THE LATEST IN OVERLAY TECHNOLOGY
Duroxite® overlay products 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 fighting sliding wear from exceptionally hard particles such as minerals containing quartz.

By welding chromium or complex carbides, or other abrasion-resistant materials on top of mild or quenched and tempered steel, an extremely wear-resistant compound material is created.

Duroxite® is delivered as plate, pipe, pin, wire and electrodes, ready for installation on your equipment or for fabrication, maintenance and repairs in your workshop or on site.
The performance of Duroxite® saves money and improves productivity in a wide range of applications through higher output and less maintenance.

Duroxite® overlay is the natural choice for industries active in quarries, mining, cement, energy, steel mills, recycling and many other areas where abrasive materials require extremely hard surfaces.
Duroxite® achieves its groundbreaking wear performance from a combination of SSAB’s metal expertise, a solid knowledge from a wide range of applications, optimized overlay materials, and state-of-the-art production equipment.

The production techniques for Duroxite® are developed by SSAB and monitored at SSAB’s state-of-the-art R&D testing facility, to ensure that wear resistance, welding, cutting, bending, impact, and other properties of all Duroxite® products meet your strictest requirements.
**OVERLAY PLATE, PIPE AND PINS**

**PRODUCT DESCRIPTION**

Hardox® is the world’s no.1 abrasion-resistant (AR) steel, providing a unique combination of hardness and toughness. When used as a base plate Hardox® increases the impact resistance of the overlay plate and gives a greater wear safety margin compared to using a mild steel base plate.

### PLATE

<table>
<thead>
<tr>
<th>Type</th>
<th>Sliding Wear</th>
<th>Severe Sliding Wear</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DUROXITE® 100</strong></td>
<td>A chromium-rich overlay deposited on a mild steel backing plate for sliding wear applications up to 350˚C (660˚F).</td>
<td>A complex carbide overlay deposited on Hardox® 450 base plate.</td>
</tr>
<tr>
<td><strong>DUROXITE® 101</strong></td>
<td>A chromium-rich overlay deposited on Hardox® 450 base plate.</td>
<td>A complex carbide overlay deposited on Hardox® 450 base plate.</td>
</tr>
<tr>
<td><strong>DUROXITE® 200</strong></td>
<td>A complex carbide overlay deposited on Hardox® 450 base plate.</td>
<td>A complex carbide overlay deposited on Hardox® 450 base plate.</td>
</tr>
<tr>
<td><strong>DUROXITE® 201</strong></td>
<td>A complex carbide overlay deposited on Hardox® 450 base plate.</td>
<td>A complex carbide overlay deposited on Hardox® 450 base plate.</td>
</tr>
</tbody>
</table>

**PROPERTIES**

- **Bulk hardness:** Single pass 55-57 HRC, double pass 59-62 HRC, triple pass 60-64 HRC.
- **Carbide hardness:** 1700 HK.
- **Volume fraction of primary carbides:** 30-50%.
- **ASTM G65-Procedure A weight loss:** 0.18 g max.

**APPLICATIONS**

- Chute/hoopers, liners for truck beds, dozer blades, shovel buckets, dragline buckets, excavators, separator guide vanes, discharge cones for crumb storage bins, chutes for sintering ore conveying, outlet ducts for cement grinding mills, receiving hoppers, shredding pipes and pumps, suction pipelines, pump discharges, fan blade/ bearings, cake vibrating screening plates, coal handling chutes, coal feeder liners, crusher screen plates, classifier cones, journal liners, silo bunkers.

**PLATE**

<table>
<thead>
<tr>
<th>Type</th>
<th>Extreme Sliding Wear</th>
<th>High Impact and Sliding Wear</th>
<th>Sliding Wear</th>
<th>Heat and Metal-to-Metal Wear</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DUROXITE® 300</strong></td>
<td>An ultra-fine complex borocarbide overlay deposited on a base plate for extreme sliding wear applications up to 600˚C (1100˚F).</td>
<td>A chromium-rich overlay deposited on a mild steel base plate for severe sliding wear applications up to 600˚C (1100˚F).</td>
<td>A tool steel overlay deposited on a Q&amp;T bar for metal-to-metal applications up to 480˚C (900˚F).</td>
<td></td>
</tr>
<tr>
<td><strong>DUROXITE® 500</strong></td>
<td>An ultra-fine complex borocarbide overlay deposited on a base plate for moderate impact applications up to 600˚C (1100˚F).</td>
<td>A chromium-rich overlay deposited on a mild steel base plate for severe sliding wear applications up to 600˚C (1100˚F).</td>
<td>A tool steel overlay deposited on a Q&amp;T bar for metal-to-metal applications up to 480˚C (900˚F).</td>
<td></td>
</tr>
<tr>
<td><strong>DUROXITE® 100 PIPE</strong></td>
<td>A chromium-rich overlay deposited on a mild steel base plate for sliding wear applications.</td>
<td>A chromium-rich overlay deposited on a mild steel base plate for sliding wear applications.</td>
<td>A tool steel overlay deposited on a Q&amp;T bar for metal-to-metal applications up to 480˚C (900˚F).</td>
<td></td>
</tr>
<tr>
<td><strong>DUROXITE® 400 PIN</strong></td>
<td>A chromium-rich overlay deposited on a mild steel base plate for sliding wear applications.</td>
<td>A chromium-rich overlay deposited on a mild steel base plate for sliding wear applications.</td>
<td>A tool steel overlay deposited on a Q&amp;T bar for metal-to-metal applications up to 480˚C (900˚F).</td>
<td></td>
</tr>
</tbody>
</table>

**PROPERTIES**

- **Bulk hardness:** Single and double pass 67 to 70 HRC.
- **Carbide hardness:** 2500-3000 HK.
- **Volume fraction of borocarbides:** 30-50%.
- **ASTM G65-Procedure A weight loss:** 0.18 g max.

**APPLICATIONS**

- Crusher rolls, slip liners, slurry pipes, slurry pumps, conveyor chains, excavator bucket liners, fan blades, deflector blades, crater crushers, surge bins, feed chutes, slurry pipes, slurry pumps, ore chutes, screw augers, wear liner plates, ash handling equipment liners, grain handling equipment liners, sugar mill knives, raw crop saws, tracking blender pumps, snow plow shoes, demolition tools.

**DUROXITE® DATASHEETS ARE AVAILABLE BY SCANNING THE QR CODE OR VISITING www.duroxite.com**
# OVERLAY WELDING

## CONSUMABLES

<table>
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<tr>
<th>Wire</th>
<th>Properties</th>
<th>Typical Applications</th>
<th>Wear part</th>
<th>Industry</th>
<th>Application</th>
<th>Service life</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Duroxite® 100 Wire</strong></td>
<td>A flux cored open-arc wire for hardfacing components subject to sliding wear applications.</td>
<td>Loader bucket liners, bucket lip and side shrouds, jaw shrouds, head pads and dewatering conveyors, cool discharge chutes.</td>
<td>Ground engaging teeth (GET) with Duroxite® 200 Wire</td>
<td>Mining – South Africa</td>
<td>Excavator bucket teeth: The original teeth (yellow) are made in CrMo steel. The other teeth received a hardfacing layer of Duroxite® 200 Wire</td>
<td>The teeth with Duroxite® 200 Wire had a 3 times longer service life.</td>
</tr>
<tr>
<td><strong>Duroxite® 200 Wire</strong></td>
<td>A flux cored open-arc wire for hardfacing components subject to severe sliding wear applications.</td>
<td>Screen plates, loader bucket liners, feeding systems for ball mills, loader bucket liners, bucket lip shrouds, bucket side shrouds, chutes, liner plates and slip liners, cement furnace components, sinter plant ports, fan blades, mixer blades, chows, gyratory mantles, cool and cement pulverizer rolls, raw material crushing components, molding panels, coal discharge chutes.</td>
<td>Cutter teeth with Duroxite® 100 Wire</td>
<td>Recycling – Canada</td>
<td>Cutting equipment for household recycling plant: Teeth in heat treated 4140 steel were replaced by teeth hardfaced with Duroxite® 100 Wire on Hardox® 450</td>
<td>Increased from 3 to 14 months of operation, when the teeth with Duroxite® 100 Wire were still in good shape.</td>
</tr>
<tr>
<td><strong>Duroxite® CR-Zero Wire</strong></td>
<td>A wire suitable for overlay welding situations where it is difficult to protect the welder from the emission of hexavalent chromium smoke.</td>
<td>Mower shafts, impellers, buckets, sheers, transport screws, and crushers for the concrete industry.</td>
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<tr>
<td><strong>Duroxite® AP Wire</strong></td>
<td>A wire with properties that make it suitable for all-position (AP) welding, including flat, horizontal, vertical and overhead welding.</td>
<td>Bucket teeth, tilting tools, bucket lips, bucket sides, cutting edges, sand dredge equipment, dragline buckets, conveyor chutes, grizzly bars, screw flights, metal shredders, sliding metal parts, tin shredder knives, extruder screws, tamper fest, churn drills, muller tires. Especially applicable for all-position welding and re-instating of hardfacing sealing runs on clad wear plate fabrications.</td>
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</tbody>
</table>

### PROPERTIES

- **Chemical composition (wt. %):**
  - Duroxite® 100 Wire: 4.7 C, 0.2 Mn, 0.6 Si, 27.0 Cr, balance Fe
  - Duroxite® 200 Wire: 5.3 C, 0.5 Mn, 0.2 Si, 22.0 Cr, 6.5 Nb, balance Fe
  - Duroxite® CR-Zero Wire: 0.6 C, 2.3 Mn, 1.5 Si, 2.4 Ni, 4.0 B, balance Fe
  - Duroxite® AP Wire: 0.5 C, 1.3 Mn, 0.6 Si, 7.0 Cr, 0.6 Mo, balance Fe

- **Surface hardness:**
  - Duroxite® 100 Wire: Two-layer deposit on mild steel: 58 to 65 HRC
  - Duroxite® 200 Wire: Two-layer deposit on mild steel: 60 to 65 HRC
  - Duroxite® CR-Zero Wire: Two-layer deposit on mild steel: 63 to 69 HRC
  - Duroxite® AP Wire: Two-layer deposit on mild steel: 55 to 59 HRC

- **ASTM G65-Procedure A weight loss:**
  - Duroxite® 100 Wire: 0.18 g max.
  - Duroxite® 200 Wire: 0.12 g max.
  - Duroxite® CR-Zero Wire: 0.18 g max.
  - Duroxite® AP Wire: 0.18 g max.
PROVEN PERFORMANCE

Duroxite® is tough on wear wherever it is applied. Here are a few examples where Duroxite® makes a difference.

If you want to know more about Duroxite® for your particular business, please visit www.duroxite.com to find the closest contact.
Durox® 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 wear plate and Durox®, and top-of-the-line processing equipment, you are able to restore products of practically any condition, size and design.

INSTALLING Durox®

No special equipment is needed to install Durox® products. Welding and bolting are the common methods for installing Durox® overlay plate or wear parts onto your equipment.

When joining base metal use 480 MPa (70 ksi) or 560 MPa (80 ksi) consumables. Any surface exposed to severe wear should be protected with hard-surfacing consumables. Cap welding a Durox® product with Durox® Wire ensures the weld will have the same wear resistance, resulting in a consistent service life for the entire overlay product.

SAFETY PRECAUTIONS

When welding or cutting Duroxite® products, smoke is produced containing harmful fumes and gases that are chemically highly complex and difficult to easily classify. The major toxic component in the fumes and gases produced in the process is hexavalent chromium. The proper exhaust ventilation equipment and fume-extraction torches are recommended, as well as suitable protective clothing and respiratory protection for operators.

Durox® can be cut by plasma, laser, water jet, arc gouge, and abrasive saw cutting. It cannot be cut by oxy-fuel flame cutting. Durox® should be cut from the base metal side only to avoid carbon contamination. When beveling, Durox® overlay plate can be burned from the hard side. Cutting speeds need to be reduced when cutting carbides.

Machining Durox® 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.

**WELDING AND BOLTING Durox® TO YOUR SUBSTRATE**

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LEARN MORE AT
www.duroxite.com