

Duroxite® Cr-zero Wire

General Product Description

Duroxite® Cr-zero Wire is a non-chromium bearing flux cored hardfacing wire for open arc welding. The deposited overlay contains boron carbides which has wear resistance and hardness equal to or greater than conventional chromium carbide deposits. Duroxite® Cr-zero Wire is specifically formulated to eliminate chromium in the wire, and still provide outstanding wear resistance. Since there are no chromium alloys added in the welding wire, the emission of hexavalent chromium during welding is reduced or completely eliminated (depending on the chromium content in substrate materials or pre-existing weld deposit). Duroxite® Cr-zero Wire is a good choice of hardfacing wire for earthmoving applications when the hexavalent chromium smoke is a big concern at the workshop. It is suitable for single and double-layer deposit.

Key Benefits

- Duroxite® Cr-zero Wire provides very good abrasion resistance for earthmoving applications where hexavalent chromium in welding fumes cannot be reduced by work practice controls.
- Duroxite® Cr-zero Wire maintain same wear resistance guaranteed from surface through 75% depth of overlay in multi-layer deposit.

Typical Applications

Duroxite® Cr-zero Wire is used for hardfacing components undergoing wear by earth, sand and abrasives in the agricultural, quarry, mining, and public works fields. Examples: Mixer shafts, impellers, buckets, shovels, transport screws, and crushers for the concrete industry.

Standard Dimensions

Standard diameter Metric	
1.6 mm	
2.8 mm	

Mechanical Properties

Wear properties ¹⁾			ASTM G65 – Procedure A weight loss ²⁾	
Number of overlay passes	Hardness: 2-layer deposit on mild steel	Hardness: 3-layer deposit on mild steel	Surface (g max)	75 % depth of overlay ³⁾ (g max)
Multiple passes	63 - 69 HRC	65 - 69 HRC	0.18	0.18

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

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 the top surface through to the depth of 75% of the overlay.

Chemical Composition

Typical all-weld metal analysis (Weight %)					
C (%)	Mn (%)	Si (%)	Ni (%)	B (%)	Fe
0.5	2.0	Up to 1.2	Up to 1.7	4.0	Balance

Welding recommendations

Welding conditions		
Current type	Shielding gas	Welding positions
DCEP (Direct current electrode positive)	None (Self-shielded)	Flat, half up, half down

Welding parameters recommendations

Diameter	Amperage (A)		Voltage (V)		Stick-out	
	Range	Optimum	Range	Optimum	Range	Optimum
1.6 mm	225 - 300	270	20 - 26	23	15.9 mm - 25.0 mm	20 mm
2.8 mm	290 - 310	300	29 - 31	30	15.9 mm - 25.0 mm	20 mm

Recovery: 95%

Delivery Conditions

Standard package	Weight
Type	Metric
Spool	15 kg
Spool	25 kg

Fabrication and Other Recommendations

The welded overlay components can be processed by welding, cutting, forming and machining. Specific recommendations can be found in the Duroxite® Product brochure or by consulting your local technical support representative.

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.