



DUROXITE 211



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General Product Description

Duroxite 211 is developed for severe wear and impact applications applying specially formulated abrasive materials on Hardox 450 backing plate. The overlay material is composed of primary chromium-rich carbides and refined multiple-alloy complex carbides dispersed evenly in a ductile eutectic austenite matrix. The additional multi-alloy carbides are harder and finer than the co-existing chromium-rich carbides which interlock between large primary chromium-rich carbides in a matrix.

Key Benefits

- Hardox 450 backing withstands plastic deformation better due to its high yield strength flexing back after impact
- Provides stronger support due to high hardness and better bonding properties between overlay and base steel
- Better performance for impact situations than Duroxite 210 at elevated temperatures up to 350° C (660° F), but impact resistance is best at room temperature

Typical Applications

Duroxite 211 is widely used in many industries including mining, cement and power generation. Some specific applications include:

Mining	Screen plates, loader bucket liners, feeding systems for ball mills, loader bucket liners, bucket lip shrouds, bucket side shrouds, chutes, liner plates and skip liners
Cement	Cement furnace components, sinter plant parts, fan blades, mixer blades, crews, gyratory mantles, coal and cement pulverizer rolls, raw material crushing components, molding panels
Power	Coal discharger chutes

For more information on applications see the Duroxite Product brochure.

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Standard Dimensions

Standard overlay thicknesses		Standard plate sizes	
Metric unit	Imperial unit	Metric unit	Imperial unit
6 mm on 6 mm	1/4" on 1/4"	1.2 m x 2.4 m 1.5 m x 3.0 m 1.8 m x 3.0 m	4' x 8' 5' x 10' 6' x 10'
10 mm on 10 mm	3/8" on 3/8"		
6 mm on 20 mm	1/4" on 3/4"		
6 mm on 25 mm	1/4" on 1"		
6 mm on 32 mm	1/4" on 1-1/4"		

Standard plate sizes above are available for all standard overlay thicknesses. Other plate sizes and custom thicknesses can be produced upon request.

Mechanical Properties

Surface Hardness

Number of overlay passes	Typical surface hardness ¹⁾
Multiple passes	60 to 65 HRC (700 to 850 HV)

¹⁾ Surface hardness is measured on machined flat surface just below overlay surface.

Wear Properties

Number of overlay passes	ASTM G65 – Procedure A weight loss ²⁾	
	Surface	75% depth of overlay ³⁾
Multiple passes	0.12 g maximum	0.12 g maximum

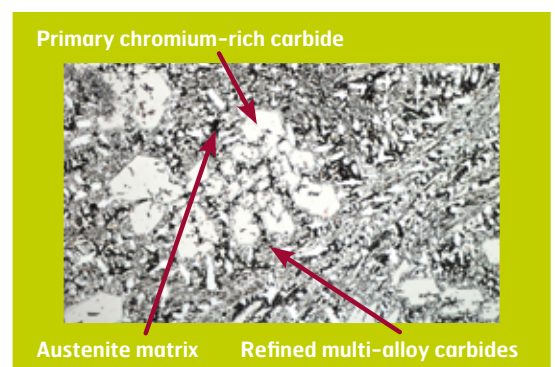
²⁾ ASTM G65 is a standard test measuring sliding abrasion resistance using a dry sand / rubber wheel apparatus. ASTM G65 – Procedure A is the most severe test method.

³⁾ ASTM G65 wear test is conducted at 75% depth of the overlay materials to ensure consistently good wear resistance from top surface through to the depth of 75% of the overlay.

Microstructure

The microstructure of Duroxite 211 contains primary chromium-rich carbides and refined multiple-alloy complex carbides with a typical hardness of 2500 to 3000 HK⁴⁾ dispersed evenly in a ductile eutectic austenite matrix. The typical volume fraction of primary chromium-rich carbides is maintained between 30 to 40% with 7 to 10% of multi-alloy complex carbides.

⁴⁾ HK is the Knoop microhardness used primarily for very brittle materials or thin sheets.



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Tolerances

Thickness

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

Flatness

Plate flatness tolerance can be guaranteed within ± 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	
Metric unit	Imperial unit	Metric unit	Imperial unit
6 mm on 6 mm	1/4" on 1/4"	25 mm	1"
10 mm on 10 mm	3/8" on 3/8"	12 mm	1/2"
12 mm on 12 mm	1/2" on 1/2"	6 mm	1/4"
6 mm on 20 mm	1/4" on 3/4"	6 mm	1/4"
6 mm on 25 mm	1/4" on 1"	6 mm	1/4"
6 mm on 32 mm	1/4" on 1-1/4"	6 mm	1/4"

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

Delivery Conditions

Duroxite 211 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.

