



## Beryllium Copper Alloy

Alloy 25 (C17200) is a high strength Beryllium Copper Alloy

Utilised in applications requiring good strength and fatigue resistance, Alloy 25 (C17200) is a beryllium-copper alloy which offers a broad range of attractive performance characteristics. Benefits include good conductivity and corrosion resistance. This high-performance material is non-magnetic, and these qualities are unaffected by machining and surface abrasion. Once fully heat-treated, no additional treatments are required.

### Galling and Wear Resistance

The galling resistance of the alloy under high load conditions is excellent. The combination of galling resistance, high hardness and low friction results in excellent wear resistance in components such as bearings and bushes under conditions where lubrication is marginal.

### About Smiths High Performance

Smiths High Performance is a leading stockholder and supplier of high-performance engineering materials to the global motorsport sector. We are supply partners in a range of specialist motorsport markets including Formula 1, Formula E, NASCAR, MOTO GP, WEC & WRC.

Further technical data available on the reverse of this Datasheet

### Corrosion Resistance

The corrosion resistance of the product is similar to pure copper; this includes resistance to saltwater environments, non-oxidising acids, dilute alkalis and most organic solutions. The material is stress corrosion resistant in chloride and sulphide solutions and is not subject to hydrogen embrittlement.

The product offers the highest strength of any copper alloy combined with electrical conductivity, which is considerably improved when compared to other high strength copper alloys.

Machinability, brazing and electro-discharge machining are all rated as good. Weldability of the alloy is considered to be good to fair.

### Availability

Bar, plate, and wire

## Chemical Composition

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

## 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 <sup>8</sup> , 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 <sup>3</sup>	8.36	8.36

## Use in Intake Valves

Alloy 25 is often used to make seat inserts for titanium valves used in racing engines. The high copper content provides a combination of superior strength with impressive heat transfer qualities. The combination helps to promote the life expectancy of the intake valve while affording the strength to withstand forces during operation.

## Motorsport Applications

- Seat inserts for titanium valves
- Bearings and bushes
- Electronic components
- Valve pins
- Electromagnetic shielding gaskets
- Fasteners

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When you purchase high-performance materials from **Smiths High Performance**, you will be joining some of the biggest and best global engineering companies. We are a Tier 1 supply chain partner to the world's leading motorsport companies. Our unique business structure and ethos allows us to offer services which are otherwise unavailable in this market sector.