MATERION

Data Sheet

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 excellent 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	1.80 - 2.00	0.2 min.	0.6 max.	Balance

Typical Physical Properties*

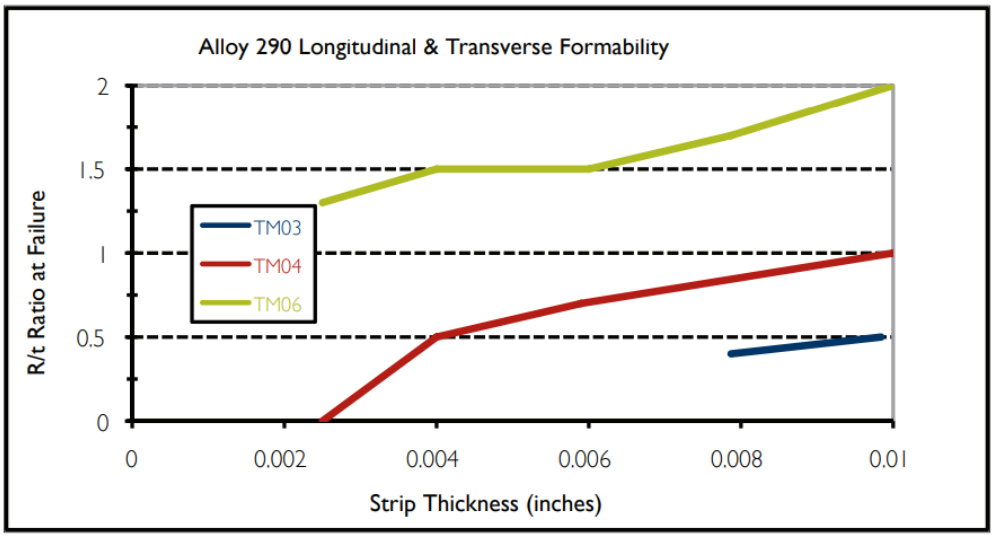
Elastic Modulus	Melting Point (Solidus)	Electrical Conductivity/ Resistivity	Density	Thermal Expansion Coefficient (20 to 200 °C)	Thermal Conductivity (25 °C)
19,000 ksi 131 GPa	1600 °F 870 °C	17 - 28% IACS 6.2 - 10.1 μΩ-cm	0.302 lb/in^3 8.36 g/cm^3	9.7 x 10^{-6} in/in °F 17.5 x 10^{-6} m/m °C	60 BTU/ft hr °F 105 W/ m K

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

Typical 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	Percent	Longitudinal	Traverse
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

UNS# C17200, ASTM B194, NACE MRO175/ISO 15156

Related Information

Additional technical information on Alloy 290 strip may be obtained by phoning +1.800.375.4205. For pricing and availability, phone +1.800.521.8800.

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 B248. 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 by email at Materion-PS@Materion.com.

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