

C17200 Alloy 25 DSTO Rod and Tube

Alloy 25 DSTO rod and tube from Materion provides an optimal combination of strength and ductility. This alloy features high thermal stability, so the mechanical properties will not degrade over time in high-temperature, downhole environments. It is a highly resilient alloy which also features high fatigue strength and magnetic permeability approaching unity. Alloy 25 DSTO also shows good resistance to wear, galling, corrosion, sulfide stress cracking and chloride stress corrosion cracking. Typical applications include flex shafts, flex collars and couplings 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.	0.60 max.	Balance

Typical Physical Properties*

Elastic Modulus	Electrical Conductivity/ Resistivity	Density	Thermal Expansion Coefficient	Thermal Conductivity (25 °C)	Relative Magnetic Permeability	Poisson's Ratio
19,000 ksi 131 GPa	25 - 30% IACS 5.8 - 6.9 μΩ-cm	0.302 lb/in ³ 8.36 g/cm ³	9.7 x 10 ⁻⁶ in/in °F 17.0 x 10 ⁻⁶ m/m °C	60 BTU/ft hr °F 105 W/m K	< 1.0006	0.3

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

Typical Mechanical Properties*

Temper	0.2% Offset Yield Strength		Ultimate Tensile Strength		Elongation Percent	Hardness HRC	CVN Impact Strength	
	ksi	MPa	ksi	MPa			ft-lb	J
DSTO-1	110 min.	758 min.	140 min.	965 min.	10 min.	C26 min.	11 avg.	15 avg.
DSTO-2	100 min.	689 min.	135 min.	931 min.	12 min.		11 avg.	15 avg.

*Properties specified for the overaged precipitation hardened (heat treated) condition and may vary by tube wall thickness.

Forms Available

Alloy 25 DSTO is available in rod with diameters ranging from 1.0" to 6" (25.4 to 152 mm) and in tube with outside diameters ranging from 1.0" to 16" (25.4 to 406 mm). Tube wall thickness is typically 10 to 20% of the outside diameter, subject to certain maximum and minimum constraints. Larger custom sizes may also be available, with slightly different properties.

Industry Standards and Specifications

C17200, ASTM B196 (rod), ASTM B643 (tube), NACE MR0175/ISO 15156

Additional Information

Additional technical information on Alloy 25 DSTO rod or tube, including fatigue curves or impact strength, may be obtained by phoning the Customer Technical Service Department at +1.800.375.4205. For pricing and availability, phone +1.800.521.8800.

Tube Tolerances

Outside Diameter (inches)		Standard Diameter Tolerance (inches)	Outside Diameter (mm)		Standard Diameter Tolerance (mm)
Over	Including		Over	Including	
1.00	1.25	± 0.020	25	30	± 0.50
1.25	2.50	± 0.030	30	38	± 0.75
2.50	6.00	± 0.060	38	150	± 1.50

Additional tube tolerances are per ASTM B643 and B251.

Rod Tolerances

Rod Diameter or Bar Thickness (inches)		Standard Tolerance on Diameter (inches)	Rod Diameter or Bar Thickness (mm)		Standard Tolerance on Diameter (mm)
Over	Including		Over	Including	
1.00	2.00	± 0.004	25	50	± 0.10
2.00	3.00	± 0.2% of Size	50	75	± 0.2% of Size
3.00	6.00	± 0.060	75	150	± 1.50

Additional rod tolerances are per ASTM 196.

Please specify the exact tolerances you require when you place your order. Tighter tolerances may be available at additional cost.

Health and Safety

Processing beryllium-containing alloys poses a health risk if safe practices are not followed. Inhalation of airborne beryllium can cause serious lung diseases in some individuals. Occupational safety and health regulatory agencies worldwide have set mandatory limits on occupational respiratory exposures. Read and follow the guidance in the Safety Data Sheet (SDS) before working with this material. The SDS and additional important beryllium health and safety information and guidance can be found at berylliumsafety.com, berylliumsafety.eu and Materion.com. For questions on safe practices for beryllium-containing alloys, contact the Materion Product Stewardship Group at +1.800.862.4118 or contact us by email at Materion-PS@Materion.com.

Disclaimer:

Only the buyer can determine the appropriateness of any processing practice, end-product or application. Materion does not make any warranty regarding its recommendations, the suitability of Materion's product, or its processing suggestions for buyer's end product, application or equipment.

The properties presented on this data sheet are for reference purposes only, intended only to initiate the material selection process. They do not constitute, nor are they intended to constitute, a material specification. Material will be produced to one of the applicable industry standards, if any, listed in the Industry Standards and Specification section.

Actual properties may vary by thickness and/or part number. Please contact your local sales engineer for detailed properties to be used in simulation.

Any properties marked as preliminary are subject to change at any time as the manufacturing process is further refined.