

## Alloys 25 (C17200) and 165 (C17000) Forgings and Extrusions

Alloy 25 from Materion Performance Alloys provides the highest strength of any copper alloy, with electrical and thermal conductivity considerably greater than other high strength copper alloys. Alloy 165 provides strength close to that of Alloy 25, with slightly lower beryllium content. These alloys feature high fatigue strength and resistance to wear, corrosion, galling, and stress relaxation. Typical applications for parts finished by forging or extrusion of these alloys include undersea instrument and repeater housings, generator rings, and resistance welding components.

### CHEMICAL COMPOSITION (weight percent)

Alloy	Beryllium	Nickel + Cobalt	Nickel + Cobalt + Iron	Copper
25 (C17200)	1.80 – 2.00	0.20 min.	0.6 max.	Balance
165 (C17000)	1.60 – 1.85	0.20 min.	0.6 max.	Balance

### PHYSICAL PROPERTIES\*

Alloy	Elastic Modulus	Melting Point (Solidus)	Electrical Conductivity/ Resistivity	Density**	Thermal Expansion Coefficient	Thermal Conductivity (25 °C)
25	19,000 ksi 131 GPa	1600°F 870°C	22-28% IACS 6.2-7.8 μΩ-cm	0.302 lb/in <sup>3</sup> 8.36 g/cm <sup>3</sup>	9.7x10 <sup>-6</sup> in/in °F 17.5x10 <sup>-6</sup> m/m °C	60 BTU/ft hr °F 105 W/m K
165	19,000 ksi 131 GPa	1600°F 870°C	22-28% IACS 6.2-7.89 μΩ-cm	0.304 lb/in <sup>3</sup> 8.41 g/cm <sup>3</sup>	9.7x10 <sup>-6</sup> in/in °F 17.5x10 <sup>-6</sup> m/m °C	60 BTU/ft hr °F 105 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 0.300 lbs/in<sup>3</sup> (8.30 g/cm<sup>3</sup>) for Alloy 25 and 0.302 lbs/in<sup>3</sup> (8.36 g/cm<sup>3</sup>) for Alloy 165

### MECHANICAL PROPERTIES\*

Alloy	Temper*	Heat Treatment Required	0.2% Offset Yield Strength		Ultimate Tensile Strength		Elongation	Hardness
			ksi	MPa	ksi	MPa		
							Percent	HRB or HRC
25	A (TB00)	Before Heat Treatment	20-40	130-280	60-85	410-590	35-60	B45-B85
25	AT (TF00)	After 3 hours	130-175	890-1210	165-200	1140-1380	3-10	C36-C42
165	A (TB00)	Before Heat Treatment	20-40	130-280	60-85	410-590	35-60	B45-B85
165	AT (TF00)	After 3 hours	120-155	830-1070	150-190	1030-1310	3-10	C32-39

\*Properties may vary by size

### FORMS AVAILABLE

Please contact Materion Performance Alloys Custom Fabrication department at +1.216.486.420, or your local sales representative for more information or to discuss your requirements.

## SPECIFICATIONS AND STANDARDS

Alloy 25 - C17200, ASTM B 570, AMS 4650, SAE J 461, SAE J 463, EN12153, EN 12420

Alloy 165 - C17000, ASTM B 570, SAE J 461, SAE J 463

## RELATED INFORMATION

Additional technical or safe handling information on parts made by forging or extrusion from Alloy 25 or Alloy 165 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

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