Hardfacing electrode

Classification

DIN 8555 : E10-UM-60-GRZ

General Description

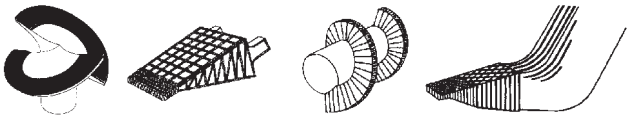
A heavily coated rutile electrode that produces a near eutectic mix of chromium carbides and austenite, with limited primary carbides weld deposit 170% recovery. Designed for operator appeal and weld quality having excellent arc characteristics, good restriking, complete slag coverage and low spatter levels. The electrode coating permits the use of a light drag or contact welding technique.

Application

Wearshield ME produces an abrasion resistant deposit with a hardness range of 55-60HRc.
The intended use of Wearshield ME is to provide a combination of abrasion and impact resistance at service temperatures up to 600°C.

Typical applications include:

Ingot tongs
Scrapper blades
Rolling mill guides
Screw flights
Coal mining chutes
Plough shares, scrapper blades and cultivator sweeps
Pulleys and chain links



Mechanical properties, all weld metal

	Typical hardness values
1 Layer	55 HRc
2 Layer	60 HRc

Welded on Mild Steel Plate

Packaging, available sizes and identification

	Diameter (mm)	3.2	4.0	5.0
	Length (mm)	450	450	450
Unit: Box	Pieces / unit (nominal)	37	23	15
	Net weight (kg)	2.5	2.5	2.5

Identification Imprint: WEARSHIELD ME (e) Tip colour: violet

Wearshield® ME (e): rev. EN 15

Additional information

When welding with Wearshield ME the weld width should be limited to 20mm. Since wide weaves generally increase the check crack spacing which can result in deposit spalling on multiple layers. For edge, corner and general buildup, narrow stringer beads are preferred.

Wearshield ME generally check cracks except for single layers on thin base material. Stringer beads tend to produce a consistent crack spacing of between 12-25mm.

Preheat is not necessary when surfacing austenitic substrates such as stainless steels and manganese steels, although the interpass temperature should be limited to about 260°C for manganese steels, For low alloy and carbon steels a preheat of 200°C is usually sufficient, but is dependent on base material thickness and chemistry. The deposited weld metal is not machinable by conventional methods although the deposit can be shaped by grinding.

The deposit thickness is usually limited to 2-3 layers to avoid spalling.

To minimise the risk of spalling, stringer beads should be employed to produce closely spaced check cracks.

The resultant weld metal microstructure is determined by the level of dilution and base material chemistry. Low dilution welds on carbon and low alloy steels results in a microstructure that is a near eutectic mix of chromium carbides and austenite, with limited primary carbides. High dilution weld deposit produce a microstructure of primary austenite and eutectic resulting in higher toughness and lower abrasion resistance.

For maximum spalling resistance on carbon and low alloy steels, a buffer layer of Wearshield MM 40 or RepTec 126 should be applied prior to the Wearshield ME.

Welding positions

ISO/ASME PA/1G PB/2F

Current type

AC / DC electr. +

Chemical composition (w%), typical, all weld metal

C	Cr	Si
3	33	1.0

Structure

In the as welded condition the microstructure consists of a near eutectic mix of chromium carbides and austenite, with limited primary carbides

Calculation data

Sizes Diam. x length (mm)	Current range (A)	Current type -	Arc time per electrode at max. current (s)*	Energy per electrode at max. current E(kJ)	Dep.rate H(kg/h)
3.2 x 450	100 - 140	DC+	-	-	1.15
4.0 x 450	130 - 190	DC+	-	-	1.70
5.0 x 450	160 - 260	DC+	-	-	2.25

* stub end = 35 mm

Complementary products

There is no flux cored equivalent to Wearshield ME. The closest product is Lincore® 60-O, however, the deposit varies significantly to Wearshield ME.