

MAGNA 403 AC-DC

Magna 403 is designed to resist both extreme high stress and low stress abrasion. It has the following features:

Combination of good toughness and crack resistance resulting from a dense matrix of a super work hardening austenite with spine-like crystals of chromium and titanium carbides. These extremely hard carbides provide resistance to gouging and high stress abrasion and the highly alloyed matrix provides resistance to low stress abrasion and scouring. The matrix is so tough that loss of carbides only occurs over a prolonged period of wear.

With some ordinary hard facing electrodes there is little or no protection against carbide precipitation in the transition zone. Often there is little or no control of penetration and there is a great deal of dilution of the weld metal into the base metal. This creates a heat affected zone at the interface of the deposit as a result of carbon migration and grain coarsening. There is a tempering effect, which although brief, can often produce carbide precipitation and embrittlement in the areas heated to 400 - 700 deg. C. particularly in maintenance of steel parts which have been severely cold-worked. Worn parts have certainly received cold work and partial metallurgical transformation will have occurred in the surface layers. The heat input and uncontrolled deposit structure of ordinary hard facing rods will carry this decomposition further.

Heat affected zone cracks are extremely dangerous, since they can result in the entire deposit spalling off. Longitudinal cracks are of relatively frequent occurrence with some hardfacing electrodes. These cracks (true hot cracks) are also very dangerous since they cannot be closed up so readily by cold working as can transverse cracks (cooling cracks) which are also common.

Magna 403 provides a metallurgical advantage over most hard surfacing electrodes because the carbides that are formed are balanced and completely stable and occur uniformly throughout the deposit. The alloy has an even dispersement of carbides which gives uniform resistance to wear. Some hard facing electrodes that are based on carbide formation have non-uniform dispersement of carbides usually due to precipitation of elements and this allows premature wear in some areas and soon deterioration of the entire

surfaced part breaks down. Magna 403 employs special additives and stabilizers that control the carbides and eliminates carbide precipitation.

SPECIAL FEATURES: -

1. High deposition rate
2. Deposits are smooth
3. Hardness is 55 to 60 Rockwell C as applied
4. Has shallow penetration which prevents dilution
5. Easy application with no spatter, no pin holes and easy slag removal.

MAGNA APPLICATION PROCEDURE - MAGNA 403

Prepare base metal by cleaning and degreasing as far as possible. Sand or file weld area to achieve a smooth working surface.

Either AC or DC reverse polarity welding machines may be used to apply Magna 403. The electrode has a balanced arc transfer, a fast deposition rate and achieves neat smooth deposits free from spatter and porosity. It is very simple to apply and requires no special techniques or procedures.

When using Magna 403 to overlay large areas, it is beneficial to make initial passes, and build up with Magna 303 and then make final three passes with Magna 403.

For cast iron applications, optimum results will be achieved by making an all over base coverage of Magna 770 before applying Magna 403.

Recommended Amperages:

Metric	Inches	Gauge	Setting
3.2 mm.	1/8	10	125 - 175 amps
4.0 mm.	5/32	8	175 - 250 amps
4.8 mm.	3/16	6	225 - 300 amps

A variety of Overlaying Applications with other Magna Welding Alloys

- Impact resistance overlays - Magna 402
- High strength joining with oxyacetylene - Magna 33F
- Gas welding overlay applications - Magna 44
- Machinable overlays - Magna 405