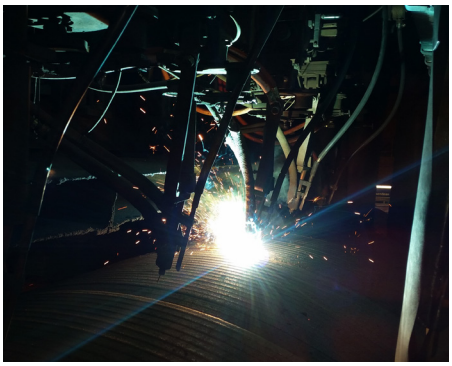
Duaplate® D80 Weld Overlay

Overview

Duaplate D80 is a chromium carbide weld overlay used in the Fixed Plant industry. The manufacturing process of Duaplate, along with the microstructure and chemical composition, give D80 its superior properties. D80 performs well under very high impact and very severe abrasive environments. Large sheets or custom shapes of Duaplate D80 are available and can be formed into complex shapes.



Duaplate Manufacturing Process

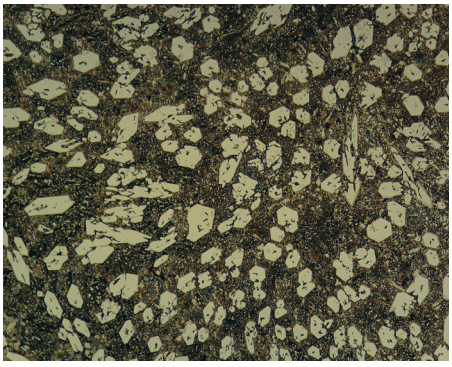
Manufacture

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

Extra alloying elements help to give Duaplate D80 its superior properties. Typical chemical composition is given below:

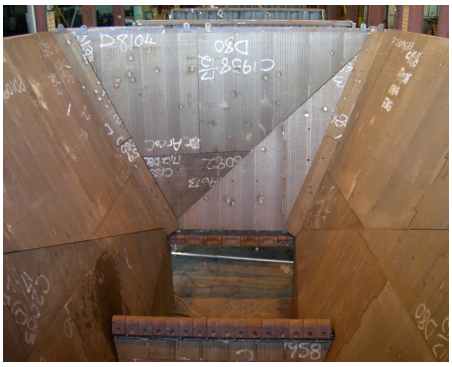
Carbon	3.0% – 4.5%
Silicon	0.8% – 2.5%
Manganese	1.5% – 3.2%
Chromium	25%–35%
Nb/Mo/Ti/V/W	Up to 5%
Iron	Balance



Duaplate D80 Microstructure

Microstructure

A D80 microstructure consists of fine, primary M_7C_3 carbides surrounded by a eutectic mixture of carbides and austenitic matrix material. The very hard primary carbides form as hexagonal nodules and help to prevent wear of the hardfacing material whilst providing superior impact resistance than Duaplate D60. The austenitic matrix material provides mechanical support to the primary carbides whilst also helping to absorb impact.



Duaplate D80 Application

Typical Properties

Bulk Hardness	620–680 HV_{50}
Carbide Hardness	1100–1600 $HV_{0.3}$
Volume Fraction of Carbides	~30%
Density	7850 kg/m^3

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