



Alloy 290 (C17200) Strip

Materion Alloy 290 strip provides the highest strength of any mill hardened copper alloy, with electrical conductivity considerably greater than other high strength copper alloys. This alloy features good stress relaxation resistance and high fatigue strength. Typical applications include high reliability spring contacts for battery contacts, audio jack contacts, and board to board contacts.

CHEMICAL COMPOSITION (WEIGHT PERCENT)

Alloy	Beryllium	Nickel + Cobalt	Nickel + Cobalt + Iron	Copper
C17200	1.8 - 2.0	0.2 min.	0.6 max.	Balance

PHYSICAL PROPERTIES*

Elastic Modulus	Melting Point (Solidus)	Electrical Conductivity/ resistivity	Density	Thermal Expansion Coefficient	Thermal Conductivity (25 °C)
19,000 ksi 131 GPa	1600°F 870°C	17 - 28% IACS 6.2 - 10.1 μΩ-cm	0.302 lb/in ³ 8.36 g/cm ³	9.7 x 10 ⁻⁶ in/in °F 17.5 x 10 ⁻⁶ m/m °C	60 BTU/ft hr °F 105 W/ m K

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

MECHANICAL PROPERTIES**

Temper	0.2% Offset Yield Strength		Ultimate Tensile Strength		Elongation***	Formability (Minimum Bend Radius to Thickness Ratio for a 90° Bend)****)	
	ksi	MPa	ksi	MPa		Longitudinal	Transverse
TM02	95 - 115	655 - 800	120 min.	820 min.	14 min.	0.0	0.0
TM03	110 - 125	760 - 860	135 min.	930 min.	12 min.	0.5	0.5
TM04	115 - 135	790 - 930	140 min.	960 min.	9 min.	0.7	0.7
TM06	135 - 155	930 - 1070	155 min.	1060 min.	6 min.	1.5	1.5
TM08	155 - 175	1060 - 1210	175 min.	1200 min.	3 min.	3.5	3.0

**Properties may vary by thickness.

***Percent elongation numbers are valid for strip 0.004" (0.10 mm) and thicker.

****Formability numbers valid for strip 0.00787" (0.20 mm) and thinner.

FORMS AVAILABLE

Alloy 290 strip is available in widths ranging from 0.050" to 16" (1.27 mm to 406.5 mm) and in thicknesses ranging from 0.002" to 0.035" (0.05 mm to 0.9 mm).

INDUSTRY STANDARDS AND SPECIFICATIONS

C17200, ASTM B-194, NACE MRO175/ISO 15156

RELATED INFORMATION

Additional technical information on Alloy 290 strip may be obtained by phoning 800-375-4205. For pricing and availability, phone 800-323-2438, or the local sales number listed on the reverse side of this sheet.

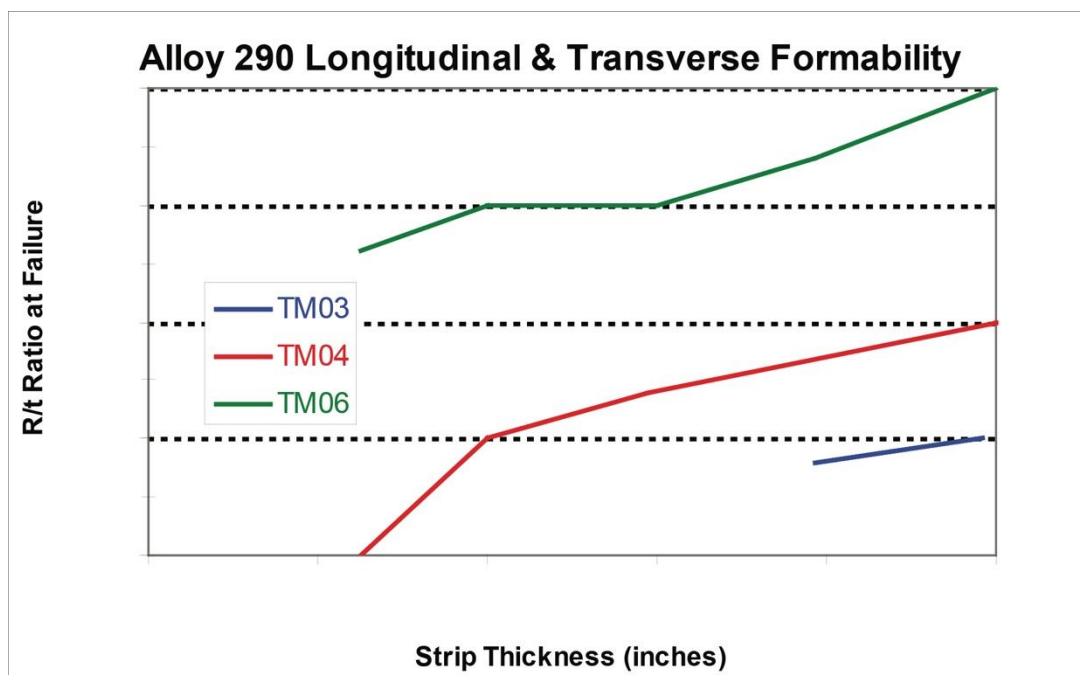
TOLERANCES

Strip Thickness (inches)		Standard Thickness Tolerance (inches)	Strip Thickness (mm)		Standard Thickness Tolerance (mm)
Over	Including	Plus or Minus	Over	Including	Plus or Minus
	0.0020	0.00010		0.05	0.003
0.0020	0.0040	0.00015	0.05	0.10	0.004
0.0040	0.0060	0.00020	0.10	0.15	0.005
0.0060	0.0090	0.00025	0.15	0.20	0.006
0.0090	0.0130	0.00030	0.20	0.30	0.008
0.0130	0.0260	0.00040	0.30	0.70	0.010
0.0260	0.0370	0.00060	0.70	1.00	0.015
0.0370	0.0500	0.00080	1.00	1.30	0.020
0.0500	0.0750	0.00100	1.30	2.00	0.025

Additional tolerances are per ASTM B 194. 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.

HEALTH AND SAFETY

Processing beryllium-containing alloys poses a health risk if safe practices are not followed. Inhalation of airborne beryllium can cause serious lung diseases in some individuals. Occupational safety and health regulatory agencies worldwide have set mandatory limits on occupational respiratory exposures. Read and follow the guidance in the Safety Data Sheet (SDS) before working with this material. The SDS and additional important beryllium health and safety information and guidance can be found at berylliumsafety.com, berylliumsafety.eu and Materion.com. For questions on safe practices for beryllium-containing alloys, contact the Materion Product Stewardship Group at +1.800.862.4118 or contact us by e mail at Materion-PS@Materion.com.



North American Service Centers – Sales Inquiries

For strip ≤ 0.060 " (1.5 mm) thick.
wire and rod ≤ 0.5 " (12.7 mm) diameter:

Elmhurst, IL
TOLL FREE: 800-323-2438
LOCAL: +(1) 630-832-9650
FAX: +(1) 630-832-9657

Disclaimer:

Only the buyer can determine the appropriateness of any processing practice, end-product or application. Materion does not make any warranty regarding its recommendations, the suitability of Materion's product, or its processing suggestions for buyer's end product, application or equipment.

The properties presented on this data sheet are for reference purposes only, intended only to initiate the material selection process. They do not constitute, nor are they intended to constitute, a material specification. Material will be produced to one of the applicable industry standards, if any, listed in the Industry Standards and Specification section.

Actual properties may vary by thickness and/or part number. Please contact your local sales engineer for detailed properties to be used in simulation.

Any properties marked as preliminary are subject to change at any time as the manufacturing process is further refined.