MATERION

Data Sheet

PerforMet™

PerforMet™ alloy from Materion is a nickel-silicide strengthened copper alloy with high strength and high thermal conductivity. It resists mechanical wear, corrosion and galling and has a low coefficient of friction when mated to other metals. PerforMet alloy retains its strength at elevated temperatures. It is non-magnetic and easily machined. Applications include valve seats, valve guides, piston rings and plain bearings, where PerforMet alloy provides long life while efficiently removing heat from critical engine components.

Chemical Composition (Weight Percent)

Alloy	Nickel	Silicon	Chromium	Copper
PerforMet	6.4 - 7.6	1.5 - 2.5	0.6 - 1.2	Balance

Physical Properties

Elastic Modulus	Density	Thermal Expansion Coefficient	Thermal Conductivity (typical @ 25 °C)	Thermal Conductivity (typical @ 250 °C)
18,500 ksi	.314 lb/in^3	9.7 x 10^{-6} in/in °F	90 BTU/ft hr °F	125 BTU/ft hr °F
130 GPa	8.69 g/cm^3	17.5 x 10^{-6} m/m °C	155 W/m °C	215 W/m °C

Mechanical Properties*

0.2% Offset Yield Strength	Ultimate Tensile Strength	Elongation	Strength Rating @ 250 °C	Minimum Hardness**
115 ksi	125 ksi	7%	0.90	265 HBW
790 MPa	860 MPa			(27 HRC)

*Typical room temperature tensile properties are provided.

**Hardness is tested via Brinell Test Method at 3000 kgf load and equivalent HRC values converted per ASTM E140, Table 1.

Forms Available

Rod and tube to 4.5" OD. Other sizes and forms are available upon request.

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