Metelec™

Data Sheet
ETP COPPER - C101/CW004A

Electrolytic Tough Pitch Copper (ETP) C101/ CW004A is a commercially pure high conductivity grade of copper refined by electrolytic deposition which is then melted and oxidised to the "tough pitch" condition with a controlled low oxygen content. This is the most widely used of all the coppers because of its combination of electrical and thermal conductivity, corrosion resistance, workability and aesthetic beauty.

C101/ CW004A is the normal grade for general electrical use as a busbar, motor and transformer components, windings and many other current carrying applications

It is also very popular with architects for applications where the corrosion resistance is required for building applications. Over time the C101 will also develop the weathered copper, green patina, appearance that offers additional corrosion resistance and a desirable look.

The use of this alloy in elevated temperature environments can be limited due to oxygen being present in the form of Cu_2O. This can cause the alloy to be susceptible to hydrogen embrittlement in reducing gasses or when welding or brazing using an oxy-fuel gas flame.

Key Features:	
Very high electrical conductivity	
Excellent formability	
Very good thermal conductivity	
Excellent joining characteristics	
Related Specifications:	
C101	CW004A
	C11000 ETP
Cu-ETP	DIN 2.0060
Chemical Composition:	
Copper	99.90 min
Oxygen	0.005 - 0.040
Total Imps	0.03% max (excl. O_2 & Ag)

Typical Uses:

The C101/ CW004A is mostly utilised for general electrical busbar, motor and transformer components, windings, electrical conductors, contacts, terminals and many other current carrying applications.

Other uses include architectural metalwork, gutters, flashing, roofing, automotive and industrial radiators, together with chemical process equipment, vats, kettles and pans.

Typical Physical Properties:	
Melting point	1083°C
Density	8.94 g/cm³
Specific heat	385 J/Kg °K
Thermal conductivity	393 W/m°C
Thermal expansion coefficient (20 - 200°C)	17.3 x 10 - 6 per °C
Electrical conductivity	100% IACS
Electrical resistivity	0.0172 x 10 - 6 microhm/m
Modulus of elasticity	118 000 N/mm²
Fabrication Properties:	
Hot working temperature range	750 - 950°C
Hot formability	Good
Cold formability	Excellent
Cold reduction between anneals	90% max
Machinability rating (free cutting brass=100)	20%
Annealing temp. Range	200 - 650°C
Stress relieving temp. Range	150 - 200°C
Joining Methods:	
Soldering	Excellent
Brazing	Good
Oxy-acetylene welding	Less Suitable
Gas-shielded arc welding	Fair
Resistance welding: Spot and seam butt	Not recommended - Good

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