

Cerbide MACH600

Technical Data



Binderless Tungsten Carbide

Cerbide MACH600 is produced from a patented process combining the properties of ceramics and cemented tungsten carbide, enabling it to perform at high levels of abrasion and erosion resistance. The result is a cost effective, high-performance product that wears significantly longer in both wet and dry, low-impact applications. Cerbide's MACH600 is also significantly more resistant to acidic corrosion than cobalt or nickel bound cemented tungsten carbides.

Abrasion Resistance

Dry Wheel - ASTM G65 (1/cm³) 865

Hardness

Vickers (HV1 – 1000g-*f*) > 2,800

Rockwell A conversion equivalent > 96.5

Knoop (HK – 100g-*f*) > 3,400

TRS (ksi) 250

Density (grams/cc) > 15.6

Grain Size nanostructured WC, < 1 μ

Youngs Modulus (GPa) 620

Fracture Toughness (MPa \sqrt m) 3.9

Thermal Conductivity (W/mK) 120

CTE (Coefficient of Thermal Expansion)
($\times 10^{-6}$ / °C) 4.5

Electrical Resistivity ($\times 10^{-6}$ Ohm / cm) 17

Specific Heat (cal / molK) 8.46

Corrosion Resistance

MACH600 is 8 times more resistant to acids than Nickel or Cobalt based cemented tungsten carbide matrices and corrosion appreciably drops off to near zero after 144 hours in strong acids

- MACH600 is inherently non-magnetic
- MACH600 can be readily formed by diamond tools in addition to sinker or wire EDM subtractive processes
- MACH600 can be torch, induction or atmospherically brazed to steel substrates with AWS Braze BAg 22. Lucas-Milhaupt LM Silvaloy 495 or Prince & Izant Silver Braze 49Ni4 with any "B" or "B-1" type flux is recommended



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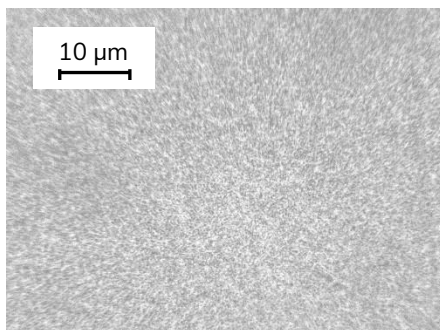


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Cerbide MACH600 offers excellent wear & chemical resistance for applications that demand the ultimate in hardness. Components made from MACH600 offer extraordinary life that translates into bolt-on benefits like reduced maintenance, decreased downtime and lower overall cost of ownership when compared to B4C and standard Tungsten Carbide grades.



MACH600 Binderless Tungsten Carbide



MACH600 micrograph – 400x

Applications

- Nozzles for grit blasting – wet or dry
- Wear resistant components
- Water jet nozzles, water pumping hardware, orifices
- Cutting tools – round tools or ISO inserts
- Paint spray nozzles
- Draw dies – extrusion dies
- Low impact compaction dies

Material Characteristics

- Approaching theoretical density
- Binderless matrix
- Non-porous surface won't trap & react with chemicals
- Non-magnetic
- Readily brazed to other metallic substrates
- Can be polished to a mirror-like finish
- Crack resistant EDM processing properties

Let Cerbide application engineers consult with your team on design and applications where MACH600 components could benefit your operations.

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