Material Information

Copper C110

Introduction

Copper C110, also known as C11000 or Electrolytic Tough-Pitch (ETP) Copper, is a high-conductivity copper alloy containing a small amount of oxygen and typically more than 99.9% copper. It is known for its excellent electrical and thermal conductivity, good corrosion resistance, and good formability. Copper C110 is widely used for sheet metal fabrication where high electrical conductivity, heat transfer, and ease of forming are important.

Advantages

Excellent electrical and thermal conductivity, good corrosion resistance, and good formability make Copper C110 suitable for a wide range of sheet metal fabrication applications. It can be readily bent, formed, stamped, and fabricated into various shapes. Compared with many copper alloys, C110 also offers good soldering and brazing characteristics, making it suitable for conductive and heat-transfer components.

Disadvantages

Copper C110 has relatively low mechanical strength compared with many engineering alloys, which can limit its use in heavily loaded structural applications. Its relatively high density also makes C110 parts heavier than comparable aluminum components. In addition, copper can work-harden during repeated forming operations, which may reduce further formability and require appropriate processing conditions.

Tolerance

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

Recommendation

The combination of excellent electrical and thermal conductivity, good corrosion resistance, formability, and joining characteristics makes Copper C110 suitable for sheet metal fabricated parts used in electrical, electronics, power distribution, thermal management, HVAC, and industrial applications. It is particularly appropriate for bus bars, electrical connectors, conductive components, heat-transfer parts, and fabricated enclosures where conductivity is a primary requirement.

Material Specifications (For reference only.)	
Tensile strength	365MPa
Fatigue strength	76MPa
Elongation at Break	55%
Hardness	57 HB
Density	8.93 g/cm^3

Attention

Copper C110 is a non-heat-treatable copper material, and its mechanical properties depend on the temper and amount of cold work. During bending and forming, the required bend radius and material condition should be considered to reduce the risk of cracking or excessive work hardening. For electrical applications, the part design should also account for the high electrical and thermal conductivity of copper. When joining C110, the appropriate soldering, brazing, or welding process should be selected based on the application and service requirements.

Applications

3DSPRO finds people using Copper C110 to make functional parts and prototypes in the following industries and applications.

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

Electronics and electrical equipment:
Conductive shields, electrical enclosures, connector components, contact parts, and other sheet metal components requiring reliable electrical performance and good formability.

Thermal management and HVAC:
Heat-transfer plates, heat shields, thermal components, HVAC parts, and other fabricated components that benefit from Copper C110's excellent thermal conductivity.

Industrial and general fabrication:
Brackets, covers, panels, housings, formed sheet metal parts, and other fabricated components where good corrosion resistance, formability, and electrical or thermal conductivity are required.