

## MoldMAX HH<sup>®</sup> Alloy

Materion's MoldMAX HH (High Hard) Alloy is the premier copper mold alloy. This alloy has a hardness and strength comparable with standard tool steels but its thermal conductivity is at four to six times higher. MoldMAX HH Alloy is used for injection mold cores and cavities and blow mold pinch-offs. Its high hardness provides durability in applications where other high conductivity copper alloys fail. The alloy resists galling against other mold alloys, including itself.

### CHEMICAL COMPOSITION (WEIGHT PERCENT)

| Alloy            | Beryllium | Cobalt    | Copper  |
|------------------|-----------|-----------|---------|
| MoldMAX HH Alloy | 1.6 - 2.0 | 0.2 - 0.3 | Balance |

### PHYSICAL PROPERTIES

| Elastic Modulus       | Melting Point (Solidus) | Density  | Thermal Expansion   | Thermal Conductivity (100 °C) | Heat Capacity (100 °C)        |
|-----------------------|-------------------------|--|---|-------------------------------|-------------------------------|
| 19,000 ksi<br>131 GPa | ~1600 °F<br>~870 °C     | 0.302 lb/in <sup>3</sup><br>8.36 g/cm <sup>3</sup> | 9.7 x 10 <sup>-6</sup> in/in °F<br>17.5 x 10 <sup>-6</sup> °C <sup>-1</sup> | 75 BTU/hr·ft·°F<br>130 W/m·°C | 0.10 BTU/lb·°F<br>0.42 J/g·°C |

### TYPICAL MECHANICAL PROPERTIES\*

| 0.2% Offset Yield Strength | Ultimate Tensile Strength | Fatigue Strength 107 Cycles (R=-1) | Elongation | Impact Strength | Hardness |
|----------------------------|---------------------------|------------------------------------|------------|-----------------|----------|
| 145 ksi<br>1000 MPa        | 170 ksi<br>1170 MPa       | > 45 ksi<br>> 310 MPa              | 5%         | 5 ft·lb<br>7 J  | 40 HRC   |

\*Properties may vary by shape and thickness.

### FORMS AVAILABLE

Rounds, square and rectangular bars, plate and forged rings.

### RELATED INFORMATION

Additional technical information on MoldMAX<sup>®</sup> products can be obtained by visiting [www.MoldMax.com](http://www.MoldMax.com) or by calling 800-375-4205 (USA). For pricing and availability in North America, contact a sales location.

### HEALTH AND SAFETY

Processing beryllium-containing alloys poses a health risk if safe practices are not followed. Inhalation of airborne beryllium can cause serious lung diseases in some individuals. Occupational safety and health regulatory agencies worldwide have set mandatory limits on occupational respiratory exposures. Read and follow the guidance in the Safety Data Sheet (SDS) before working with this material. The SDS and additional important beryllium health and safety information and guidance can be found at [berylliumsafety.com](http://berylliumsafety.com), [berylliumsafety.eu](http://berylliumsafety.eu) and [Materion.com](http://Materion.com). For questions on safe practices for beryllium-containing alloys, contact the Materion Product Stewardship Group at +1.800.862.4118 or contact us by e mail at [Materion-PS@Materion.com](mailto:Materion-PS@Materion.com).

Disclaimer:

Only the buyer can determine the appropriateness of any processing practice, end-product or application. Materion does not make any warranty regarding its recommendations, the suitability of Materion's product, or its processing suggestions for buyer's end product, application or equipment.

The properties presented on this data sheet are for reference purposes only, intended only to initiate the material selection process. They do not constitute, nor are they intended to constitute, a material specification. Material will be produced to one of the applicable industry standards, if any, listed in the Industry Standards and Specification section.

Actual properties may vary by thickness and/or part number. Please contact your local sales engineer for detailed properties to be used in simulation.

Any properties marked as preliminary are subject to change at any time as the manufacturing process is further refined.