

MAGNA ALLOY C

IMPROVED MAGNA ALLOY C

NEW, IMPROVED Alloy C is a super high alloy electrode specially designed to cope with problems of corrosion, heat and impact. It has the following characteristics:

High Physical Properties

- Tensile Strength: Up to 69 Kg/mm² (98,000 psi)
- Elongation: <40%
- Hardness: Brinell 220 as welded
Brinell 400 after work hardening

High Alloy Content

Magna Alloy C deposits an entirely complex alloy system. Its content of high cobalt, tungsten, nickel, chromium and molybdenum provides extra high physical properties at elevated temperatures. It provides an ideal choice in resisting deformation from either cyclic or static loads. Alloy C displays only a minute degree of shrinkage on cooling and expansion on heating. Alloy C is virtually impervious to high temperatures.

High Corrosion Resistance

Alloy C provides outstanding resistance to oxidizing acid mixtures and is especially good in applications requiring contact with nitric acid, phosphoric acid, hypochlorites and organic acids as well as chlorine acids and mixed acids.

Excellent Hot Hardness Properties

Magna Alloy C drops only a very small amount in hardness even at exceedingly high temperatures. The Brinell Hardness of deposits after soaking heat for 24 hours is:-

1400°F (760°C) = 190 Brinell

1200°F (648°C) = 190 Brinell

1000°F (537°C) = 200 Brinell

Magna Alloy C stays at Brinell 220 at room temperature. Its unique quality makes it outstanding for withstanding impact and pressure at high temperatures.

Impact Resistance

It has excellent spall resistance with impact as well as shock absorbency loading, even at high temperatures.

Forging Properties

Alloy C is forgeable. The correct procedure is to start forging at 2300°F and stop forging at 1900°F (1055°C).

Machinability

Magna Alloy C is machinable at room temperature (i.e. 220 Brinell). This work hardening alloy which hardens up to 400 Brinell (42 Rockwell C), should be machined using the same procedures as with stainless steel.

Weldability

It is easy to apply and has a smooth spray transfer. It is also versatile, being all-position, and has virtually no spatter. Alloy C provides good weldability with both alternating and direct current.

Application

Magna Alloy C is perfect for joining as well as overlaying high nickel alloys such as :-

Inconel
Inlimum
Hastelloys
Monel
and dissimilar Nickel Alloys

Magna Alloy C is also widely-used for overlaying tools and equipment that must have good service properties at high temperatures, such as:

- Blister Bar Tongs
- Crane Tong Bits
- Forging Die Blocks
- Hot Trimmer Dies
- Sizing Punches & Rings

- Hot Shear Blades
- Mill Guides
- Shafts
- Rams
- Piercing Tools
- Ladles
- Equipment for handling hot metal

HOW TO APPLY IMPROVED MAGNA ALLOY C

Typical Welding Conditions

Use on AC or DC (Electrode Positive)

Electrode Diameter

1/8" (3.175mm)

Recommended Amperage

120-140 Amps

When overlaying dies, tools or other parts, remove fatigued metal by chipping, grinding or using Magna 100 Chamfering Electrode. Degrease surface with Magna 990 Degreasing Aerosol. Since Magna Alloy C is highly crack-resistant, it can be applied in stringer beads or weave beads. Use shortest possible arc and back-whip to avoid craters.

Preheat is not necessary with Magna Alloy C except when welding thick sections or crack-sensitive metals. Peening is not necessary except on heavy sections or crack-sensitive metals. A range of 600°F (315°C) should be employed when applied to heat-treatable forging die steels. On heat-treatable forging die steels, temper at 1000°F (538°C) for four to six hours and cool in still air.

Slag is easily removed and this should be done before applying later passes. The uniform coating produces a smooth, even burn-off, with excellent arc stability. Optimum results are obtained when a two pass build-up is used, or the finished weld limited to a weld thickness of 5/32" (15.8 mm).

Magna Alloy C can be used on all steels and virtually all high nickel alloys. It can be used on cast iron as an overlay material. Its widest use is for overlaying equipment to work at elevated temperatures in steel mills and in the forging industry.

Machining

Use high speed steel or tungsten carbide tools with very low speed, high feed rate and adequate cooling.

Heat Treatment

Deposits of Alloy C are non heat-treatable but work harden to Brinell 400 (42 Rockwell C)