"It's pointless without TACA"

TACA GROUP OF COMPANIES

TUNGSTEN CARBIDE HARDFACING FACT SHEET

1. PROPERTIES

Properties of Tungsten Carbide.

Tungsten is one of the hardest metals known to man. The Periodic Table lists the following
Molecular Formula: **WC & W_2C**, depending on the carbon content.
Melting Point: $3422^{O}C+$, Boiling Point: $5555^{O}C$.
Hexagonal Crystalline structure.
Mohs hardness scale is 8.5 to 9.5 (diamond being 10.0). (Approximate Vickers 1200 to 1700, or Rockwell C 89+)
Tungsten is sintered in varying percentages with Cobalt and other metals, to form a Grit that is suitable for hardfacing applications in a CO_2/Mig weld.

Properties of Cobalt.

Cobalt is a hard lustrous grey metal widely used for wear resistant, high strength Alloys.
Molecular Formula **Co**. Melting Point: $1495^{O}C$, Boiling Point: $3200^{O}C$.
Hexagonal Crystalline structure.
Mohs hardness scale is 5.0 to 5.5 (Approximate Vickers 500 to 800, or Rockwell C Scale 76+)

Properties of Mig Welding Wire.

Mig Semi automatic or automatic feed.
Temperature on the parent metal face varies between $1200^{O}C$ and $2300^{O}C$.
The product defines the degree of hardness but is usually below Mohs 4.5 (Approximate Vickers 400 to 500, or Rockwell C 41 to 49)
The above facts are based on basic Mig wire. Harder wires are available which will enhance the Tungsten Carbide application hardness properties.

2. APPLICATION.

TACA Grit Mix.

TACA Grit is a specially formulated blend to produce the hardest matrix of coating known.
The grit is supplied in scientifically designed grit sizes, with varying degrees (Percentages %) of fines. **Our product is strictly controlled and ensures better adhesion and higher resistance to wear and impact.**

TACA Application.

The TACA application uses a unique patented process that allows the Tungsten Grit to penetrate the parent material therefore allowing the matrix weld to be impervious to impact. The patented TACA Machine allows no foreign particles into the matrix weld therefore giving the weld superior hardness.

TACA Hardness

TACA consistently records values above 60 Rockwell C within the matrix binder. Constant Research & Development is pushing this limit higher, and up to 65+ on the Rockwell C Scale within the matrix binder.

3. THE RESULT.

Summary

The crystalline structure of pure Tungsten lends itself to being almost comparable in hardness to diamond, in mixing it with various other metals, a usable product is produced which enables the application to be applied to the base metal, and thereby increasing resistance to erosive properties whilst engaged in all abrasive workings. **The purer the application the better the product functions.** Any impurities encased within the Tungsten Carbide Application Matrix results in increased brittleness and loss of adhesive qualities**. This results in early failure**. TACA's high quality patented process reduces this to a negligible level. **However, the application must be scientifically placed on the parent material to enable it to fully carry out its designed task, and provides a Cost Saving benefit in Downtime and Labour etc.**

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