

Alloy 25 (C17200) Tube

Alloy 25 Tube from Materion Brush Performance Alloys provides the highest strength of any copper alloy, with electrical conductivity considerably greater than other high strength copper alloys. This alloy features high fatigue strength and magnetic permeability approaching unity. Typical applications include bushings and bearings for aircraft as well as drill collars and instrument housings for oil and gas exploration.

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)	Relative Magnetic Permeability
19,000 ksi 131 GPa	1600°F 870°C	25-30% IACS 5.8-6.9 μΩ-cm	0.302 lb/in ³ 8.36 g/cm ³	9.7x10 ⁻⁶ in/in °F 17.0x10 ⁻⁶ m/m °C	60 BTU/ft hr °F 105 W/m K	<1.0006

*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	Outside Diameter		0.2% Offset Yield Strength		Ultimate Tensile Strength		Elongation
		in	mm	ksi	MPa	ksi	MPa	Percent
A (TB00)	600 - 675°F 315 - 357°C 3 - 4 hours	0.75 - 16	19.1 - 406	20-35	130-250	60-85	410-590	20-75
H (TD04)	2 - 3 hours	≤ 0.375	≤ 9.5	75-105	520-720	90-130	620-900	8-30
H (TD04)	2 - 3 hours	>0.375 - 1	>9.5 - 25.4	75-105	520-720	90-125	620-860	8-30
H (TD04)	2 - 3 hours	>1 - 3	> 25.4 - 76	75-105	520-720	85-120	590-830	8-20
AT (TF00)	-	0.75 - 3	19.1 - 76	145-175	1000-1210	165-200	1140-1380	4-10
AT (TF00)	-	> 3 - 16	> 76 - 406	130-175	900-1210	165-200	1140-1380	3-10
HT (TH04)	-	≤ 0.375	≤ 9.5	160-200	1000-1380	185-225	1280-1550	2-9
HT (TH04)	-	>0.375 - 1	>9.5 - 25.4	155-195	1070-1340	180-220	1240-1520	2-9
HT (TH04)	-	>1 - 3	> 25.4 - 76	145-190	1000-1310	175-215	1210-1480	4-9
DST	-	1 - 7	25 - 180	110 min.	760 min.	140 min.	970 min.	12 min.
DST	-	> 7 - 11	>180 - 280	100 min.	690 min.	135 min.	930 min.	13 min.
DST	-	> 11	> 280	90 min.	620 min.	120 min.	830 min.	13 min.

*Properties may vary by tube wall thickness.

FORMS AVAILABLE

Alloy 25 tube is available with outside diameters ranging from 0.75” to 16” (19.1 mm to 406 mm) for Annealed (A) temper. Hard (H) temper is available in 0.375” to 3” (3.8 mm to 76 mm) outside diameters. Wall thickness is typically 10 to 20% of the outside diameter, subject to certain maximum and minimum constraints. Smaller diameter tube may be produced by tube redrawers. Alloy 25 is also available in strip, rod, bar, plate, wire and parts finished by drawing, extrusion, and machining.

SPECIFICATIONS

C17200, ASTM B643, ASTM B-251, AMS 4535, SAE J 461, SAE J 463, JIS H3270, EN 1654, EN 12163, EN 12165, EN 12167, GB5233, GB4431, BMS 7-353 Type 2, MIL-C-21657

TOLERANCES

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Outside Diameter (inches)		Standard Diameter Tolerance (inches)		Outside Diameter (mm)		Standard Diameter Tolerance (mm)	
Over	Including	Cold Drawn Tube	Extruded Tube	Over	Including	Cold Drawn Tube	Extruded Tube
0.375	0.500	±0.002		3.8	12	±0.05	
0.500	1.00	±0.003		12	25	±0.08	
1.00	2.00	±0.004		25	50	±0.10	
2.00	3.00	±0.02% of OD		50	75	±0.02% of OD	
0.750	1.25		±0.020	20	30		±0.50
1.25	2.50		±0.030	30	38		±0.75
2.50	6.00		±0.060	38	150		±1.50

Additional tolerances are per ASTM B 251. 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 Tube 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
 TOLL FREE: 800-521-8800
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To obtain a complete list of our global Distributor/Agent network, visit us online at www.materion.com/BrushAlloys/ContactUs.