

Brass CZ121 / CW614N

Brasses are alloys of copper and zinc. They may also contain small amounts of other alloying elements to impart advantageous properties. Brasses have high corrosion resistance and high tensile strength. They are also suited to fabrication by hot forging. Free machining grades of brass set the standard for machining, by which other metals are compared.

Brasses are divided into two classes. The alpha alloys, with less than 37% zinc, and the alpha/beta alloys with 37-45% zinc. Alpha alloys are ductile and can be cold worked. Alpha/beta or duplex alloys have limited cold ductility and are harder and stronger. CZ121 / CW614N is an alpha/beta alloy.

Brass alloy CZ121 / CW614N is used for machining. It has lead added to the composition to improve machinability. The lead remains insoluble in the microstructure of the brass and the soft particles act as chip breakers.

The name CZ121M is sometimes used to emphasise its machining properties.

Applications

CZ121 is typically used in:

- ◆ High speed machined components
- ◆ Architectural extrusions
- ◆ Locks
- ◆ Hinges

Typical Chemical Composition

%	CZ121 / CW614N
Cu	58
Pb	3
Sn	-
Fe	-
Al	-
Mn	-
Zn	Balance
Si	-
Ni	-

Typical Mechanical Properties

Grade	CZ121/CW614N
Tensile Strength (MPa)	410
Proof Stress 0.2% (MPa)	200
Elongation A5 (%)	20
Hardness VPN	130-150

Typical Physical Properties

Property	Value
Density	8.47 g/cm ³
Melting Point	875°C
Modulus of Elasticity	97 GPa
Electrical Resistivity	0.062x10 ⁻⁶ Ω.m
Thermal Conductivity	123 W/m.K at 100°C
Thermal Expansion	20.9 x10 ⁻⁶ /K at 100°C

Alloy Designations

CZ121 / CW614N corresponds to the following designations:

CEN	BS	UNS	ISO
CW614N	BS2874 CZ121	C38500	CuZn39Pb3

Corrosion Resistance

The corrosion resistance of CZ121 / CW614N is fair to excellent.

Cold Working

Cold working of CZ121 / CW614N is poor and is not recommended. It can, however, be knurled if required.



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Hot Working

Fabrication of CZ121 / CW614N by hot working is excellent. It is recommended that hot working be done between 630 and 730°C.

Heat Treatment

Solution treatment or annealing can be done by rapid cooling after heating to 430-600°C.

Machinability

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

Welding and Joining

Soldering of CZ121 / CW614N is rated as "excellent" and brazing is "good". Butt welding is fair but all other welding methods are not recommended.

Supplied Forms

CZ121 / CW614N is typically supplied in the following forms:

- ◆ Round bar
- ◆ Hexagon bar
- ◆ Square bar
- ◆ Flat bar

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