

Data Sheet

FREE MACHINING BRASS - CZ121/CW614N

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 high resistance to corrosion makes it the ideal choice for many brass components throughout industry.

Key Features:

The highest machinability of any copper alloy

Excellent hot formability

Good corrosion resistance

Related Specifications:

CZ121 CW614N

C36000 or
C38599 CuZn39Pb3

Chemical Composition:

Copper 56.5 - 58.5%

Lead 2.5 - 3.5% max

Iron 0.3% max

Zinc Rem

Total Imps 0.7% max

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.

Typical Physical Properties:

Melting point 890°C

Density 8.4 g/cm³

Specific heat 380 J/Kg °K

Thermal conductivity 121 W/m°C

Thermal expansion coefficient (20 - 200°C) 20.9 x 10⁻⁶ per °C

Electrical conductivity 28% IACS

Electrical resistivity 0.062 ohm mm²/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 butt Not recommended - Less suitable