MATERION

Data Sheet

Alloy 25 (C17200) Strip

Materion's Alloy 25 strip provides the highest strength of any copper alloy, with electrical conductivity considerably greater than other high-strength copper alloys. Since it is heat treated after forming, it provides excellent formability and ductility. This alloy features good stress relaxation resistance and high fatigue strength. Typical applications include pressure sensor bellows, burn-in and test socket contacts, computer processor socket contacts, and electromagnetic shielding gaskets.

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 °C to 200 °C)	Thermal Conductivity (25 °C)
19,000 ksi 131 GPa	1600 °F 870 °C	22-28% IACS 6.2-7.8 µΩ-cm	0.302 lb/in^3 8.36 g/cm^3	9.7 x 10^{-6} in/in °F 17. 5x 10^{-6} m/m °C	60 BTU/ft hr °F 105 W/ m K

*Properties listed for the precipitation age hardened (heat treated) condition.
**Density in the cold-rolled condition (prior to heat treatment) is 0.30 lb/in^3 (8.30 g/cm^3).

Typical Mechanical Properties*

Temper**	0.2% Offset Yield Strength		Ultimate Tensile Strength		Elongation***	Hardness	Formability (Minimum Bend Radius to Thickness Ratio for a 90° Bend)****	
	ksi	MPa	ksi	MPa	Percent	DPH	Longitudinal	Transverse
A (TB00)	30 - 55	200 - 380	60 - 78	410 - 540	35 - 65	90 - 144	0.0	0.0
¼ H (TD01)	60 - 80	410 - 560	75 - 88	510 - 610	20 - 45	121 - 185	0.0	0.0
½ H (TD02)	75 - 95	510 - 660	85 - 100	580 - 690	12 - 30	176 - 216	0.5	1.0
H (TD04)	90 - 115	620 - 800	100 - 120	680 - 830	2 - 18	216 - 287	1.0	2.9
AT (TF00)	140 - 175	960 - 1210	165 - 195	1130 - 1350	3 - 15	353 - 413	-	-
¼ HT (TH01)	150 - 185	1030 - 1280	175 - 205	1200 - 1420	3 - 10	353 - 424	-	-
½ HT (TH02)	160 - 195	1100 - 1350	185 - 215	1270 - 1490	1 - 8	373 - 435	-	-
HT (TH04)	165 - 205	1130 - 1420	190 - 220	1310 - 1520	1 - 6	373 - 446	-	-

*Properties may vary by thickness.
**Heat treatment temperature is 600°F (315°C). AT temper requires a 3-hour soak time at temperature, the other tempers require 2 hours.
***Elongation numbers valid only for strip greater than 0.004" (0.10 mm) thick.
****Formability numbers valid for strip 0.010" (0.25 mm) and thinner.

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 248. 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.

Forms Available

Alloy 25 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 0.188" (0.05 mm to 4.77 mm). It is also available in rod, wire, bar, plate, and tube.

Industry Standards and Specifications

UNS# C17200, ASTM B-194, AMS 4530, AMS 4532, SAE J 461, SAE J 463, NACE MRO175/ISO 15156, QQC-533, JIS H3130, EN 1654, EN 13148, EN 14436

Related Information

Additional technical information on Alloy 25 strip may be obtained by phoning +1.800.375.4205.

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.

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