HOLME DODSWORTH METALS LIMITED
www.holmedodsworth.com

C110 / CW009A is a very high purity certified grade of oxygen free copper for electronic type applications. The material is manufactured from pure cathode copper and poured in a protective gas atmosphere. It has a minimum copper content of 99.99% and offers a minimum electrical conductivity of 101.5% IACS. To ensure a resistance to hydrogen embrittlement the maximum oxygen content is restricted to 5 ppm with other individual impurity values limited to 25 ppm.

The combination of the highest available thermal and electrical conductivity values, an excellent formability, an adherent oxide film and excellent joining/welding properties it can be utilised in the electrical and high vacuum industries as well.

Chemical Composition

Copper	99.99% min
Phosphorus	0.0003% max
Sulphur	0.002% max
Lead	0.001% max
Total Others	0.0050% max

(incl. As, SB, Bi, Cd, Mn, Se, Te, Zn - no single impurity shall exceed 0.0025%)

Related Specifications

- C10100 OFE
- BS1433 C110
- BS3839
- BS13604 CW009A
- Cu-OFE
- Cu-C2

Key Features

- Very High Purity
- Highest Conductivity Values
- Excellent formability
- Freedom from Hydrogen Embrittlement
- Excellent Joining Characteristics

Typical Physical Properties

Melting Point	1083°C
Density	8.94 g/cm³
Specific heat	385 J/Kg °K
Thermal conductivity	399 W/m°C
Thermal expansion coefficient (20-200°C)	17.3 x 10^{-6}
Electrical conductivity	101.5 % IACS
Electrical resistivity	0.017 microhm m
Modulus of elasticity	118000 N/mm²

Fabrication Properties

Hot Working Temperature Range	600-800°C
Hot Formability	Good

Cold Formability	Excellent
Cold reduction between anneals	95% max.
Machinability rating (free cutting brass = 100)	20%

Joining Methods

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

Typical Uses:

Traditional uses for C110 / CW009A OFE copper include material for vacuum capacitors and circuit breakers, gaskets for vacuum apparatus, magnetrons, bases for semi-conductors, electronic components, anodes, electrical instruments, rotor conductors for large capacity generators and motors, electrical and electronic components at cryogenic temperatures.

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.