or 7) - Stock item number (4) = 18 - 19 characters.
Example: 097495 - 7569850 - 4910.

Heat number (6) - slab number-plate number - bundle number.
Example: A19123 - ABC12 - A12 - 1234567.

Coil number (5-7) - Bundle number (1 - 3) = 9 - 11 characters.
Example: C89613 - 10 (or HC89613 - 10 on Odette label).

Product ID (6 - 3 - 3) = 14 characters.
Example: W7C123 - A05 - A01.

Product ID (X - X - X) = X characters.
Example: 095150 - 555621 - 001.

Marking and stamping

The steel grade and plate identity are always low-stressed stamped perpendicular to the rolling direction. For products without stamping, the steel grade and product identity are marked and the rolling direction is ink marked with arrows. Marking with paint may be carried out in the direction of rolling.

The customer's mark, product dimensions of length, width and thickness dimensions, product identity and the pile number for internal use are marked on the product. The marking is performed with white paint dot-matrix printing or black ink jet marking. The location of the stamp is occasionally indicated with two white-painted dots.

Brand marking

Unless otherwise agreed, to maintain traceability of the material at its destination SSAB's products are marked as follows: Painted product is normally marked in a number of rows over the entire product surface. Unless otherwise agreed, a simplified steel grade designation and SSAB are painted. The product identity number can also be marked in rows over the product surface.

Note that the complete steel grade designation in accordance with the standard/data sheet or specification is stamped or is included in the paint marking.

ANTI-CORROSION PAINTING STRENX® PRODUCTS

Unprotected steel plate will corrode. SSAB can therefore provide the plate with effective anti-corrosion treatment known as shop primer. This protects the product while it is in transit.

The primer types we use have been tested by various institutes to ensure good working conditions for the end user. If good ventilation is provided, the hygienic limit values will not be exceeded in conjunction with welding, cutting or grinding.

Regardless of the anti-corrosion treatment specified, the appearance and cleanliness of the steel surface before treatment are decisive for the effectiveness of the anti-corrosion treatment. We shot-blast the plate, which is then immediately anti-corrosion painted. The primers used are mainly of low-zinc silicate.

The plate we keep in stock is painted with low-zinc silicate primer, since it does not need to be removed before normal welding. In order to provide visual distinction, our steel grades are painted in different colors.

Strenx® is primed with a grey color unless otherwise agreed. Before selecting the final paint system, the relevant paint supplier should be consulted.

Shop primers

| Type | Color | Protection time |
|----------|-------|-----------------|
| Low zinc | Grey | 6 months |

Degree of blasting SA 2.5 as per ISO 8501-1.

SURFACE TREATMENT OF STRENX® SHEET AND COIL

SSAB offers different types and degrees of oiling as a surface treatment for the pickled material. Both hot and cold rolled material can be surface treated by oiling. The purpose of the oil is to protect the steel during transport.

SSAB offers both untreated and oiled surfaces for Strenx® products. The standard oil for surface treatment is anti-corrosion oil. Contact your local sales representative for support to find out the most appropriate surface treatment.

For Strenx®, there are several different degrees of oiling: lightly oiled, normally oiled, heavily oiled, very lightly oiled and lightly oiled, upper side. The various degrees of oiling give the following results:

Untreated

Patches of oil may occur on delivery of untreated material. In this case, the customer must be informed that the risk of rust is considerable and that the customer is liable for any damage due to rust.

Very lightly oiled

Gives a very limited amount of rust protection.

Lightly oiled, upper side

Gives a very limited amount of rust protection.

Lightly oiled

Gives some amount of rust protection and a liberal portion of oil on the outer and inner laps. Occasional dry patches occur.

Normally oiled

Gives an unbroken oil cover with excess of oil at the ends.

Heavily oiled

Gives an unbroken oil cover with more or less excess of oil all over the band/strip.

PACKING GUIDELINES FOR STRENX® SHEET

SSAB offer different packing options for cut-to-length sheets.

Strenx® sheets are produced and packed at different locations, so the packing alternative may differ. When placing your order, always specify whether the material is to be subjected to special agreement.

SSAB has three different packing alternatives for cut-to-length sheet: Base, Light and Export. Their basic function is to protect the sheet during transportation. The packing does not provide any guaranteed protection against corrosion or handling damage.

There are several options and different packing types. Packaging will be planned together with sales support to determine the most appropriate practice.

Quantities per package of Strenx® hot and cold rolled sheet.

| Product | Package weight (kg) | | Package Height (mm) | |
|---------------------------|---------------------|--------|---------------------|-----|
| | Min | Max | Min | Max |
| Strenx® hot rolled sheet | 600 | 16 000 | 30 | 600 |
| Strenx® cold rolled sheet | 1200 | 7800 | 30 | 380 |

Bundle height including pallet for cold rolled sheet 136–486 mm.

Available packing types

- Stretchfilm covering front end of bundle for label attachment.
- Plastic foil.
- Paper foil.
- Stretchfilm covering whole bundle.
- Edge protection profiles covering the upper longitudinal edges.
- Cross strapping with strapped interlayers.
- Pallet, nailed or glued.
- Identity label on shortside and longside.

PACKING GUIDELINES FOR STRENX® COIL

SSAB offers a broad range of packing options for our Strenx® coils. The coils are produced and packed at different locations, so the packing alternatives may differ. When placing your order, always specify whether the material should be subject to special agreement.

As for cut-to-length sheets, SSAB has three different packing alternatives for coils: Base packing, Light packing and Export packing. Their function is to protect the coil during transportation. The packing does not provide any guaranteed protection against corrosion or handling damage. Below you will find examples of the most common packing options used.

Base packing

This packing is a bare transport packing providing limited protection where the protective rings are applied. Otherwise no protection against corrosion or handling. In its lightest form, only circumferential strapping is applied. Base packing is suitable for transport by covered truck or by rail.

- Edges, outer: No edge cover.
- Edges, rings: Plastic or steel.
- Protection layer: No layer.

Light packing

This packing provides limited protection against dust and humidity. It provides good protection against dents on a mantle surface, but limited protection in the center eye where the rings are applied. Suitable for covered truck or by rail.

- Edges, outer: Steel or plastic.
- Edges, rings: Steel or plastic.
- Eye: paper or plastic wrapping through the eye. Cardboard protection may be used.
- Protection layers: PE wrapping or foil and laminate mantle.

Export packing

Reinforced export packing designed mainly for storage and port handling. The packing provides good protection against dust, humidity, corrosion, dents and other damage under normal conditions. Fulfills all transport regulations.

- Edges outer: Outer rings in steel.
- Edges, rings: Steel or plastic.
- Eyes: Plastic, paper or PE wrapping.
- Wall: Often cardboard, plastic may be used.
- Mantle: Cardboard or laminate. Under mantle layer Paper, foil or PE paper under the mantle layer.

Hot rolled slitted coil packing

SSAB also offers hot rolled slitted coils in the same packing arrangement as above. Base packed slitted coils are strapped on pallets. Light packed slitted coils are plastic foiled on a pallet. Export packed slitted coils are foil-wrapped, with edges covered and have plastic rings. Please contact your local sales representative for more information regarding a suitable packing alternative.

PALLETIZING STRENX® PLATE

Our delivery standard presents rules and guidelines for palletizing the deliveries. Please note that Strenx® plates are produced and delivered from different locations, so the palletizing options may differ. When placing your order, always specify whether the material should be subject to special agreement.

The aim of the standard is to palletize the material in a way that avoids handling damage to the greatest extent possible, and that creates cost-effective and manageable volumes.

For deliveries in which SSAB is responsible for loading, the goods are always secured in accordance with the laws and regulations in force at that time. To regulate who pays for freight and insurance, we apply either CIP or CIF 2020 delivery conditions.

Definitions

| | |
|--------------|--|
| Pallet | A platform loaded with packages. The pallets are separated with timber spacers measuring 63 x 90 mm. |
| Stack | A partial load on a pallet. Separated from other stacks by timber spacers measuring 32 x 32 mm. |
| Pallet label | A label attached to the top plate on a pallet containing the printed pallet number, bar code, painted color code, quantity, weight, and the identity of the top plate. |
| Color | Painted color coding on the short and/or coding long side of the plate for delivery by sea. |
| Short plate | Plate <6100 mm long. |

General pallet rules

- The maximum pallet weight is 12 tonnes.
- Short and long plates are never loaded on the same pallet, when ordered from stock.
- Thick and thin plates are never loaded on the same pallet.
- Painted and unpainted plates are never loaded on the same pallet.
- The widest plate is always at the bottom on the pallet.
- Graduated width loading (widest plate on the pallet, gradually diminishing to the narrowest at the top) is employed for plate thicknesses <30.1 mm.
- Random length loading (plates of different lengths are loaded in random order) is employed.
- Some thin plate may be strapped.
- Magnetic pallet label.

Options

- Strapping with steel straps around both the pallet and the stack. 6099 mm maximum plate length.
- Stack weights as agreed.
- Pallet weights as agreed.
- Special color coding.
- Delivery codes outside the standard.
- Other requirements on dimensional separation.

Optional marking

- On the top plate on a pallet or stack. Up to 3 lines with 21 characters (manuell marking)* stack, up to 3 lines.
- Edge label attached on the thickness surface of the short side. Available in three variants with different information about the plate. Edge label possible above 8 mm thickness.

* Carried out free of charge, if required.

PALLETIZING STRENX® SHEET

Our delivery standard presents the rules and options for bundling and palletizing the deliveries. Please note that Strenx® cut-to-length sheets are produced and delivered from different locations, so the palletizing options may differ. When placing your order, always specify whether the material should be subject to special agreement.

The aim of the standard is to palletize the material in a way that avoids handling damage and that creates cost-effective and manageable volumes.

For deliveries in which SSAB is responsible for loading, the goods are always secured in accordance with the laws and regulations in force at that time. To regulate who pays for freight and insurance, we apply either CIP or CIF 2020 delivery conditions. Exceptions can be made for certain conditions.

Definitions

| | |
|--------------|--|
| Pallet | A platform loaded with packages. The pallets are separated with timber spacers measuring 72 x 72 mm or 90 x 90 mm. |
| Stack | A partial load on a pallet. Separated from other stacks by timber spacers measuring 32 x 32 mm. |
| Bundle | A single brand of sheets packed together. |
| Pallet label | Identity label on shortside and longside. |
| Edges | Edge protection profiles covering the upper longitudinal edges. |

General pallet rules

- The maximum pallet length is 16 000 mm.
- All sheets on the same pallet have the same dimension.
- Short and long sheets are never loaded on the same pallet.
- All sheets can be stacked.
- Wood secured to bundle.

Storing recommendations

- Dry environment.

Options

- Stack weights as agreed.
- Pallet weights as agreed.
- Special color coding/packing.
- Delivery codes outside the standard.
- Other requirements on dimensional separation.

LOGISTICS STRENX® COIL

Our delivery standard presents our recommendations for transport, storage and handling of Strenx® coils. All packing alternatives have different demands on the logistics process. Note that Strenx® coils are produced and delivered from different locations, so the packing and logistic alternatives may differ. When placing your order, always specify whether the material should be subject to special agreement.

For deliveries in which SSAB is responsible for loading, the goods are always secured in accordance with the laws and regulations in force at that time. To regulate who pays for freight and insurance, we apply 2020 delivery conditions. Exceptions can be made for certain conditions.

Base packing

Transport

- The packing fulfills the transport regulation for truck and rail.
- Due to risk for corrosion the transport time should not exceed 24 hrs.
- Coils must be transported in covered carriers.
- Carriers must be clean from stones, gravel etc. and design to prevent dents or other damage.

Storage

- Storage in dry environment. All storage poses the risk of corrosion.
- Material can be stacked in two layers. Recommended one-level stacking for pre-painted material, but with good handling two-level is acceptable.
- Storage saddles must be clean from stones, gravel etc. and design to prevent dents or other damage.

Handling

- Handling with tongs, C-hook or peak truck.

Light packing

Transport

- The packing fulfills the transport regulation for truck and rail.
- Coils must be transported in covered carriers.
- Carriers must be clean from stones, gravel etc. and designed to prevent dents or other damage.

Storage

- In dry environment.
- Material can be stacked in two levels.
- Storage saddles must be clean from stones, gravel etc. and designed to prevent dents or other damage.

Handling

- Handling with tongs, C-hook or peak truck.

Export packing

Transport

- Coils must be transported in covered carriers.
- Carriers must be clean from stones, gravel etc. and designed to prevent dents or other damage.

Storage

- In dry environment.
- Material can be stacked in two levels.
- Storage saddles must be clean from stones, gravel etc. and designed to prevent dents or other damage.

Handling

- Handling with tongs, C-hook or peak truck.

SERVICE AND SUPPORT

SSAB offers extensive service and support to customers. We have a long tradition of helping customers to develop their steel products and processes with our unique knowledge. Unlike other steel companies, SSAB offers two different services, Tech Support and the Knowledge Service Center. We offer technical and innovation support as well as technical training, handbooks and tools to help you become more productive.

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

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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 Nasdaq Stockholm and has a secondary listing on Nasdaq Helsinki. www.ssab.com.

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