EDRO

MOLDMAX®

DATA SHEET

# PROtherm™

Materion Brush Performance Alloys' PROtherm™ is a high conductivity copper mold alloy with good strength. PROtherm™ 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™ | 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<br>138 GPa | 1900 °F<br>1040 °C | .319 lb/in$^3$<br>8.83 g/cm$^3$ | 9.8x10$^{-6}$ in/in °F<br>1.8x 10$^{-5}$ °C$^{-1}$ | 145 BTU/hr·ft·°F<br>250 W/m·K | .099 BTU/lb·°F<br>0.41 J/g·K |

## TYPICAL MECHANICAL PROPERTIES*

| 0.2% Offset Yield Strength | Ultimate Tensile Strength | Fatigue Strength $10^7$ Cycles (R=-1) | Elongation | Impact Strength | Hardness |
|---|---|---|---|---|---|
| 90 ksi<br>620 MPa | 105 ksi<br>725 MPa | 35 ksi<br>240 MPa | 15% | 40 ft·lb<br>55 J | 20 HRC<br>(97 HRB) |

*Properties may vary by shape and thickness.

## FORMS AVAILABLE

Rounds, square and rectangular bars, and plate.

## SAFE HANDLING OF COPPER BERYLLIUM

Handling copper beryllium in solid form poses no special health risk. Like many industrial materials, beryllium-containing materials may pose a health risk if recommended safe handling practices are not followed. Inhalation of airborne beryllium may cause a serious lung disorder in susceptible individuals. Occupational safety and health regulatory agencies worldwide have set mandatory limits on occupational respiratory exposures. Read and follow the guidance in the Material Safety Data Sheet (MSDS) before working with this material. The SDS and additional important beryllium health and safety information and guidance can be found at berylliumsafety.com, berylliumsafety.eu, and Materion.com.



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