

CW614N / CZ121 is the standard European grade of free-machining brass consisting of a duplex structure and a 3% lead addition. The particles of lead are finely dispersed throughout the microstructure and acts as both a lubricant and a chip breaker to give the alloy its free machining characteristics.

The machinability rating of 100% for CW614N / CZ121 is the standard against which all other copper alloys are rated. It is the most widely used of all the brasses due to its suitability for high speed machining operations and also the manufacture of intricate parts. Its combination of machinability, thread rolling and knurling characteristics, combined with its good strength, an ease of soldering / brazing and a high resistance to corrosion makes it the ideal choice for many brass components throughout industry.

Related Specifications

CZ121	CW614N
C36000 or C38500	CuZn39Pb3

Nominal Composition

Copper	56.5-58.5%
Lead	2.5-3.5%
Iron	0.3% max
Zinc	Rem
Total Imps	0.7% Max

Key Features

- The Highest Machinability of any Copper Alloy
- Excellent Hot formability
- Good Corrosion Resistance

Typical Physical Properties

Melting Point	890°C
Density	8.4 g/cm ³
Specific Heat	380 J/Kg°K
Thermal conductivity (RT)	121 W/m°K
Thermal expansion coefficient (20-200°C)	20.9 x 10 ⁻⁶
Electrical conductivity	28% IACS
Electrical Resistivity	0.062 ohm mm ² /m

Fabrication Properties

Hot Working Temperature Range	625-725°C
Hot Formability	Excellent
Cold Formability	Poor
Machinability rating (free cutting brass = 100)	100%

Annealing Temp. Range	450-600°C
Stress Relieving Temp. Range	250-350°C

Joining Methods

Soldering	Excellent
Brazing	Good
Oxy-acetylene welding	Not Recommended
Gas-shielded arc welding	Not Recommended
Resistance welding: Spot and Seam	Not Recommended
Butt	Less Suitable

Typical Uses:

Traditional uses for CZ121 / CW614N include a wide variety of machined components made on high speed lathes including screws, bolts, nuts, bushing, pins, washers, butts, hinges and also locks and components for watches.

This technical information is given by Holme Dodsworth Metals without charge and the user shall employ such information at their own discretion and risk. For more detailed technical advice on temper selection, fabrication, joining, machining, physical and mechanical data please contact us as space does not permit the listing of every feature of the material.