

Alloy 25 (C17200) Wire

Materion Brush Performance Alloys' Alloy 25 wire provides the highest strength of any 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 coil springs and pins for burn-in and test socket contacts and probe pins, computer processor socket contacts, cold headed fasteners, modular jack contacts, woven mesh electromagnetic shielding gaskets and resilient eyeglass frames.

CHEMICAL COMPOSITION (weight percent)

Alloy	Beryllium	Nickel + Cobalt	Nickel + Cobalt + Iron	Copper
C17200	1.80 – 2.00	0.20 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 un-heat treated condition is 0.300 lbs/in³ (8.30 g/cm³)

MECHANICAL PROPERTIES*

Temper*	Heat Treatment Required	0.2% Offset Yield Strength		Ultimate Tensile Strength		Elongation Percent
		ksi	MPa	ksi	MPa	
	600 – 625 °F 315 – 330 °C					
A (TB00)	3 hours	20-30	130-210	60-82	410-565	30-75
¼ H (TD01)	2 hours	75-105	510-730	90-115	620-800	2-25
½ H (TD02)	1.5 hours	90-125	620-870	110-135	750-940	2-15
¾ H (TD03)	1 hour	115-150	790-1040	130-155	890-1070	2-8
H (TD04)	1 hour	130-160	890-1110	140-165	960-1140	1-8
AT (TF00)	-	145-180	990-1250	160-200	1100-1380	3 min.
¼ HT (TH01)	-	165-200	1130-1380	175-210	1200-1450	2 min.
½ HT (TH02)	-	170-210	1170-1450	185-215	1270-1490	2 min.
¾ HT (TH03)	-	175-220	1200-1520	190-230	1310-1590	2 min.
HT (TH04)	-	180-220	1240-1520	195-230	1340-1590	1 min.

*Properties may vary by thickness. **Wire is typically provided in an annealed or cold drawn temper and heat treated after forming. Wire may also be provided pretempered (heat treated).

FORMS AVAILABLE

Alloy 25 wire is supplied in loose coils or on spools or reels. It is available in diameters ranging from 0.050" to 0.5" (1.27 mm to 12.7 mm) for A, ¼ H, and ½ H tempers. ¾ H, and H tempers are available in 0.050" to 0.080" (1.27 mm to 2.0 mm) diameters. Smaller diameter wire may be produced by wire redrawers. Alloy 25 is also available in strip, rod, bar, plate, tube and parts finished by drawing, extrusion, and machining.

SCPECIFICATIONS

C17200, ASTM B-197, AMS 4725, SAE J 461, SAE J 463, JIS H3270, EN 1654, EN 12166, GB5233, GB3134

TOLERANCES

Wire Diameter (inches)		Standard Diameter Tolerance (inches)		Wire Diameter (mm)		Standard Diameter Tolerance (mm)	
Over	Including	Cold Drawn Tempers	Annealed Temper	Over	Including	Cold Drawn Tempers	Annealed Temper
0.030	0.080	±0.0003	±0.001	0.8	1.5	±0.01	±0.03
0.0800	0.1250	±0.0004	±0.002	1.5	2.0	±0.01	±0.03
0.1250	0.2500	±0.0006	±0.002	2.0	3.8	±0.02	±0.05
0.2500	0.3125	±0.0007	±0.002	3.8	12.0	±0.03	±0.05
0.3125	0.4060	±0.0010	±0.002				
0.4060	0.5000	±0.0010	±0.002				

Additional tolerances are per ASTM B 250. 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.

RELATED INFORMATION

Additional information on Alloy 25 may be obtained by phoning 800-375-4205 or one of the numbers below.

North American Service Centers – Sales Inquiries

For strip and small diameter rod and wire:
 Elmhurst, IL
 TOLL FREE: 800-323-2438
 LOCAL: +(1) 630-832-9650
 FAX: +(1) 630-832-9657

For Rod, bar, tube and plate:
 Warren, MI
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