MATERION

DATA SHEET

Alloy M25 (C17300) Rod

RoHS COMPLIANT

Alloy M25 from Materion Performance Alloys is a free machining, high performance copper alloy. **M25**'s properties minimize signal distortion in coaxial RF connectors and reduce power loss in circular connectors and contact probes. **M25** is available in straight rod or coiled wire product forms, and in different tempers to accommodate diverse design requirements. After machining and forming operations, **M25** parts can be easily heat treated and plated to obtain maximum mechanical and electrical performance. Applications requiring stability to 175° C or reliable contact force in miniaturized designs specify Alloy **M25**. In demanding electronic applications, **M25** provides performance and reliability superior to any free machining copper alloy.

CHEMICAL COMPOSITION (weight percent)

Alloy	Beryllium	Nickel + Cobalt	Nickel + Cobalt + Iron	Lead	Copper
C17300	1.80 – 2.00	0.20 min.	0.6 max.	0.20-0.6	Balance

PHYSICAL PROPERTIES*

Elastic Modulus	Melting Point (Solidus)	Electrical Conductivity/ Resistivity	Density**	Thermal Expansion Coefficient	Thermal Conductivity (25 °C)	Machinability Index
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 17.5x10^{-6} m/m °C	60 BTU/ft hr °F 105 W/m K	60% (vs. free-cutting brass)

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

** Value listed is the density after heat treatment. The density before heat treatment is 0.300 lbs/in^3 (8.30 g/cm^3)

MECHANICAL PROPERTIES*

Temper*	Diameter		Heat Treatment**	0.2% Offset Yield Strength		Ultimate Tensile Strength		Elongation
	inch	mm	600 – 675 °F 315 – 357 °C	ksi	MPa	ksi	MPa	Percent
A (TB00)	0.030-2.5	0.76-63.5	Before Heat Treatment	20-35	130-250	60-85	410-590	20-75
H (TD04) H (TD04) H (TD04)	0.030-0.375 >0.375-1 >1-2.5	0.76-9.5 >9.5-25.4 >25.4-63.5	Before Heat Treatment	75-105 75-105 75-105	520-720 520-720 520-720	90-130 90-125 85-120	620-900 620-860 590-830	8-30 8-30 8-20
AT (TF00)	0.030-2.5	0.76-63.5	After 3 hours	145-175	1000-1210	165-200	1140-1380	4-10
HT (TH04) HT (TH04) HT (TH04)	0.030-0.375 >0.375-1 >1-2.5	0.76-9.5 >9.5-25.4 >25.4-63.5	After 2-3 hours After 2-3 hours After 2-3 hours	160-200 155-195 145-190	1100-1380 1070-1340 1000-1310	185-225 180-220 175-215	1280-1550 1240-1520 1210-1480	2-9 2-9 4-9

*Properties may vary by diameter

**Rod is typically provided in an annealed or cold drawn temper and heat treated after machining. Only rod greater than 0.4375" (11.0 mm) diameter or thickness may also be purchased in the pretempered (heat treated) condition.

FORMS AVAILABLE

Alloy M25 rod is supplied in straight lengths up to 12 ft (3.7 m), in diameters ranging from 0.030" to 2.5" (0.76 mm to 63.5 mm). Rod may be purchased with pointed and/or chamfered ends. Alloy M25 is also available in wire form.

SPECIFICATIONS AND STANDARDS

C17300, ASTM B-196, EN 12164, MIL-C-21657

Materion Performance Alloys
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phone: 216.486.4200 fax: 216.383.4005
email: BrushAlloys-info@materion.com

MATERION CORPORATION
www.materion.com/alloys

AD0110_0817

TOLERANCES

	Rod Diameter (inches)		Standard Tolerance (inches)		Rod Diameter (mm)		Standard Tolerance (mm)	
	Over	Including	Diameter or Thickness	Out of Round	Over	Including	Diameter or Thickness	Out of Round
Cold Drawn	0.0300	0.0800	±0.0003	0.0003	0.76	2.0	±0.008	0.008
	0.0800	0.1250	±0.0004	0.0004	2.0	3.2	±0.010	0.010
	0.1250	0.2500	±0.0006	0.0004	3.2	6.4	±0.015	0.010
	0.2500	0.3125	±0.0007	0.0007	6.4	7.9	±0.018	0.018
	0.3125	0.3750	±0.001	0.001	7.9	9.5	±0.025	0.025
	0.3750	0.500	±0.002	0.002	9.5	12.0	±0.05	0.05
	0.500	1.00	±0.003	0.003	12.0	25.0	±0.08	0.08
	1.00	2.00	±0.004	0.004	25.0	50.0	±0.10	0.10
	2.00	2.50	±0.2% of Size	0.2% of Size	50.0	63.5	±0.2% of Size	0.2% of Size

Additional tolerances are per ASTM B 196. 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 technical or safe handling information on Alloy M25 may be obtained by phoning 800-375-4205 or your local international sales office (listed below). For pricing and availability, please contact your local service center or sales office.

HEALTH & SAFTEY

Handling copper beryllium in solid form poses no special health risk. Like many industrial materials, beryllium-containing materials may pose a health risk if recommended safe handling practices are not followed. Inhalation of airborne beryllium may cause a serious lung disorder in susceptible individuals. The Occupational Safety and Health Administration (OSHA) has set mandatory limits on occupational respiratory exposures. Read and follow the guidance in the Safety Data Sheet (SDS) before working with this material. For additional information on safe handling practices or technical data on copper beryllium, contact Materion Performance Alloys, Technical Service Department at 800.375.4205.

North American Service Centers – Sales Inquiries

For strip ≤0.060" (1.5 mm) thick. wire and rod ≤0.5" (12.7 mm) diameter:

Elmhurst, IL
TOLL FREE: 800-323-2438
PHONE: +(1) 630-832-9650
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International Sales Offices

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