

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

Alloys 3 and 10 from Materion Brush 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 (C17500)	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 ³ 8.83 g/cm ³	9.8x10 ⁻⁶ in/in °F 17.6x10 ⁻⁶ 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 ³ 8.83 g/cm ³	9.8x10 ⁻⁶ in/in °F 17.6x10 ⁻⁶ m/m °C	115 BTU/ft hr °F 200 W/m K

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

** Density of both alloys in the un-heat treated condition is 0.316 lbs/in³ (8.75 g/cm³)

MECHANICAL PROPERTIES*

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

*Properties may vary by size

FORMS AVAILABLE

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

SPECIFICATIONS

Alloy 3 - C17510, ASTM B 938, EN12165, EN 12420, RWMA Class 3

Alloy 10 - C17500, ASTM B 938, SAE J 461, SAE J 463, EN12165, EN 12420, RWMA Class 3

RELATED INFORMATION

Additional information on parts extruded or forged from Alloy 3 or 10 may be obtained by phoning 800-375-4205, or one of the numbers below.

North American Service Centers – Sales Inquiries

For strip and small diameter rod and wire:
Elmhurst, IL
TOLL FREE: 800-323-2438
LOCAL: +(1) 630-832-9650
FAX: +(1) 630-832-9657

For Rod, bar, tube and plate:
Warren, MI
TOLL FREE: 800-521-8800
LOCAL: +(1) 586-772-2700
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