

Alloy 25 (C17200) Strip

Materion Brush Performance Alloys' 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 | 1.8 – 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 | 22-28% IACS 6.2-7.8 μΩ-cm | 0.302 lb/in ³ 8.36 g/cm ³ | 9.7×10 ⁻⁶ in/in °F 17.0×10 ⁻⁶ m/m °C | 60 BTU/ft hr °F 105 W/ m K |

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

** Density in the cold-rolled condition (prior to heat treatment) is 0.300 lbs/in³ (8.30 g/cm³)

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 |
| A (TB00) | 30-55 | 190-380 | 60-78 | 410-540 | 35-65 | 90-144 | 0.0 | 0.0 |
| ¼ H (TD01) | 60-80 | 410-560 | 75-88 | 510-660 | 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 | 1030-1300 | 175-205 | 1190-1420 | 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 for strip greater than 0.004" (0.10 mm) thick.

****Formability numbers valid for strip 0.010" (0.25 mm) and thinner.

FORMS AVAILABLE

Alloy 25 strip is available in widths ranging from 0.050" to 16" (1.27 mm to 452.7 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.

SPECIFICATIONS

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 information on Alloy 25 may be obtained by phoning 800-375-4205

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 | 0.20 | 0.006 |
| 0.0060 | 0.0090 | 0.00025 | 0.20 | 0.30 | 0.008 |
| 0.0090 | 0.0130 | 0.00030 | 0.30 | 0.70 | 0.010 |
| 0.0130 | 0.0260 | 0.00040 | 0.70 | 1.0 | 0.016 |
| 0.0260 | 0.0370 | 0.00060 | 1.0 | 1.3 | 0.020 |
| 0.0370 | 0.0500 | 0.00080 | 1.3 | 2.0 | 0.025 |
| 0.0500 | 0.0750 | 0.00100 | | | |

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.