

## Duroxite® 100

### General Product Description

Duroxite® 100 is manufactured by depositing chromium-rich, abrasion-resistant materials on a mild steel base plate using a traditional arc welding process. The hardfacing overlay plate is suitable for severe abrasive wear and moderate to low impact applications. The multiple-layer overlay is also capable of maintaining full wear resistance up to 350 °C (660°F) and the typical surface hardness of 55 HRC at elevated temperatures up to 540°C (1000°F). Duroxite® 100 is available in single layers or multiple layers up to 20 mm (3/4") in overlay thickness.

#### Key Benefits

- Same wear resistance guaranteed from surface down to 75% of the overlay
- Optimal carbide composition to provide good combination of wear resistance and homogenous bonding
- Good formability due to staggered cracking pattern on overlay surface

#### Typical Applications

Duroxite® 100 is widely used in the mining, power generation, cement, dredging, steel production, waste handling, glass production, and pulp and paper industries. Some specific applications include:

Mining	Chutes/hoppers, liners for truck beds, dozer blades, shovel buckets, dragline buckets, excavators
Cement	Separator guide vanes, discharge cones for clinker storage bins, chutes for sintering ore conveying, outlet ducts for clinker grinding mills, receiving hoppers
Dredging	Dredging pipes and pumps, suction pipelines, pump discharges
Steel	Fan blade/housings, coke vibrating screen plates
Power	Coal handling chutes, coal feeder liners, crusher screen plates, classifier cones, journal liners, silo bunkers

For more information on applications see the Duroxite® Product brochure.

#### Available Dimensions

Standard overlay thicknesses	
Single pass	Multiple Passes
Metric unit	Metric unit
3 mm on 6 mm	6 mm on 6 mm
5 mm on 8 mm	6 mm on 10 mm
—	10 mm on 10 mm
—	12 mm on 12 mm
—	20 mm on 10 mm

Other plate sizes and custom thicknesses can be produced upon request.

#### Standard plate sizes

Metric unit	Imperial unit
1.2 m x 2.4 m	4' x 8'
1.4 m x 3.0 m	4.6' x 10'
1.5 m x 3.0 m	5' x 10'
1.8 m x 3.0 m	6' x 10'
2.4 m x 3.0 m	8' x 10'

Other plate sizes and custom thicknesses can be produced upon request.

## Mechanical Properties

Wear properties			ASTM G65 – Procedure A weight loss <sup>2)</sup>	
Number of overlay passes	Typical surface hardness <sup>1)</sup> (HRC)	Typical surface hardness <sup>1)</sup> (HV)	Surface (g max)	75 % depth of overlay <sup>3)</sup> (g max)
Single pass	55 - 57	590 - 630	0.25	0.25
Double passes	59 - 62	675 - 750	0.18	0.18
Triple and more passes	60 - 64	700 - 810	0.18	0.18

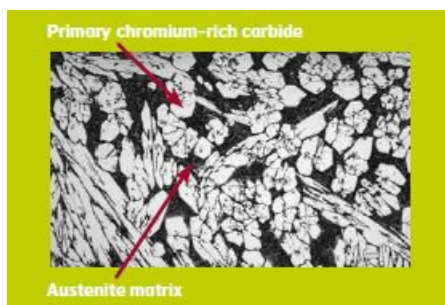
<sup>1)</sup> Surface hardness is measured on machined flat surface just below overlay surface.

<sup>2)</sup> ASTM G65 - Procedure A weight loss, is a standard test measuring sliding abrasion resistance using a dry sand/rubber wheel apparatus. ASTM G65-Procedure A is the most severe test method.

<sup>3)</sup> ASTM G65 - Procedure A weight loss, wear test is conducted at 75% depth of the overlay materials to ensure consistently good wear resistance from the top surface through to the depth of 75% of the overlay.

## Microstructure

The microstructure of Duroxite® 100 is composed of a high proportion of extremely hard primary  $M_7C_3$  chromium-rich carbides with a typical hardness of 1700 HK<sup>4)</sup> dispersed evenly in a ductile eutectic austenite matrix. The volume fraction of primary carbides is maintained between 30 to 50% to provide a good combination of wear resistance and homogenous bonding.



<sup>4)</sup>HK is the Knoop microhardness used primarily for very brittle materials.

## Tolerances

### Thickness

Overall and overlay thickness tolerances can be guaranteed within  $\pm 10\%$  of specified thickness.

### Flatness

Plate flatness tolerance can be guaranteed within  $\pm 3$  mm ( $\pm 1/8"$ ) over 1.5 m (5') plate length for plate dimensions equal to or less than 1.5 m (5') x 3.0 m (10'). For plates greater than 1.5 m (5') wide by 3.0 m (10') long, the following flatness guarantees apply.

Standard overlay thicknesses	Flatness tolerance over 1.5 m plate length, Metric unit	
Metric unit	1.8 m x 3.0 m	2.4 m x 3.0 m
5 mm on 8 mm	25	41
6 mm on 6 mm	25	—
10 mm on 10 mm	12	25
12 mm on 12 mm	6	16

For custom sizes, please consult your local sales representative or Hardox Wearparts center for flatness guarantees.

## Delivery Conditions

Duroxite® 100 is normally supplied in an as-welded condition, but can also be supplied in a ground condition upon request.

## Fabrication and Other Recommendations

### Welding, cutting, forming and machining

Recommendations can be found in the Duroxite® Product brochure, or consult your local technical support representative.

Appropriate health and safety precautions must be taken when bending, welding, cutting, grinding or otherwise working on the 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.