

## PROtherm™ Alloy

Materion's PROtherm alloy is a high conductivity copper mold alloy with good strength. PROtherm alloy is used as blow mold cavities, injection mold cores and cavities and hot runners. The alloy provides excellent toughness, and the highest conductivity of any alloy with tensile strength in excess of 100,000 psi.

### CHEMICAL COMPOSITION (WEIGHT PERCENT)

Alloy	Nickel	Beryllium	Copper
PROtherm Alloy	1.4 – 2.2	0.2 – 0.6	Balance

### PHYSICAL PROPERTIES

Elastic Modulus	Melting Point (Solidus)	Density	Thermal Expansion	Thermal Conductivity (100 °C)	Heat Capacity (100 °C)
20,000 ksi 138 GPa	1900 °F 1040 °C	0.319 lb/in <sup>3</sup> 8.83 g/cm <sup>3</sup>	9.8x10 <sup>-6</sup> in/in °F 1.8x 10 <sup>-5</sup> °C <sup>-1</sup>	145 BTU/hr·ft·°F 250 W/m·°C	.099 BTU/lb·°F 0.41 J/g·°C

### TYPICAL MECHANICAL PROPERTIES\*

0.2% Offset Yield Strength	Ultimate Tensile Strength	Fatigue Strength 107 Cycles (R=-1)	Elongation	Impact Strength	Hardness
90 ksi 620 MPa	105 ksi 725 MPa	35 ksi 240 MPa	15%	40 ft lb 55 J	20 HRC (97 HRB)

\*Properties may vary by shape and thickness.

### FORMS AVAILABLE

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

### RELATED INFORMATION

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

### 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.