

MAGNA 404

An alloy formulated to resist extreme abrasion extreme grinding and wear of many types. It has the following features:

- 1. Extreme Wear Resistance.** Magna 404 provides a deposit of a duplex nature. It consists of an alloy steel tube which is filled with particles of a special cobalt tungsten carbide material in crushed particle form. This electrode is coated with a chemical flux coating that contains special arc stabilizers and also materials that alloy with the steel tube to improve toughness of the matrix. When the electrode is melted, the tube melts and forms a matrix and the special tungsten carbide particles are embedded, sealed in, and firmly held by the matrix. The wear resistance is incredible because hard carbides will outwear anything on earth except diamonds. Some carbide will carry the service load of resisting wear for a long period but when the sharp edges are worn down other sharp edges are exposed that will continue to withstand wear. When a complete carbide is worn out, another takes its place. Thus the deposit is self sharpening and will keep a cutting action in progress for a long time when used for drilling or cutting rock, etc.
- 2. Quality Product.** The principle of a steel tube filled with tungsten carbide particles is not new. Some companies manufacture these as cheaply as possible using only a small amount of carbides in each tube. Magna 404 consists of a special alloy tube instead of a mild steel tube, fully filled with special quality virgin tungsten carbide. The carbides used are very nearly as hard as a diamond.
- 3. Use with Torch or Arc.** The coating on Magna 404 is designed so that the alloy can be applied either with torch or arc. The torch gives the very best wear resistance because none of the particles melt, while with the arc there is naturally some melting of the carbides. Arc application gives remarkable wear resistance and has the advantage of greater speed especially on large structures. With ordinary tungsten carbide type rods it is necessary to use a different one with arc and with gas, but Magna 404 has the unique feature of having a coating that lends itself to both arc and gas application.

4. **Great Economy.** The great economy with Magna 404 is the fact that equipment overlayed with this product will last up to 30 times longer than when lesser quality products are used. This saves costly downtime on machinery. 4.5 kg of Magna 404 will overlay up to 930 cm² totalling as little as 3 or 4 cents per mm² protected, and often less. Often it is not necessary to overlay the entire part. A pattern of 'stripes' on a part, or dots will often wear as well as a complete overlay.

APPLICATION

Magna 404 may be applied using either torch or arc welding equipment. The use of an oxyacetylene torch enables greater precision of application and higher wear resisting results. Arc application yields an excellent wear resistance with the added benefit of greater speed of application.

With Oxyacetylene Torch

Fit a large sized tip at least two sizes larger than you would normally use when welding steel of the same diameter. Adjust the flame to an excess acetylene. The flame feather should be three times the length of the inner cone.

Bring the base metal to a dull cherry red heat. Direct the inner cone of the flame onto the base metal. This will cause the base metal to become liquid at the surface and fuse with the weld deposit without dilution. The surface will begin to "sweat" at a lower temperature than melting point. When this is achieved use a brazing technique to apply Magna 404. Only a single layer of alloy is required and the deposit should have a rough granular texture and appearance.

With Arc

Magna 404 can be applied by either AC or DC Reverse polarity equipment set to the following amperages:

Recommended Amperages:

| Metric | Inches | Gauge | Setting |
|---------|--------|-------|----------------|
| 4.0 mm. | 5/32 | 8 | 95 - 140 amps |
| 4.8 mm. | 3/16 | 6 | 145 - 190 amps |

Preheating is not necessary. Deep penetration is not required therefore use the lowest setting and closest gap practicable and control the dilution rate as far as

possible. No special techniques need be observed; just apply as any mild steel electrode.

For normal requirements one overlay is adequate. However, the alloy is highly crack resistant and to combat extreme abrasive wear multiple overlays are possible. This is best achieved by holding the Magna 404 alloy at a close angle (say 30°) and making a thicker deposit and greater concentration of tungsten carbide particles.

Other Magna Overlay Products for Different Applications:

- | | | |
|--------------------------------|---|-----------|
| For extreme impact resistance | - | Magna 402 |
| For abrasion resistance | - | Magna 403 |
| For gas application | - | Magna 44 |
| For tough, machinable overlays | - | Magna 405 |