

Copper and Copper Alloys

CW614N Brass Rod

Description

Brasses are alloys made from a combination of Copper and Zinc, often with minor additions of other alloying elements to confer specific advantageous properties. They are notable for their strong corrosion resistance and high tensile strength, making them well-suited for fabrication through hot forging. Brass grades designed for free machining set the standard for machining quality, serving as a benchmark against which other metals are measured.

Brasses are commonly classified into two groups: the alpha alloys, with less than 37% Zinc, and the alpha/beta alloys, containing 37-45% Zinc. Alpha alloys are ductile and amenable to cold working, while alpha/beta or duplex alloys exhibit limited cold ductility, rendering them harder and stronger. CZ121/CW614N belongs to the alpha/beta alloy category.

CZ121/CW614N, a brass alloy, is specifically used for machining purposes. It contains added Lead to enhance machinability. The Lead remains insoluble within the brass's microstructure, and the soft particles generated act as effective chip breakers during machining.

Common applications for CZ121/CW614N typically include high-speed machined components, architectural extrusions, locks, and hinges.

Designations

CZ121/CW614N can be associated with the following designations, although it may not be an exact equivalent: UNS C38500, CuZn39Pb3

Machinability

The machinability of alloy CZ121/CW614N is excellent. It has a machinability rating of 100 and is the standard against which the machinability of other alloys is measured.

Chemical Composition

EN 12164:2011. CW614N Brass

Element	% Present
Copper (Cu)	57.00 - 59.00
Lead (Pb)	2.50 - 3.50
Iron (Fe)	0.0 - 0.30
Nickel (Ni)	0.0 - 0.30
Tin (Sn)	0.0 - 0.30
Others (Total)	0.0 - 0.20
Aluminium (Al)	0.0 - 0.05
Zinc (Zn) Balance	Balance

Corrosion Resistance

CZ121/CW614N exhibits corrosion resistance that ranges from fair to excellent

Cold Working

CZ121/CW614N is not well-suited for cold working, and it is generally not recommended for such processes. However, it can be knurled if that specific type of operation is required.

Hot Working

CZ121/CW614N is excellently suited for hot working during fabrication. It is advisable to perform hot working within the temperature range of 630 to 730°C for optimal results.

Heat Treatment

Solution treatment or annealing of CZ121/CW614N can be carried out by rapidly cooling the material after it has been heated to a temperature within the range of 430-600°C. This process helps to achieve the desired material properties.

Weldability

Soldering of CZ121/CW614N is rated as excellent, while brazing is considered good. Butt welding is rated as fair, but it's important to note that all other welding methods are not recommended for this material.

Physical Properties

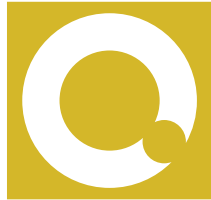
Property	Value
Density	8.47 g/cm ³
Melting Point	875 °C
Thermal Expansion	20.9 x10 ⁻⁶ /K
Modulus of Elasticity	97 GPa
Thermal Conductivity	123 W/m.K
Electrical Resistivity	0.062 x10 ⁻⁶ Ω .m

Mechanical Properties

EN 12164:2011. Bar. 6mm to 80mm Dia. / 5mm to 60mm AF

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

Property	Value
Proof Stress	230-350 MPa
Tensile Strength	360-500 MPa
Hardness Brinell	90 to 160 HB
Elongation A	20 to 5 %



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Disclaimer

This data serves as an indicative reference and should not be used as a substitute for the full specification. Mechanical properties can vary significantly depending on the temper, product, and its dimensions. All the information provided is based on our current knowledge and is given in good faith. The company bears no responsibility for any actions taken by third parties based on this information.

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