Material Information

Copper C101

Introduction

Copper C101, also known as C10100 or Oxygen-Free-Electronic Copper (OFE), is a high-purity copper with a minimum copper content of 99.99%. It is known for its excellent electrical and thermal conductivity, good corrosion resistance, and excellent cold-working and forming capability. C101 is widely used for fabricated copper sheet metal parts where high conductivity, clean material composition, and good formability are important.

Advantages

Excellent electrical and thermal conductivity, excellent cold workability, and good fabrication characteristics make Copper C101 suitable for a wide range of sheet metal applications. It can be readily formed, bent, stamped, sheared, and drawn, while also offering excellent soldering and brazing characteristics. Its oxygen-free composition is particularly useful for applications where high electrical conductivity and reliable joining performance are required.

Disadvantages

Copper C101 has relatively low mechanical strength compared with many copper alloys and other engineering metals, so it may require appropriate thickness or structural support when used for load-bearing parts. Its relatively low machinability can also make machining more difficult than with some other metals. In addition, copper is relatively dense, which can result in heavier parts compared with aluminum sheet metal components of similar dimensions.

Tolerance

We offer tolerances as tight as +/- 0.005". Tighter tolerances are available upon manual review.

Recommendation

The combination of very high electrical and thermal conductivity, excellent formability, corrosion resistance, and good joining characteristics makes Copper C101 suitable for sheet metal fabricated parts used in electrical, electronics, power distribution, thermal management, and industrial applications. It is particularly appropriate for conductive components, electrical connections, shielding parts, and formed copper components

where conductivity and fabrication performance are more important than high structural strength.

Material Specifications (For reference only.)	
Tensile strength	300MPa
Yield strength	150MPa
Electrical conductivity	100% to 101% IACS
Hardness	80 to 100 HB
Modulus of elasticity	115 to 118GPa
Density	8.91 g/cm^3
Thermal conductivity	385 to 393 W/m·K (at 20°C)

Attention

Copper C101 is a highly conductive, non-alloyed copper material, and its mechanical properties vary with temper and processing conditions. During fabrication, the required bend radius, material thickness, and forming method should be considered to avoid excessive deformation or work hardening. When welding, appropriate processes and surface preparation are important, and the specific joining method should be selected according to the part design and service requirements. C101 is particularly well suited to soldering and brazing, while welding suitability varies with the welding process.

Applications

3DSPRO finds people using Copper C101 to make functional parts and prototypes in the following industries and applications.

Electrical and power distribution:
Bus bars, electrical connectors, grounding components, conductive panels, terminals, and other fabricated parts requiring very high electrical conductivity.

Electronics and telecommunications:
Electrical shielding, conductive enclosures, connector components, RF-related parts, and other sheet metal components where high conductivity and good formability are required.

Thermal management:
Heat-transfer components, thermal shields, conductive plates, and other fabricated parts that benefit from Copper C101's high thermal conductivity.

Industrial and general fabrication:

Brackets, covers, panels, formed sheet metal components, and other fabricated parts requiring corrosion resistance, excellent formability, and reliable electrical or thermal conductivity.