

Duaplate® D60 Weld Overlay

Overview

Duaplate D60 is a chromium carbide weld overlay used in the mining and mineral processing industries. The manufacturing process of Duaplate, along with the microstructure and chemical composition, give D60 its superior properties. D60 performs well under high impact and is resistant to highly abrasive environments. It is available in large sheet sizes or can be cut to custom shapes.

Manufacture

Duaplate is manufactured by welding an abrasion resistant material to a mild steel base. A chromium rich powder is fused to the base plate, creating a bi-metallic material with high abrasion resistance whilst still retaining ductility allowing forming and welding. Multiple overlay and backing plate thickness options are available.

Composition

D60 is manufactured to Bradken's proprietary specifications. Typical chemical composition is given below:

Carbon	3.5%–4.5%
Silicon	0.4%–1.5%
Manganese	1.2%–3.0%
Chromium	27%–38%
Iron	Balance

Microstructure

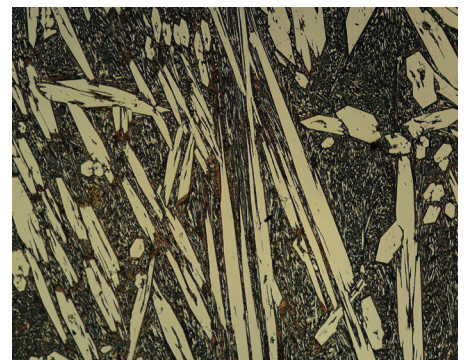
A D60 microstructure consists of large, primary M_7C_3 carbides surrounded by a eutectic mixture of carbides and austenitic matrix material. The very hard primary carbides form as hexagonal, needle-like rods which are very resistant to wear. The austenitic matrix material provides mechanical support to the primary carbides whilst also helping to absorb impact.

Typical Properties

Bulk Hardness	620–700 HV ₅₀
Carbide Hardness	1100–1600 HV _{0.5}
Volume Fraction of Carbides	~30%
Density	7850 kg/m ³



Duaplate Manufacturing Process



Duaplate D60 Microstructure



Duaplate D60 Bin Liners



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