

Alloys 3 (C17510) and 10 (C17500) Plate

Alloys 3 and 10 rod and bar from Materion Brush Performance Alloys provide high electrical and thermal conductivity coupled with moderate strength. Typical applications include resistance welding components, and inserts for metal die casting, injection molding and blow molding.

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**	Plate Thickness		Heat Treatment Required	0.2% Offset Yield Strength		Ultimate Tensile Strength		Elongation
	inch	mm		850 – 900°F 454 – 482°C	ksi	MPa	ksi	
A (TB00)	1.75-5	44.5-127	3 hours	25-45	170-310	35-55	240-380	20-35
H (TD04)	0.188-3	4.8-76	2 hours	55-80	380-550	70-85	480-590	2-8
AT (TF00)	1.75-5	44.5-127	-	80-100	550-690	100-130	690-900	8-20
HT (TH04)	0.188-3	4.8-76	-	100-120	690-830	110-140	760-970	5-15

*Properties may vary by thickness

FORMS AVAILABLE

Alloys 3 and 10 plate are supplied in lengths from 24 to 126 inches (610 to 3200 mm), and in widths from 12 to 22 inches (305 to 559 mm). Solution annealed tempers are available in thicknesses ranging from 1.75" to 5" (44.5 to 127.0 mm) and hard drawn tempers are available from 0.188" to 3" (4.8 mm to 76 mm). Alloys 3 and 10 are also available in tube, wire, rod, bar and parts finished by drawing, extrusion, and machining. Alloy 3 is also available in strip.

SPECIFICATIONS

Alloy 3 - C17510, ASTM B-534, SAE J 461, SAE J 463, RWMA Class 3

Alloy 10 - C17500, ASTM B-534, SAE J 461, SAE J 463, RWMA Class 3

TOLERANCES

Plate Thickness (inches)		Standard Thickness Tolerance (inches)		Plate Thickness (mm)		Standard Thickness Tolerance (mm)	
Over	Including	Plus	minus	Over	Including	Plus	Minus
0.188	0.205	0.020	0	5.0	8.0	0.60	0
0.205	0.300	0.024	0	8.0	13.0	0.80	0
0.300	0.500	0.030	0	13.0	20.0	1.00	0
0.500	0.750	0.038	0	20.0	30.0	1.20	0
0.750	1.00	0.046	0	30.0	40.0	1.40	0
1.00	1.50	0.056	0	40.0	60.0	1.70	0
1.50	3.00	0.066	0	60.0	127.0	3.175	0
3.00	5.00	0.125	0				

Additional tolerances are per ASTM B 534. Please specify the exact tolerances that you require when you place your order. Tighter tolerances may be available at additional cost. Please contact your local sales engineer to confirm the requested capability.

RELATED INFORMATION

Additional information on Alloys 3 and 10 plate 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
FAX: +(1) 586-772-2472

International Sales Offices

CHINA/HONG KONG

TEL: + (852) 2318-1960 / 1907
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