Duroxite® 100 Wire

General Product Description

Duroxite® 100 Wire is a flux-cored welding wire for hardfacing components subject to severe sliding wear and moderate to low impact applications using an open-arc welding process. The weld deposit contains abrasion-resistant materials composed of a high proportion of extremely hard primary M7C3 chromium-rich carbides. With a typical hardness of 1700 HK *) these carbides are dispersed evenly in a ductile eutectic austenite matrix. It naturally reveals stress-relief cracks after welding.

Duroxite® 100 Wire is suitable for single-layer or multiple-layer deposits up to a maximum of three layers. Preheating, interpass temperature, and post-weld heat treatment are as needed according to base metal recommendations. If welding with downhill or uphill position, reduced wire feed speed and voltage are preferred to apply.

*) HK is the Knoop microhardness used primarily for very brittle materials.

Key Benefits

- Same wear resistance guaranteed from surface through 75% depth of overlay in multi-layer deposit
- Optimal alloy formulation that forms a carbide composition which provides a good combination of wear resistance and homogenous bonding

Typical Applications

Duroxite® 100 Wire is mainly designed to use for hardfacing wear parts undergoing wear by earth, sand and abrasives up to 350ºC (660ºF). Typical examples include: Crusher hammers, gyratory crusher cones and mantles, dredging pumps, slurry pipes, dragline bucket liners, coal pulverizer rolls, coke hammers, sand dredging parts, mining and earthmoving components, and sorting screens.

Standard Dimensions

Standard diameter Metric
1.2 mm
1.6 mm
2.8 mm

Mechanical Properties

		ASTM G65 – Procedure A weight loss [2]		Typical all-weld metal surface hardness [1]	
Number of overlay passes	Classifications	Surface (g max)	75 % depth of overlay [3] (g max)	Hardness: 2-layer deposit on mild steel	Hardness: 3-layer deposit on mild steel
Multiple passes	DIN 14700 T Fe15 g DIN 8555 MF 10 GF 60 G	0.18	0.18	58 - 65 HRC	60 - 65 HRC

[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.

Test results for mechanical properties

Test results for mechanical properties, deposit overlay chemical composition, surface hardness, and ASTM G65-A weight loss were obtained from a weld produced and tested according to prescribed standards, and should not be assumed to be the expected results in a particular application or weldment. Actual results will vary depending on many factors, including, but not limited to, weld procedure, substrate chemistry and working temperature, weldment design and fabrication methods. Users are cautioned to confirm by qualification testing, or other appropriate means, the suitability of any welding consumable and procedure before use in the intended applications.

Chemical Composition

Standard diameter	Typical all-weld metal analysis (Weight %)				
Metric	C (%)	Mn (%)	Si (%)	Cr (%)	Fe
1.2 mm	4.7	0.2	0.6	27	Balance
1.6 mm	5.5	0.2	0.6	29	Balance
2.8 mm	5.5	0.2	0.6	29	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	
Metric	Range	Optimum	Range	Optimum	Range	Optimum
1.2 mm	110 - 250	190	24 - 30	28	20 mm - 45 mm	25 mm
1.6 mm	150 - 270	200	25 - 30	28	20 mm - 45 mm	25 mm
2.8 mm	250 - 450	300	28 - 32	30	20 mm - 45 mm	25 mm

Recovery: 90%

Delivery Conditions

Standard package	Diameter	Weight
Type	Metric	Metric
Spool	1.2 mm	15 kg
Spool	1.6 mm	15 kg
Spool	2.8 mm	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, gases and harmful fumes are produced that are chemically complex and difficult to classify. The major toxic component in the fumes 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.

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