

HIGH STRENGTH COPPER BERYLLIUM ALLOY

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 and 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.

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.

HIGH TEMPERATURE STRENGTH

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

MATERIAL SPECIFICATIONS

- UNS C17200
- ASTM B196
- AMS 4533, 4534, 4535
- QQ-C-530
- RWMA – Class 4
- API Spec 7
- BS EN 12163:1998

FABRICATION

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

AVAILABILITY

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

CHEMICAL COMPOSITION

Alloy 25 in weight %

| Be | Co + Ni | Fe | Cu |
|-----------|----------|--------|---------|
| 1.80-2.00 | .20 -.50 | .1 max | balance |

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/cm ³ | 8.36 | 8.36 |

Advanced Metals International

Unit O, Stratton Business Park, London Road, Biggleswade, Bedfordshire SG18 8QB United Kingdom

Tel: +44 (0) 1767 604 710 Fax: +44 (0) 01767 315 340 Email: sales@advancedmetals.com Website: www.advancedmetals.com

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