



DUROXITE®

DUROXITE®
GUARANTEES

SSAB

DUROXITE® GUARANTEES

SSAB continuously advances its manufacturing processes to achieve higher precision and product consistency. This results in tight tolerance and improved workshop performance.

Duroxite® guarantees specify strict limits on overlay and overall plate thickness, flatness, and bending tolerances, serving as a technical complement to the Duroxite® datasheets and ensuring reliable, repeatable performance in demanding fabrication environments.

The brochure provides numerical values in both metric and Imperial units. In the event of any discrepancies, the specifications in Imperial units take precedence.

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DUROXITE® THICKNESS GUARANTEE

The overall and overlay thickness tolerances for Duroxite® Overlay plate products can be guaranteed within $\pm 10\%$ of specified thickness.

DUROXITE® FLATNESS GUARANTEE

Duroxite® flatness guarantee is applicable on Duroxite® overlay plate products and the flatness is guaranteed over a 1.5 m (5 ft) section of the plate. For plate sizes up to 1.5x3.0 m (5'x10'), the flatness tolerances follow the 1.5x3.0 m (5'x10') column of the tables. For wider plates (1.8x3.0 m or 2.4x3.0 m (6'x10', 8'x10')), the guarantees are as shown in the tables. The flatness guarantees for different Duroxite® overlay plates product grades are listed below.

DUROXITE® 100

Standard overlay thickness		Plate flatness tolerance guarantees over 1.5 m (5').		
Metric unit	Imperial unit	1.5 x 3.0 m (5' x 10')	1.8 x 3.0 m (6' x 10')	2.4 x 3.0 m (8' x 10')
5 mm on 8 mm	3/16" on 5/16"	3 mm (1/8")	25 mm (1")	41 mm (1 5/8")
6 mm on 6 mm	1/4" on 1/4"	3 mm (1/8")	25 mm (1")	38 mm (1 1/2")
10 mm on 10 mm	3/8" on 3/8"	3 mm (1/8")	12 mm (1/2")	25 mm (1")
12 mm on 12 mm	1/2" on 1/2"	3 mm (1/8")	6 mm (1/4")	16 mm (5/8")

DUROXITE® 101

Standard overlay thickness		Plate flatness tolerance guarantees over 1.5 m (5').		
Metric unit	Imperial unit	1.5 x 3.0 m (5' x 10')	1.8 x 3.0 m (6' x 10')	2.4 x 3.0 m (8' x 10')
5 mm on 8 mm	3/16" on 5/16"	12 mm (1/2")	32 mm (1 1/4")	38 mm (1 1/2")
6 mm on 6 mm	1/4" on 1/4"	12 mm (1/2")	32 mm (1 1/4")	38 mm (1 1/2")
10 mm on 10 mm	3/8" on 3/8"	6 mm (1/4")	19 mm (3/4")	25 mm (1")
12 mm on 12 mm	1/2" on 1/2"	3 mm (1/8")	12 mm (1/2")	12 mm (1/2")

DUROXITE® 200

Standard overlay thickness		Plate flatness tolerance guarantees over 1.5 m (5").		
Metric unit	Imperial unit	1.5 x 3.0 m (5' x 10')	1.8 x 3.0 m (6' x 10')	2.4 x 3.0 m (8' x 10')
5 mm on 8 mm	3/16" on 5/16"	3 mm (1/8")	25 mm (1")	41 mm (1 5/8")
6 mm on 6 mm	1/4" on 1/4"	3 mm (1/8")	25 mm (1")	38 mm (1 1/2")
10 mm on 10 mm	3/8" on 3/8"	3 mm (1/8")	12 mm (1/2")	25 mm (1")

DUROXITE® 201

Standard overlay thickness		Plate flatness tolerance guarantees over 1.5 m (5").		
Metric unit	Imperial unit	1.5 x 3.0 m (5' x 10')	1.8 x 3.0 m (6' x 10')	2.4 x 3.0 m (8' x 10')
5 mm on 8 mm	3/16" on 5/16"	12 mm (1/2")	32 mm (1 1/4")	38 mm (1 1/2")
6 mm on 6 mm	1/4" on 1/4"	12 mm (1/2")	32 mm (1 1/4")	38 mm (1 1/2")
10 mm on 10 mm	3/8" on 3/8"	6 mm (1/4")	19 mm (3/4")	25 mm (1")

DUROXITE® 300 & DUROXITE® 500

Standard overlay thickness		Plate flatness tolerance guarantees over 1.5 m (5").		
Metric unit	Imperial unit	1.5 x 3.0 m (5' x 10')		
5 mm on 8 mm	3/16" on 5/16"	12 mm (1/2")		
6 mm on 6 mm	1/4" on 1/4"	12 mm (1/2")		
10 mm on 10 mm	3/8" on 3/8"	6 mm (1/4")		

DUROXITE® BENDING GUARANTEE

Duroxite® is typically formed with the overlay to the inside, but it can also be formed with the overlay to the outside. Duroxite® overlay plates contains transverse cracks in overlay portion which are naturally formed during welding to release residual stress. Duroxite® overlay plates maintains the staggered cracking pattern on the overlay surface to ensure good formability.

Duroxite® overlay plate products CANNOT be formed parallel to the welding bead direction. It is strongly recommended to form the Duroxite® overlay plate products using a roll bending machine. Forming by a press brake is not recommended due to the local stress concentration spots generated which could cause spalling or cracking during bending. Bending with hard layer facing in closes up the transverse cracks; bending with hard layer facing out opens up the transverse cracks; the transverse cracks are arrested at the base plate surface without penetrating to crack through entire plate.

Duroxite® overlay pipe is recommended for pipes with diameters under 0.6 m (24") rather than pipes fabricated from plate. The bending guarantees for Duroxite® Overlay plate products are based on dies with rolls and normal friction (no lubrication). See the following charts for guaranteed minimum forming radius recommendations.

Product	Standard overlay thickness		Min. inside radius With overlay side in	Min outside radius With overlay side out
	Metric unit	Imperial unit	Metric unit (Imperial unit)	Metric unit (Imperial unit)
Duroxite® 100 Duroxite® 200	3 mm on 6 mm	1/8" on 1/4"	300 mm (12")	900 mm (36")
	5 mm on 8 mm	3/16" on 5/16"	300 mm (12")	1100 mm (44")
	6 mm on 6 mm	1/4" on 1/4"	300 mm (12")	1200 mm (48")
	6 mm on 10 mm	1/4" on 3/8"	350 mm (14")	1400 mm (56")
	10 mm on 10 mm	3/8" on 3/8"	400 mm (16")	1500 mm (60")
	12 mm on 12 mm	1/2" on 1/2"	700 mm (28")	1800 mm (72")
Duroxite® 101 Duroxite® 201	3 mm on 6 mm	1/8" on 1/4"	300 mm (12")	950 mm (36")
	5 mm on 8 mm	3/16" on 5/16"	300 mm (12")	1200 mm (44")
	6 mm on 6 mm	1/4" on 1/4"	300 mm (12")	1250 mm (48")
	6 mm on 10 mm	1/4" on 3/8"	400 mm (15")	1450 mm (56")
	10 mm on 10 mm	3/8" on 3/8"	450 mm (17")	1550 mm (60")
	12 mm on 12 mm	1/2" on 1/2"	1100 mm (42")	1850 mm (72")
Duroxite® 300 Duroxite® 500	3 mm on 6 mm	1/8" on 1/4"	400 mm (15")	1550 mm (60")
	5 mm on 8 mm	3/16" on 5/16"	500 mm (18")	1850 mm (72")
	6 mm on 6 mm	1/4" on 1/4"	500 mm (18")	1850 mm (72")
	6 mm on 10 mm	1/4" on 3/8"	550 mm (21")	2050 mm (80")
	10 mm on 10 mm	3/8" on 3/8"	650 mm (25")	2600 mm (100")

The guaranteed values for bending are valid under conditions given in the Duroxite® Workshop brochure. In the case of discrepancies, the recommendations given in the Imperial units shall prevail.

DUROXITE® OVERLAY PIPES, PINS, WIRES & ELECTRODES

SSAB is a producer of high-quality Duroxite® overlay pipes, pins and welding consumables such as wires and electrodes. These products are used for production of overlay parts, maintenance and repair work. SSAB continuously work on developing and improving our products and offering. Below you will find a short description for the different Duroxite® products. For more information on dimensions, lengths and other requirements, please see the respective datasheets, or contact your local sales representative or Tech Support.

DUROXITE® PIPES

Duroxite® overlay pipes are manufactured by depositing chromium-rich, abrasion-resistant materials on a mild steel base using a traditional arc welding process. Duroxite® overlay pipes provide the same hardness and wear resistance as flat Duroxite® overlay plate products. Despite their hardness, Duroxite® overlay pipes can be welded and cut by following the Duroxite® Workshop brochure. Duroxite® overlay pipes can be fabricated as square-to-round transitions, elbows, T or Y-shaped, or as long sweeps. More information on dimensions and tolerances for Duroxite® overlay pipes is described in respective datasheets.



DUROXITE® PINS

Duroxite® overlay pin is a specially formulated hardfacing overlay pin engineered and designed to withstand severe heat and metal-to-metal wear applications. Duroxite® overlay pin is a versatile, ready-to-use, abrasion-resistant overlay pin product. Its exceptional quality comes from the precise control and selection of raw materials as well as proprietary processing. The maximum available length depends on the product's diameter. Please contact your local sales representative for more information.



DUROXITE® WIRES & ELECTRODES

Duroxite® wires and electrodes are specially formulated hardfacing overlay consumables to withstand severe sliding wear, or metal-to-metal wear, or impact wear applications. Duroxite wires are flux-cored welding wires using either OAW (Open-arc welding process) or GMAW (Gas-metal arc welding process). Duroxite electrodes are mainly welded using SMAW (Shield-metal arc welding process). More information on diameters and welding settings for Duroxite® wires and electrodes are described in the respective datasheets.



TESTING DUROXITE® OVERLAY PLATE 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 datasheets. 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

Wear resistance testing is performed in accordance with the ASTM G65-Procedure A standard. Hardness testing is performed in accordance with the ASTM E18 standard.

CHEMISTRY TESTING

Chemical analysis of Duroxite® overlay is performed by OES (Optical Emission Spectroscopy) and XRF (X-ray Fluorescence) testing devices. The readings of light elements, such as carbon, boron, etc., are for reference only. 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 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. The certificates include the particulars specified in the material standard, which usually include:

- Name of issuing department.
- Description of product.
- Nominal dimensions.
- Nominal thickness.
- Results of inspection including surface hardness, overlay chemistry and overlay/overall thicknesses.
- Date of issue.

MARKING DUROXITE® OVERLAY PLATE PRODUCTS

All products are clearly marked on delivery. The Duroxite® grade and the product identity are stamped on the base metal surface, unless the relevant standard specifies no stamping or after special agreement. The product identity is stamped also on the overlay surface.

PRODUCT IDENTITY

All production units (works, plants, facilities) within the SSAB group have their own production identity systems. The product identity code combines numbers and letters in one text string. The maximum number of characters is 10-11. Each product identity is unique and consists of three groups of characters with each group containing up to two or six characters, respectively. These groups of characters give every product a unique identity. Examples of product identities from SSAB are listed below. Contact your local sales representative for more detailed options.

Plate ID (2-6-4) – Product type (2) = 2 characters. “PL” represents “Overlay Plate” product
Example: PL12345678AN.

Plate ID (2-6-4) – Manufacturing date (6) = 6 characters. “123456” represents the date of product being made.
Example: PL12345678AN.

Plate ID (2-6-4) – Production record (4) = 4 characters. “78AN” represents the production record and facility.
Example: PL12345678AN.

MARKING AND STAMPING

The Duroxite® grade and plate identity are always painted parallel to the welding bead direction on all Duroxite® 100/101/200/201 plates supplied outside USA. The product dimensions of length, width and overlay/overall plate thicknesses, and product identity are marked on the base plate surface. One product identity is also marked on the overlay surface for better traceability. The marking is performed with green/yellow printing for Duroxite® 100/101/200/201 overlay plates supplied outside USA. The marking is performed with hand-written markings with a white chalk for Duroxite overlay plates supplied within USA.

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 upper surface. Unless otherwise agreed, a simplified steel grade designation and SSAB are painted. The product identity can also be marked in rows over the product surface. Note that the complete steel grade designation in accordance with the datasheet is included in the paint marking.



Example of marking on a Duroxite® overlay plate.

ANTI-CORROSION PAINTING DUROXITE® OVERLAY PLATE PRODUCTS

Unprotected steel plate will corrode. SSAB can therefore provide the Duroxite® overlay plate products delivered to Europe with effective anti-corrosion treatment known as anti-rust paint. This protects the product while it is in transit.

The anti-rust paint type we use has been tested by various institutes to ensure good working conditions for the end users. 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 crucial for the effectiveness of the anti-corrosion treatment. We clean the plate by air pressure blowing, which is then immediately coated with anti-corrosion paint. The paint primarily consists of water, waterborne alkyd resin, anticorrosive pigments and additives, with only a small fraction of organic solvent.

Duroxite® overlay plate products kept in stock in Europe are painted with a waterborne alkyd structural steel paint, as it does not need to be removed before normal welding. More welding recommendations can be found in SSAB's Duroxite® Workshop brochure.

Duroxite® overlay plate products supplied to Europe are painted with a transparent color unless otherwise agreed. Before selecting the final paint system, the relevant paint supplier should be consulted.

ANTI-RUST PAINT

Type	Color	Protection time
Waterborne alkyd steel structural paint	Transparent	6 month

PALLETIZING DUROXITE® OVERLAY PLATE PRODUCTS

Our delivery standard presents rules and guidelines for palletizing the deliveries. Please note that Duroxite® 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 prevents 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.

Duroxite® overlay plate products are flat when delivered to facilitate cutting on plasma and laser machines. While handling and transporting, it is important the plates are supported by stiff beams that stretch the entire length of the plates to avoid buckling and bending.

HANDLING SENSITIVE PRODUCTS

Duroxite® overlay products are designed for your most extreme wear situations with abrasion, impact, heat, metal-to-metal and erosion wear. SSAB offers Duroxite® overlay products in high quality for many purposes and with different properties. The recommendations below are suitable for all Duroxite® overlay products. Please carefully read the following recommendations.

WHEN LIFTING

- Avoid “three point bending”.
- When using a crane, always lift the plates with evenly widespread attachment points.
- When using a truck, adjust the lifting forks along the length of the material for an even weight distribution.

WHEN STORING

- Store the plates indoors.
- Avoid rust.
- Place Duroxite® plates on stiff beams and continue stacking with beams directly aligned.
- The Duroxite® plates are supported by stiff beams that stretch the entire length of the plates to avoid buckling and bending.

WHEN STORING

- Appropriate health and safety precautions must be taken.
- Follow SSAB processing recommendations.
- Before processing, let the plate adjust to room temperature.
- After processing, let the material rest at room temperature.

GENERALLY

- Duroxite® overlay products should always be supported when handling and transporting to ensure they stay flat.

NOTES

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SERVICE AND SUPPORT

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

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

CONTACT INFORMATION

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SSAB is a Nordic and US-based steel company that builds a stronger, lighter and more sustainable world through value added steel products and services. Working with our partners, SSAB has developed SSAB Fossil-free™ steel and plans to reinvent the value chain from the mine to the end customer, largely eliminating carbon dioxide emissions from our own operations. SSAB Zero™, a largely carbon emission-free steel based on recycled steel, further strengthens SSAB's leadership position and our comprehensive, sustainable offering independent of the raw material. SSAB has employees in over 50 countries and production facilities in Sweden, Finland and the US. SSAB is listed on Nasdaq Stockholm and has a secondary listing on Nasdaq Helsinki. Join us on our journey! www.ssab.com.

Explore the world of Duroxite® Overlay products.

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