CuCrNb

Copper-Chromium-Niobium Alloy for Metal Additive Manufacturing

Overview

- High strength precipitation-hardened copper alloy
- Excellent wear resistance
- High electrical conductivity
- High thermal conductivity
- Suitable for Laser Powder Bed Fusion (LPBF / SLM) processes

Chemical Composition (wt%)

Element	Min (%)	Max (%)
Copper (Cu)	Balance	Balance
Chromium (Cr)	3.0	4.0
Niobium (Nb)	2.0	3.0

Typical Mechanical Properties (As Built / Heat Treated)

Property	Typical Value
Density	≈ 8.8 g/cm³
Tensile Strength	450 – 550 MPa
Yield Strength (0.2%)	350 – 450 MPa
Elongation	8 – 15 %
Hardness	120 – 180 HB

Physical Properties

Property	Typical Value
Electrical Conductivity	60 – 85 % IACS
Thermal Conductivity	300 – 350 W/m·K
Melting Range	Approx. 1070 – 1085 °C

Powder Characteristics (For AM)

Parameter	Typical Range
Particle Size (D10-D90)	15 – 45 µm
Morphology	Spherical, gas atomized
Oxygen Content	< 0.05 %
Apparent Density	4.5 – 5.5 g/cm³

Note: All values are typical reference values and may vary depending on machine parameters, powder batch, and post-processing conditions.