

Alloy 190 (C17200) Strip

Materion Brush Performance Alloys' Alloy 190 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 switches and relays, battery contacts, and automotive terminals.

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 | 9.7×10 ⁻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

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 | | | Longitudinal | Transverse |
| AM (TM00) | 70-95 | 480-660 | 100-110 | 690-760 | 16-30 | 210-251 | 0.0 | 0.0 |
| ¼ HM (TM01) | 80-110 | 550-760 | 110-120 | 750-830 | 15-25 | 230-271 | 0.5 | 0.5 |
| ½ HM (TM02) | 95-125 | 650-870 | 120-135 | 820-940 | 12-22 | 250-301 | 0.5 | 1.0 |
| HM (TM04) | 110-135 | 750-950 | 135-150 | 930-1040 | 9-20 | 285-343 | 2.0 | 2.0 |
| SHM (TM05) | 125-140 | 860-970 | 150-160 | 1030- | 9-18 | 309-363 | 2.8 | 3.2 |
| XHM (TM06) | 135-170 | 930-1180 | 155-175 | 1110 | 4-15 | 317-378 | 4.0 | 5.0 |
| XHMS (TM08) | 150-180 | 1030-1250 | 175-190 | 1060-1250 1200-1320 | 3-12 | 325-413 | 5.0 | 10.0 |

Properties may vary by thickness. *Percent Elongation valid for strip 0.004" (0.10 mm) and thicker

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

FORMS AVAILABLE

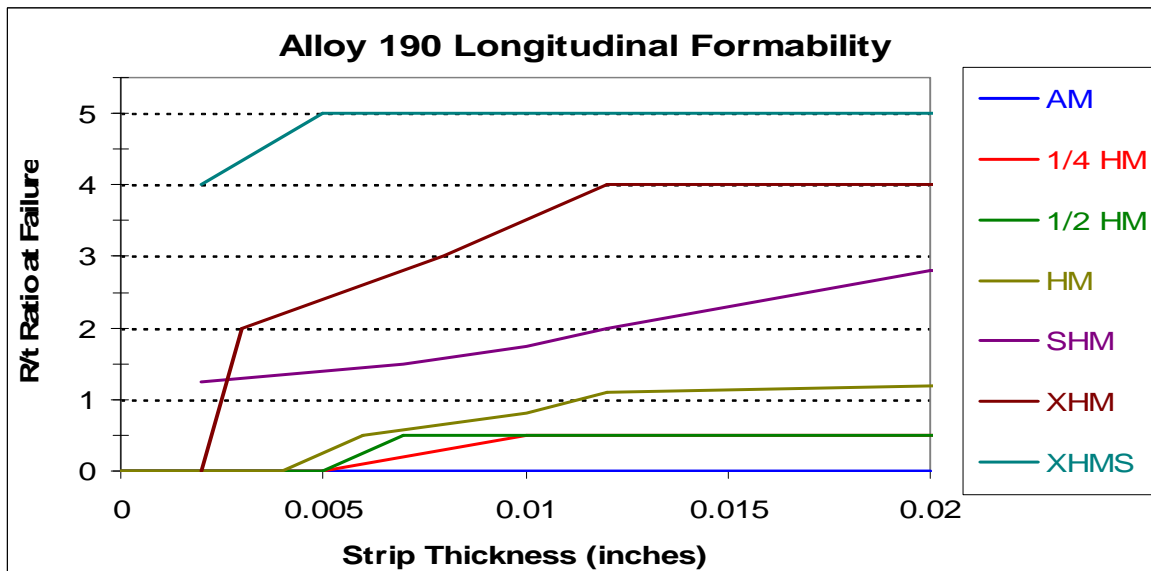
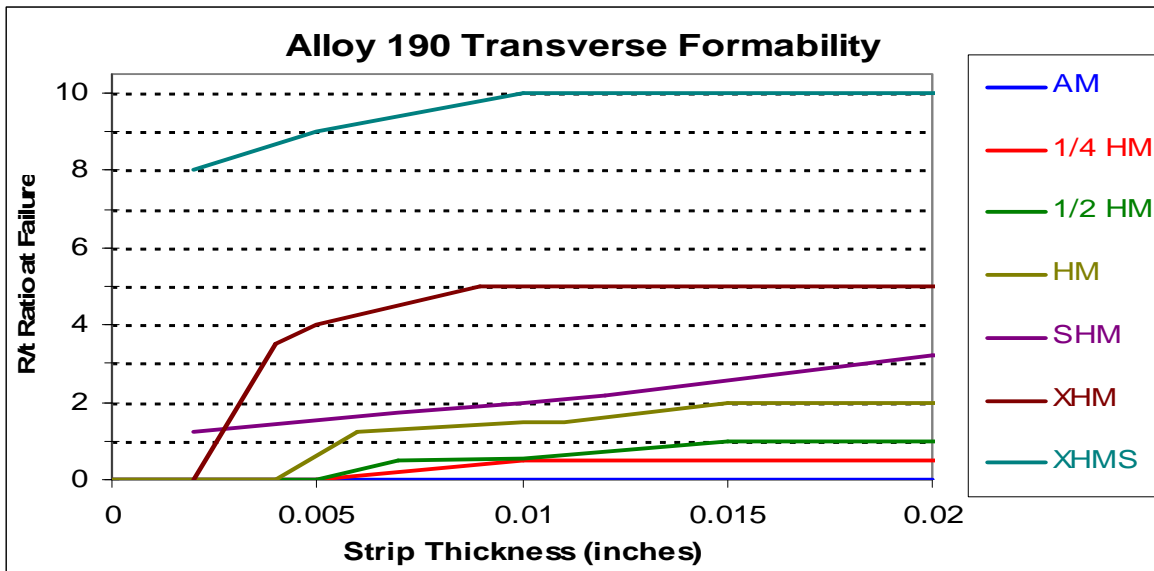
Alloy 190 strip is available in widths ranging from 0.050" to 16" (1.27 mm to 452.7 mm) and in thicknesses ranging from 0.002" to 0.040" (0.05 mm to 1.0 mm). Thicker gauges may be produced at substantially reduced formability.

SPECIFICATIONS

C17200, ASTM B-194, NACE MRO175/ISO 15156, JIS H3130, EN 1654, EN 13148, EN 14436

RELATED INFORMATION

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



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