

DUROKITE™

THE LATEST IN OVERLAY TECHNOLOGY



DUROKITE™

HARDOX®
WEARPARTS

DUROXITE FIGHTS WEAR, GUARANTEED

Duroxite overlay products from Hardox Wearparts can add weeks, months, even years of trouble-free operations to your most extreme wear situations.

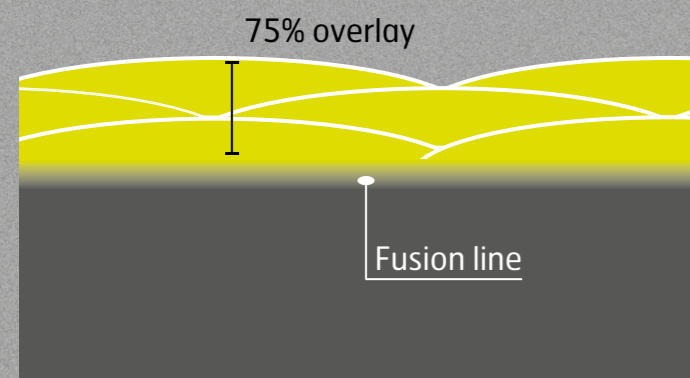
The Duroxite product range is targeted at different types of wear, such as abrasion, impact, heat, metal-to-metal and erosion wear. Duroxite is particularly well suited to fight sliding wear from exceptionally hard particles such as minerals containing quartz.

By welding chromium or complex carbides on top of mild steel or Hardox® wear plate an extremely wear resistant compound material is created.

Duroxite is delivered as plate ready for installation on your equipment or for further fabrication in your workshop. The products are available worldwide from more than 200 Hardox Wearparts centers located in over 65 countries.



GUARANTEED OVERLAY THICKNESS, GUARANTEED OVERLAY PROPERTIES



Duroxite overlay products are delivered with an overlay thickness guaranteed within $\pm 10\%$. This is consistent throughout the plate and from plate to plate.

The wear properties of Duroxite are also guaranteed throughout the plate down to 75% of the overlay thickness.

The remaining 25% of overlay is the transition layer necessary to maintain good bonding to the base plate.

DUROXITE EMPOWERS YOUR INDUSTRY

The performance of Duroxite saves money and improves productivity in a wide range of applications through higher output and less maintenance.

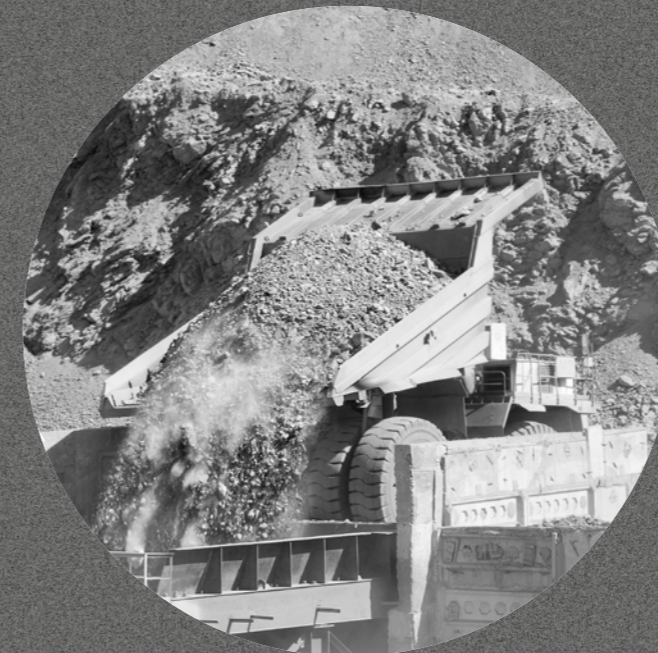
Duroxite is the natural choice for industries active in mining, energy, quarries, cement production and many other areas where abrasive materials require extremely hard surfaces.



QUARRIES



ENERGY



MINING



CEMENT

OVERLAY OVERVIEW

The ultimate Duroxite product for your application depends on the material—whether rock, sand, gravel or other substance—sliding along the surface of the wear part. It also depends on the angle and speed of impact, and the operating temperature.

QUALITY CONTROL CHECK LIST

We constantly refine and test our overlay materials and workshop techniques to confirm they meet our customers' high expectations on productivity and uptime.



- Chemistry check
- Thickness control
- Flatness tolerance
- Cracking pattern
- Surface hardness
- Through-thickness hardness
- Microstructure analysis
- ASTM G65 wear test

PRODUCT	DESCRIPTION	APPLICATIONS	OVERLAY PROPERTIES
SLIDING WEAR			
DUROXITE 100	<ul style="list-style-type: none"> - Multi-purpose overlay product with high quality and premium performance - Specially designed for severe abrasive environments - Appropriate to take moderate to low impact applications - Fabricated by depositing chromium-rich, abrasion-resistant materials on mild steel backing - The multiple-layer overlay is capable of maintaining full wear resistance up to 350°C (660°F) 	Chutes/hoppers, liners for truck beds, dozer blades, shovel buckets, dragline buckets and excavators, separator guide vanes, discharge cones for clinker storage bins, chutes for sintering ore conveying, outlet ducts for clinker grinding mills, receiving hoppers, dredging pipes and pumps, suction pipelines, pump discharges, fan blade/housings, coke vibrating screen plates, coal handling chutes, coal feeder liners, crusher screen plates, classifier cones, journal liners, silo bunkers	Bulk hardness: Single pass 55 to 57 HRC Double pass 56 to 59 HRC Triple plus passes 58 to 63 HRC Carbide hardness: 1700 HK Volume fraction of primary carbides: 30-50% ASTM G65-Procedure A weight loss: 0.18 g max.
DUROXITE 101 HARDOX BASE PLATE	<ul style="list-style-type: none"> - Provides improved resistance against impact and plastic deformation - Greater safety margin compared to mild steel backing overlay products - Employs stronger Hardox® base plate and chromium-rich overlay materials 	Coal discharger chutes, loader bucket liners, bucket lip shrouds, bucket side shrouds	Bulk hardness: Single pass 55 to 57 HRC Double pass 56 to 59 HRC Triple pass 58 to 63 HRC Carbide hardness: 1700 HK Volume fraction of primary carbides: 30-50% ASTM G65-Procedure A weight loss: 0.18 g max.
EXTREME WEAR			
DUROXITE 210	<ul style="list-style-type: none"> - Primarily designed for severe abrasive wear and impact up to 600°C (1100°F) - Provides up to 4 times longer service life than Duroxite 100 due to its high proportion of extremely hard multiple-alloy carbides - Comprised of specially formulated abrasive-resistant materials deposited on mild steel backing plate 	Cement furnace components, sinter plant parts, fan blades, mixer blades, crews, gyratory mantles, coal and cement pulverizer rolls and grinding, ore sintering, crushing, riddling, blast furnace hoppers, throats and ovens	Bulk hardness: 60 to 65 HRC Carbide hardness: 2500-3000 HK Volume fraction of primary carbides: 30-50% ASTM G65-Procedure A weight loss: 0.12 g max.
DUROXITE 211 HARDOX BASE PLATE	<ul style="list-style-type: none"> - For severe wear and impact applications - Contains primary chromium carbides and refined multiple-alloy complex carbides deposited on strong Hardox® base plate - Provides higher impact resistance than Duroxite 210 at both room and elevated temperatures up to 350°C (660°F), but impact performance is best at room temperature 	Screen plates, loader bucket liners, feeding systems for ball mills, coal discharger chutes, loader bucket liners, bucket lip shrouds, bucket side shrouds, conveyor liners	Bulk hardness: 60 to 65 HRC Carbide hardness: 2500-3000 HK Volume fraction of primary carbides: 30-50% ASTM G65-Procedure A weight loss: 0.12 g max.

DUROXITE IN FABRICATION

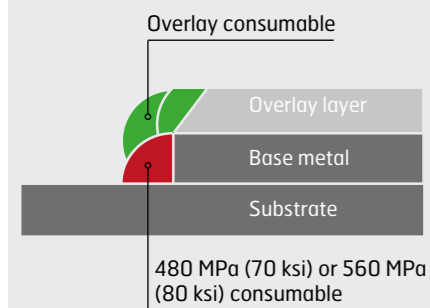
Duroxite is designed to be hard, without giving you a hard time in the workshop.

Even the most worn-out equipment can be rebuilt and repaired to perform as new. With our broad product offering, including Hardox and Duroxite, and top-of-the-line processing equipment, you are able to restore products of practically any condition, size and design.

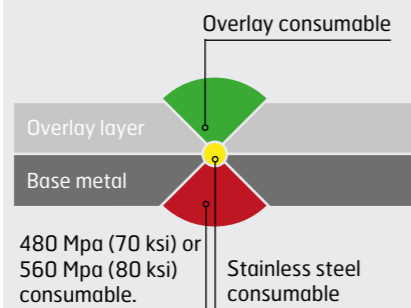
INSTALLING DUROXITE

No special equipment is needed to install Duroxite. Welding, bolting and stud welding are the common methods for installing Duroxite overlay plate or wear parts onto your equipment. The following figures demonstrate how to weld and bolt overlay parts on your substrate.

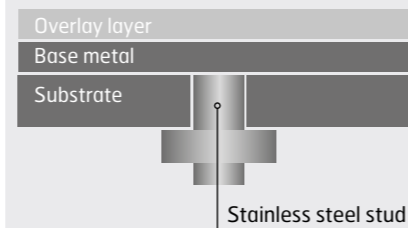
JOINING DUROXITE PLATE ON MILD STEEL



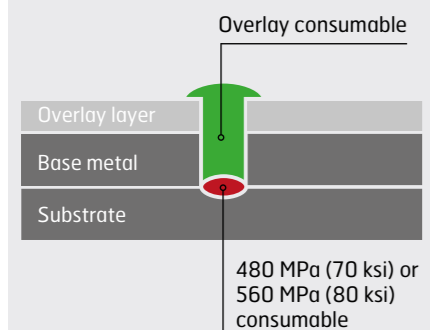
JOINING DUROXITE PLATES END TO END



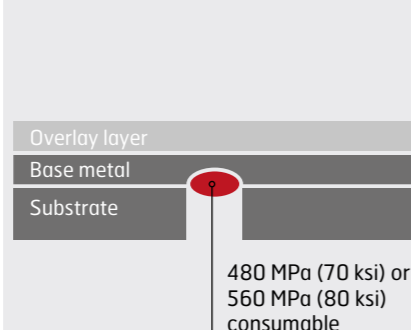
STUD WELDING OF DUROXITE PLATE FROM BASE METAL SIDE



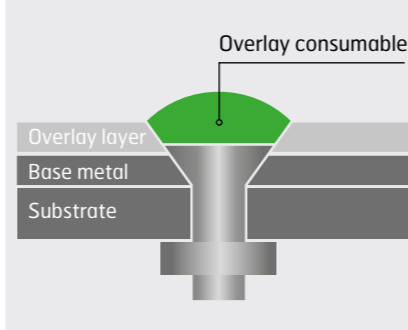
PLUG WELDING OF DUROXITE PLATE FROM OVERLAY SIDE



PLUG WELDING OF DUROXITE PLATE FROM BASE METAL SIDE



BOLTING DUROXITE PLATE THROUGH COUNTERSUNK HOLE



INSTALLATION

The base metal on Duroxite can be welded to other steels using standard welding procedures. When joining base metal use 480 MPa (70 ksi) or 560 MPa (80 ksi) consumables. Duroxite can also be applied to the substrate by stud welding or by using a bolt with a countersunk hole. Note that any surface exposed to severe wear should be protected with hard-surfacing consumables.

CUTTING

Duroxite can be cut by plasma, laser, water jet, arc gouge, and abrasive saw cutting. It cannot be cut by oxy-fuel flame cutting. Duroxite should be cut from the base metal side only to avoid carbon contamination. When beveling, Duroxite overlay plate can be burned from the hard side. Reduce cutting speed due to cutting carbides.



FORMING

Duroxite is usually formed with overlay to the inside. For pipes with diameters smaller than 0.6 m (24"), Duroxite pipe is recommended instead of pipes fabricated from Duroxite plate. Duroxite can also be roll formed with overlay to the outside. The staggered cracking pattern on the overlay surface ensures good formability when bending a flat plate.

MACHINING

Machining Duroxite with conventional methods is not recommended. It can be finished by grinding. Countersunk holes can be precisely produced by EDM (Electrical Discharge Machining). Pre-machined mild steel inserts can be used if extra machining is required.



PROVEN PERFORMANCE

Duroxite is tough on wear wherever it is applied. Here are a few examples from different industries and different abrasive situations.

If you are looking for benefits in your particular business, we are happy to provide more examples.

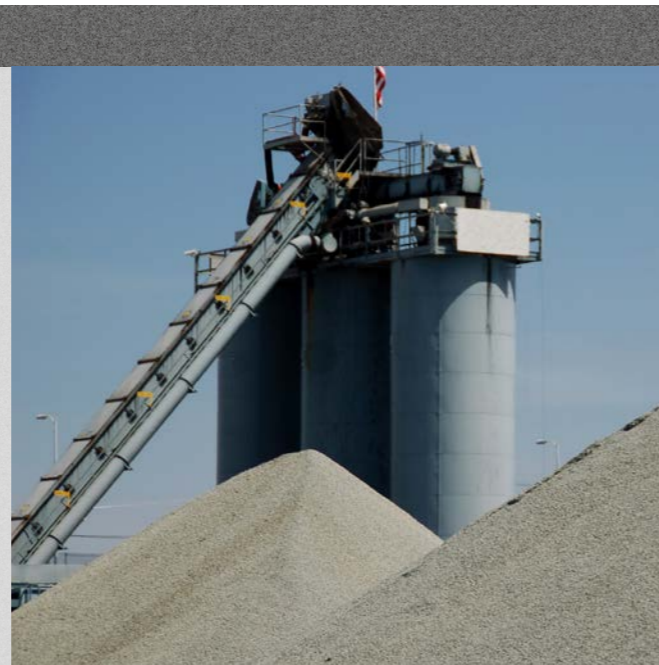
COAL MINE

Application: Coal discharge chute
 Wear part: Chute liner made of Duroxite 101
 Purpose: Discharges coal into storage bins or stockpiles
 Type of wear: Abrasion and impact
 Benefits: Increased wear life from 7 days to 6 months over previous design using overlay on mild steel
 No failure due to impact
 Notable reduction in down time



ASPHALT

Application: Slat conveyor
 Wear part: Slat conveyor bottom liner, 27.4 to 30.5 m (90 to 100') in length, made of Duroxite 100
 Purpose: Conveys asphalt up to silos
 Type of wear: High abrasion no impact
 Benefits: Replaced brittle cast Ni-hard liners with Duroxite extending wear life and solving brittleness and breakage issues



PARTNERS IN METAL

Duroxite achieves its groundbreaking wear performance from a combination of metal expertise, research and development facilities, and state-of-the-art production equipment.

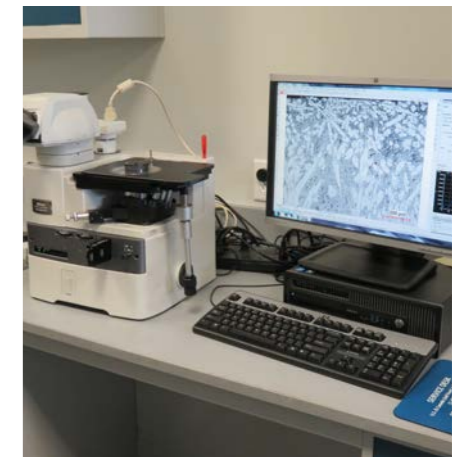
As Hardox Wearparts centers, we have a long-standing tradition of partnering with SSAB when designing new products, improving the choice of materials, and finding easier and more efficient processing techniques.

This close collaboration benefits both parties. Hardox Wearparts centers has access to fast-track product development, as well as workshops and seminars on metals and wear. SSAB gains knowledge on the requirements and problems facing our customers, both day-to-day issues and long-term development trends.

Production of Duroxite is monitored at SSAB's state-of-the-art R&D testing facility, to ensure that its wear resistance, welding, cutting, bending, impact, and other properties meet your strictest requirements.



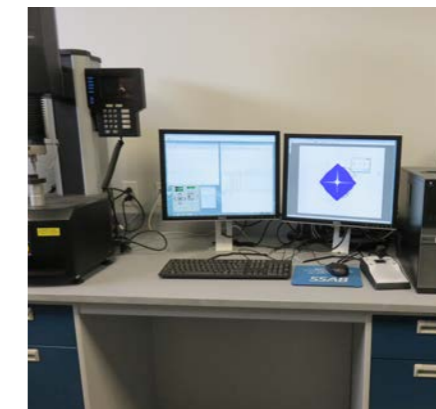
Scanning electron microscope/Energy dispersive spectroscopy



Optical microscope



Rockwell C hardness tester



Vickers hardness tester



Heat treatment laboratory

Hardox Wearparts is the world's leading provider of wear parts and wear services. With more than 200 centers in more than 65 countries, there is always a Hardox Wearparts center close to you. Hardox Wearparts is a part of SSAB, the manufacturer of Hardox® wear plate.

We would love to hear about your uptime needs



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