

Cerbide OPTIC MOLD Blanks

Technical Data



Binderless Tungsten Carbide

Cerbide OPTICAL MOLD blanks made from MACH600 are the new industry standard for PGM / PMO manufacturing of aspheres and other technical optics. Cerbide's patented process combines the best properties of ceramics & cemented tungsten carbides to produce a durable, **binderless** tungsten carbide. Cerbide's unique material properties will improve both productivity & product quality with drastically lower finishing & operating costs.



Advantages of MACH600 Binderless Tungsten Carbide

- No Cobalt leaching at elevated temperatures
- No adherence between glass & the mold surface
- Incredible hardness for superior surface finish on molds
- Superior wear resistance compared to cemented tungsten carbide (triple the life of conventional cemented carbide grades)
- Extended mold life – lower operating cost/minimal equipment downtime
- Operating Temperature >900°C – well above Moldable Oxide Glass limits
- High Thermal Conductivity / Low Specific Heat capacity allows glass to heat rapidly & provides a more uniform temperature distribution
- Hot Isostatic Press consolidation of Cerbide MACH600 post sintering produces a high density (> 99.9%) base material with ultra-low porosity



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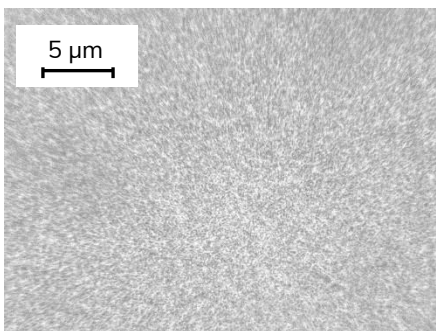
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Cerbide MACH600 offers excellent wear & chemical resistance for applications that demand the ultimate in hardness. Components manufactured from MACH600 offer extraordinary operational life that translates into real-world benefits like reduced maintenance & lower cost of ownership when compared to standard Tungsten Carbide products.



MACH600 micrograph – 400x

Abrasion Resistance

Dry Wheel - ASTM G65 (1/cm³) 840

Hardness

Vickers (HV1 – 1000g-*f*) > 2,800
Rockwell A conversion equivalent > 96.5
Knoop (HK – 100g-*f*) > 3,400

Density (grams/cc) > 15.6

Grain Size < 0.6μm

Thermal Conductivity (W/mK) 120

CTE (× 10⁻⁶ / °C) 4.5

Electrical Resistivity (× 10⁻⁶ Ohm / cm) 17

Specific Heat (cal / molK) 8.46

Material Characteristics

- Approaching theoretical density
- Binderless matrix
- Nanostructured Tungsten Carbide
- Non-porous surface won't trap & react with chemicals
- Non-magnetic
- Can be polished to a mirror finish
- Minimizes sticking in-mold

Let Cerbide application engineers consult with your team on integration of MACH600 into your workflow

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