Silicon Bronze

Specifications:

Commercial: **ASTM C65500**

Bronzes are copper-based alloys. They offer a combination of properties such as high strength, hardness, corrosion resistance and wear resistance.

Bronze alloy C65500 is a high Copper alloy, single phase Silicon Bronze. The alloy can be cold worked to increase strength and can be supplied in a range of tempers. The addition of Silicon and Manganese not only improves the strength but also increases the corrosion resistance.

Applications

C65500 is typically used in the following:

- Fasteners
- Wear plates
- Bridge bearing plates
- Bridge expansion plates
- Structural applications
- Valve guides
- Marine fittings

Alloy designations

C65500 corresponds to the following designations but may not be a direct equivalent:
CW116C, BS101, SAE J463, SAE J461, DIN 2.11525, UNS C65500.

Supplied forms

C65500 is typically supplied in the following: sheet and plate.

Corrosion resistance

Alloy C65500 has good corrosion resistance.

Cold working

Cold working response of C65500 is excellent.

Hot working

Hot formability of C65500 is considered excellent. Forgeability is rated at 40 (Brass 100). Hot working temperature 700-870°C.

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Heat treatment

Annealing temperature 480-700°C.

Machineability

The machineability rating of C65500 is rated at 30 compared to Brass CZ121/CW614N which is rated at 100.

Weldability

C65500 is rated as follows: Soldering good, brazing excellent, Oxyacetylene welding good. Seam welding excellent, spot welding excellent, butt welding excellent. Gas shielded arc welding is rated as excellent. Coated metal arc welding is rated as fair.

General physical properties	
Property	**Value**
Density	$8.53g/cm^3$
Melting point	970-1025°C
Thermal conductivity	36 W/mK
Magnetic permeability	<1.01
Thermal expansion	18 0-250°C

Chemical composition	
C65500	
Element	**% Present**
Silicon (Si)	2.80-3.80
Manganese (Mn)	0.5-1.3
Nickel (Ni)	0.60 max
Zinc (Zn)	1.50 max
Iron (Fe)	0.80 max
Lead (Pb)	0.05 max
Copper (Cu)	balance

Mechanical properties	
C65500	
Property	**Value**
Proof/yield strength	$270 N/mm^2$
Tensile strength	$490 N/mm^2$
Hardness Brinell	90HB min
Elongation	18%

Mechanical properties may vary widely according to condition (soft/half hard etc)

DISCLAIMER

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