

Alloy 165

Technical Datasheet



Service. Quality. Value.

Copper Beryllium Alloy

Typical Applications

- Bearings, bushes and fasteners
- Resistance welding equipment
- Pins and inserts for plastic injection moulds
- Anti-galling wear plates
- Guide rails and bus bars

Product Description

Alloy 165 is a beryllium copper alloy which displays good strength. The material is non-magnetic and non-sparking with good conductivity. The alloy is easily machined and weldable using established welding methods. Alloy 165 also offers good strength in cryogenic conditions. The alloy inherently has good wear resistance.

Machinability

Easily machined. Similar rates to free cutting copper alloys or stainless steels.

Availability

Plate, Sheet, Strip, Rolled Bar, Rod and Bar.

Key features:

- Good strength
- Non-magnetic
- Good conductivity
- Non-sparking

Galling & Wear Resistance

Inherently good wear resistance. Threaded joints of Beryllium Copper in contact with itself and also stainless steels show good resistance to galling.

Fabrication

Readily welded by resistance welding, laser welding, TIG, MIG and Electron Beam. Follow established welding procedures.

Related material specifications

ASTM B194 C17000 Plate, Sheet, Strip & Rolled Bar
ASTM B196 C17000 Rod and Bar
QQ-C 553

Chemical Composition (weight %)

	Be	Ni + Co	Ni + Co + Fe	Cu + Be + Ni + Co + Fe	
Min	1.60	0.20		99.50	
Max	1.79		0.60		

Physical Properties

Density g/cm ³	8.36			
Elastic Modulus 10 ⁶ psi	19			
Thermal Conductivity Btu/(ft.hr.°F)60			Thermal Expansion Coefficient	
Melting Temp °F	1600-1800		In/in/°F, 70°F to 400°F	9.7 X 10 ⁻⁶

Mechanical Properties (Typical)

Temper*	Outer Diameter (rod) or Thickness (bar)		0.2% Offset Yield Strength		Ultimate Tensile Strength		Elongation %
	inch	mm	ksi	MPa	ksi	MPa	
HT (TH04)	0.030-0.375	0.76-9.5	145-185	1000-1280	170-210	1170-1450	2-5
HT (TH04)	>0.375-1	>9.5-25.4	145-185	1000-1280	170-210	1170-1450	2-5
HT (TH04)	>1-3	>25.4-76	135-175	930-1210	165-200	1140-1380	4-9

* Properties may vary by diameter (rod) or thickness (bar)

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