

## Alloys 3 (C17510) and 10 (C17500) Forgings and Extrusions

Alloys 3 and 10 from Materion Performance Alloys provide high electrical and thermal conductivity coupled with moderate strength. Typical applications for parts finished by forging or extrusion of these alloys include continuous casting mold components and resistance welding components.

### CHEMICAL COMPOSITION (weight percent)

Alloy	Nickel	Cobalt	Beryllium	Copper
3 (C17510)	1.4 – 2.2	-	0.2 – 0.6	Balance
10 (C17500)	-	2.4 – 2.7	0.4 – 0.7	Balance

### PHYSICAL PROPERTIES\*

Alloy	Elastic Modulus	Melting Point (Solidus)	Electrical Conductivity/ Resistivity	Density**	Thermal Expansion Coefficient	Thermal Conductivity (25 °C)
3	20,000 ksi 138 GPa	1900°F 1040°C	45-60% IACS 2.9-3.8 μΩ-cm	0.319 lb/in <sup>3</sup> 8.83 g/cm <sup>3</sup>	9.8x10 <sup>-6</sup> in/in °F 17.6x10 <sup>-6</sup> m/m °C	140 BTU/ft hr °F 240 W/m K
10	20,000 ksi 138 GPa	1850°F 1010°C	45-60% IACS 2.9-3.8 μΩ-cm	0.319 lb/in <sup>3</sup> 8.83 g/cm <sup>3</sup>	9.8x10 <sup>-6</sup> in/in °F 17.6x10 <sup>-6</sup> m/m °C	115 BTU/ft hr °F 200 W/m K

\*Properties specified for the precipitation age hardened (heat treated) condition

\*\* Value listed is the density after heat treatment. The density before heat treatment is 0.316 lbs/in<sup>3</sup> (8.75 g/cm<sup>3</sup>) for both alloys.

### MECHANICAL PROPERTIES\*

Temper**	Heat Treatment Required	0.2% Offset Yield Strength		Ultimate Tensile Strength		Elongation	Hardness
		ksi	MPa	ksi	MPa		
A (TB00)	900 °F 480 °C Before Heat Treatment	20-40	130-280	35-55	240-380	20-35	B20-B50
AT (TF00)	After 3 hours	80-100	550-690	100-130	690-900	10-25	B92-100

\*Properties may vary by size

### FORMS AVAILABLE

Please contact Materion Performance Alloys Custom Fabrication department at +1.216.486.4200, or your local sales representative for more information or to discuss your requirements.

### SPECIFICATIONS AND STANDARDS

Alloy 3 - C17510, ASTM B 9

## RELATED INFORMATION

Additional technical or safe handling information on parts made by forging or extrusion from Alloy 3 or Alloy 10 may be obtained by phoning 800-375-4205. For pricing and availability, phone 216-486-4200, or the local sales number listed below.

## 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. The Occupational Safety and Health Administration (OSHA) has set mandatory limits on occupational respiratory exposures. Read and follow the guidance in the Safety Data Sheet (SDS) before working with this material. For additional information on safe handling practices or technical data on copper beryllium, contact Materion Performance Alloys, Technical Service Department at 1-800-375-4205.

### North American Service Centers – Sales Inquiries

For bar, tube, plate/sheet >0.060" (1.5 mm) thick  
and rod >0.5" (12.7 mm) diameter:

#### Warren, MI

TOLL FREE: 800-521-8800  
PHONE: +(1) 586-772-2700  
FAX: +(1) 586-772-2472

### International Sales Offices

#### CHINA/HONG KONG

TEL: + (852) 2318-1960 / 1907  
[brushalloysHK-info@materion.com](mailto:brushalloysHK-info@materion.com)

#### CHINA/SHANGHAI

TEL: + (86) 21-5237-2328  
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