

Data Sheet

COPPER CHROMIUM ZIRCONIUM - CC102/CW106C

CC102/ CW106C is a high copper alloy containing a small amount of chromium & zirconium that improve its mechanical performance. Copper on its own has outstanding electrical and heat transfer properties but is soft and ductile. However the small additions of these elements followed by a suitable heat treatment significantly increases strength while retaining high conductivity values.

This gives a high performance alloy which has traditionally been used for resistance welding equipment, switchgear components, circuit breakers part, rotating electrical machinery, current carrying arms and shafts, switch contacts, heat sinks, MIG welding contact tubes, soldering iron tips, and many other electrical and thermal conductors requiring greater strength than copper.

A desirable combination of low wear, long life, and efficient performance are provided to designers as a result of its high electrical and thermal conductivity, high strength levels and a retention of mechanical properties at elevated temperatures (up to 525 °C). This ensures maximum retention of mechanical properties under practical working conditions.

Key Features:

- Very high electrical conductivity
- Good mechanical strength and toughness
- Very good thermal conductivity
- Resistance to softening up to 525°C

Related Specifications:

CC102	CW106C
BS4577 A/2/2	CuCr1Zr
C18150	DIN 17666 - WN 2.1293

Chemical Composition:

Copper	CW106C
Chromium	0.5 - 1.2%
Zirconium	0.03 - 0.30%
Total Others	0.2% max

Typical Uses:

The main applications for CC102/ CuCrZr are for resistance welding shafts, electrodes, electrode holders, seam welding wheels, flash or butt welding dies, and which must have a high electrical conductivity to conduct the heat away from the weld and be strong enough to withstand the mechanical pressure required for welding. But the copper chromium zirconium is also used for switchgear components, circuit breaker parts, rotating electrical machinery, electrical and thermal conductors requiring greater strength of copper.

Typical Physical Properties:

Melting point	1080°C
Density	8.89 g/cm ³
Thermal conductivity	300 W/m°C
Thermal expansion coefficient (20 - 200°C)	16.45 x 10 ⁻⁶ per °C
Electrical conductivity	75 - 85% IACS
Modulus of elasticity	117 200 N/mm ²

Fabrication Properties:

Hot formability	Good
Cold formability	Fair
Machinability rating (free cutting brass=100)	25%

Joining Methods

Soldering	Good
Brazing	Fair
Gas-shielded arc welding	Fair
Resistance welding	Fair