

# High Tensile Brass CZ114 / CW721R

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. CZ114 / CW721R is a duplex or alpha/beta alloy.

Brass alloy CZ114 / CW721R is a versatile high strength, hot workable, machinable engineering alloy.

## Applications

CZ114 / CW721R is typically used in:

- ◆ Architectural applications
- ◆ High strength components
- ◆ Valves
- ◆ Valve stems
- ◆ Fittings
- ◆ Marine fittings

## Typical Chemical Composition

%	CZ114 / CW721R
Cu	57
Pb	1.2
Sn	0.75
Fe	0.75
Al	0.8
Mn	1.5
Zn	Balance
Si	-
Ni	-

## Typical Mechanical Properties

Grade	CZ114/CW721R
Tensile Strength (MPa)	500
Proof Stress 0.2% (MPa)	250
Elongation A5 (%)	15
Hardness VPN	120-150

## Typical Physical Properties

Property	Value
Density	8.36 g/cm <sup>3</sup>
Melting Point	865°C
Modulus of Elasticity	96.5 GPa
Electrical Resistivity	0.090x10 <sup>-6</sup> Ω.m
Thermal Conductivity	88.3 W/m.K at 20°C

## Alloy Designations

Brass alloy CZ114 corresponds to the following designations:

CEN	BS	UNS
CW721R	CZ114	C67500

CZ114 is also sometimes called Manganese Bronze.

## Corrosion Resistance

The addition of Tin to the composition of CZ114 / CW721R increases this alloy's resistance to corrosion in marine and mildly acidic environments.

## Cold Working

CZ114 / CW721R has a poor rating for cold working.



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## Hot Working

Hot working of CZ114 / CW721R is excellent.

The hot forgeability rating is very good, rated at 80 compared to forging brass which rated as 100. The recommended hot working temperature for this alloy is between 625 and 750°C.

## Heat Treatment

The annealing temperature of CZ114 / CW721R is between 425°C and 600°C.

## Machinability

CZ114 / CW721R has a poor machinability rating of 30 compared Brass CZ121 / CW614N which is rated as 100.

## Welding and Joining

- ◆ Soldering and brazing of CZ114 / CW721R are rated as "excellent".
- ◆ Oxyacetylene welding, butt welding and spot welding are rated as "good".
- ◆ Gas shielded arc welding and seam welding are rated as "fair".
- ◆ Coated metal arc welding is not recommended.

## Supplied Form

CZ114 / CW721R is typically supplied in the following form:

- ◆ Round Rod

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