Hardfacing electrode

Classification

DIN 8555 : E10-UM-50-GPZ
EN 14700 : E Fe6

General description

A graphite coated electrode that produces a primary austenite and austenite-eutectic weld deposit.
Wearshield ABR is the most versatile product within the Wearshield range
Good resistance to both abrasion and impact, as well as hot-forging properties

Application

Wearshield ABR produces an abrasion and impact resistant deposit with a hardness of 28-55HRc depending on base metal chemistry, dilution and number of layers. The combination of abrasion and impact resistance coupled with hot forging properties makes Wearshield ABR particularly suitable for APLs involving transportation of abrasive media under heavy variable loading. Wearshield ABR is also suitable for metal to metal wear APLs.

Typical applications include:

Dipper and dredge cutter teeth
Rock crusher hammers and mill hammers
Rock crushers and crusher mantles
Screw flights
Coal mining cutters
Conveyor buckets and rolls
Plough shares, scrapper blades and cultivator sweeps
Truck chain and gears

Mechanical properties, all weld metal

	Typical hardness values
1 Layer	24-53 HRc
2 Layers	28-53 HRc
3 Layers	28-55 HRc

Welded on Mild Steel Plate

Packaging and available sizes

	Diameter (mm)	54	4.0	4.8
	Length (mm)	355	355	355
Unit: Box	Pieces / unit	85	54	38
	Net weight/unit (kg)	2.5	2.5	2.5

Identification Imprint: WEARSHIELD ABR Tip Color: none

Wearshield® ABR: rev. EN 22

Additional information

When welding with Wearshield ABR a short arc should be employed. The weld width should be limited to between 12-20mm for all electrode diameters when employing a weaving technique. For edge and corner build up narrow stringer beads are preferred.
Preheat is not necessary when surfacing austenitic substrates such as stainless 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 material thickness and chemistry. For optimum abrasion resistance the interpass temperature should be limited to 320°C.
The deposited weld metal is not machinable by conventional methods although the deposit can be shaped by grinding.
To obtain a deposit that can be machined by carbide cutting tools, the component should be heated to 750°C for one hour followed by air cooling to room temperature. For maximum machinability the component should be heated to 875-900°C for one hour, furnace cooled to 650°C at a rate not exceeding 10°C per hour, followed by furnace or air cooling to room temperature. The abrasion resistance can be restored by heating to 800°C, quenching and tempering at 200°C.
The deposit thickness is usually limited to 2 layers.
For applications requiring thicker deposits, an intermediate layer of an austenitic material such as Wearshield 15CrMn should be used and each layer peened to relieve residual stresses.
For maximum resistance to spalling one or more layers of Wearshield 15CrMn should be used as buildup.
There is no flux cored equivalent to Wearshield ABR.

Welding positions

ISO/ASME	PA/1G	PC/2G	PF/3Gup	PE/4G

Current type

AC / DC + / -

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

C	Mn	Si	Cr	Mo
2.1	1.1	0.75	6.5	0.40

Structure

In the as welded condition the microstructure consists of primary austenite and a eutectic of austenite plus carbides.

Calculation data

Sizes Diam. x length (mm)	Current range (A)
3.2 x 355	40 - 150
4.0 x 355	75 - 200
5.0 x 355	110 - 250

Complementary products

The closest product is Lincore® 50, however, the deposit varies significantly to Wearshield ABR.