Alloy 25 (C17200)

Technical Datasheet

High Strength Copper Beryllium Alloy Service. Quality. Value.

Typical Applications

Aerospace, Heavy duty bearings and bushings, Oil and gas exploration, Automotive, Marine, Chemical processing, Welding

Product Description

Alloy 25 is a high performance copper beryllium alloy used in applications requiring strength, fatigue resistance, non-magnetic properties, conductivity, and corrosion resistance. Alloy 25, supplied with certified mechanical properties, is fully heat treated and no additional treatment is required. Alloy 25 magnetic properties are unaffected by machining and surface abrasion.

Galling & Wear Resistance

Alloy 25 provides excellent galling resistance to itself and other alloys at high load conditions. Galling resistance, high hardness and low friction provide wear resistance in bearing and bushing applications under conditions of marginal lubrication.

Availability

Bar, rod, plate, wire, tube, extrusions, forgings

Material Specifications

- UNS C17200
- ASTM B196
- AMS 4533, 4534, 4535
- QQ-C-530
- RWMA – Class 4
- API Spec 7
- BS EN 12163

Fabrication

- Machining – very good
- Brazing – good
- Electro-discharge machining – good
- Welding – good/fair

Corrosion Resistance

Alloy 25's corrosion resistance is similar to pure copper. It resists corrosion in sea water, most organic solutions, non-oxidizing acids, and dilute alkalis. Alloy 25 is not subject to hydrogen embrittlement, and it resists stress corrosion cracking in sulfide and chloride solutions. It meets the requirements of NACE MRO175. Alloy 25 is not recommended for use with ammonium hydroxide or strongly oxidizing acids.

Chemical Composition (weight %)

Weight (%)	Be	Co+Ni	Fe	Cu
Min	1.8	0.20		
Max	2.0	0.50	0.1	Balance

High Temperature Strength

Temperature, °C	150	200	250	300	350
UTS, MPa	1210	1210	1180	1030	650

Mechanical Properties

	Alloy 25 AT	Alloy 25 HT
UTS, MPa	1130-1380	1200-1520
0.2% PS, MPa	890-1210	1030-1380
Elongation, % in 4D	3-10	2-9
Hardness, HRC	36-41	37-45
Fatigue strength at 10^8 , MPa	340-450	340-450
Elastic modulus, GPa	131	131
Thermal conductivity, W/m °C	105	105
Thermal expansion, ppm/°C	17	17
Magnetic permeability	<1.001	<1.001
Density, g/cm³	8.36	8.36