

Material Information



Copper 110

Introduction

Copper 110, also known as Electrolytic Tough-Pitch (ETP) Copper or UNS C11000, is a high-conductivity copper alloy containing a minimum of 99.90% copper. It offers excellent electrical and thermal conductivity, good corrosion resistance, and excellent formability, making it suitable for CNC-machined components used in electrical, thermal, and industrial applications.

Advantages

Excellent electrical and thermal conductivity, good corrosion resistance, and excellent cold-working capability. Copper 110 also provides good solderability and can be used in a wide range of electrical components where efficient electrical and heat transfer are important.

Disadvantages

Copper 110 has relatively low machinability compared with free-cutting copper alloys and brass, which can make CNC machining more demanding. Its high density also makes Copper 110 parts significantly heavier than comparable components made from lightweight metals such as aluminum.

Tolerance

3DSPRO can manufacture and inspect to tight tolerances, including sub +/- 0.001" tolerances, per your drawing specifications and GD&T callouts.

Recommendation

The excellent electrical and thermal conductivity of Copper 110 makes it suitable for CNC machined electrical and thermal components, including busbars, electrical conductors, contacts, terminals, and heat-transfer components. It is also a practical choice for industrial parts where conductivity, corrosion resistance, and formability are important.

Material Specifications (For reference only.)	
Tensile strength	69 to 365MPa
Fatigue strength	76 to 90MPa
Elongation at Break	5% to 50%
Hardness	65 to 90HB
Density	8.89 g/cm ³

Attention

Copper 110 has a relatively low machinability rating of about 20% when compared with free-cutting brass, so appropriate tooling and machining conditions are important when producing precision CNC parts. The material is available in different tempers, and its mechanical properties can vary with temper and product form. For applications requiring specific strength or hardness, the required temper should be specified.

Applications

3DSPRO finds people using Copper 110 to make functional parts and prototypes in the following industries and applications.

Electrical components:

Busbars, electrical conductors, contacts, terminals, switches, and other high-conductivity components.

Thermal management:

Heat exchangers, heat-transfer components, thermal conductors, and other parts requiring excellent thermal conductivity.

Industrial equipment:

Pressure vessels, chemical process equipment, printing rolls, and other components where conductivity and corrosion resistance are important.

Automotive and consumer products:

Gaskets, fasteners, decorative components, and other parts requiring good formability, conductivity, or corrosion resistance.