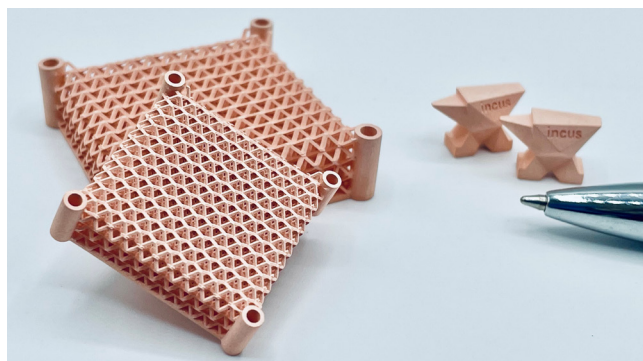


Material Data Sheet Copper



Pure copper is widely used in thermal management applications such as heat exchangers, chip coolers, and similar devices. Based on its excellent electrical conductivity, it finds applications in electrical transmission, antenna applications, and other radio frequency devices.

Material properties

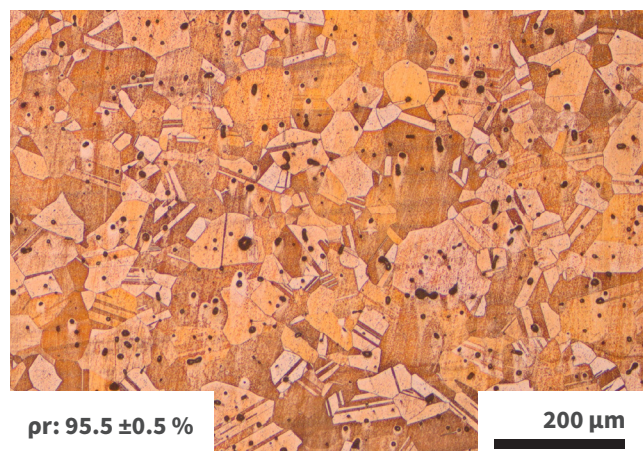
High thermal conductivity

Excellent electrical conductivity

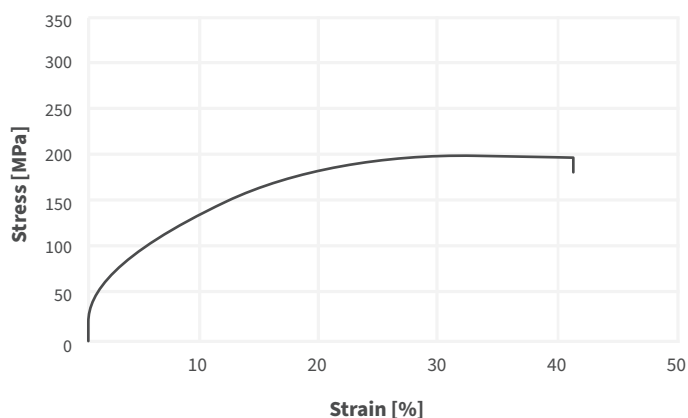
Composition¹

Element	Cu	O
Fraction [%]	Balance	0.04

Microstructure and porosity²



Microstructure of etched testing sample



Typical stress-strain curve of sintered sample

Mechanical properties³

Value	Standard	Lithography-based Metal Manufacturing (LMM)	Metal Injection Molding (MIM) minimum ⁴	MIM typical ⁴
Yield strength [MPa]	ISO 6892	40	–	69
Ultimate strength [MPa]	ISO 6892	193	–	207
Elongation [%]	ISO 6892	41	–	30
Electrical Conductivity [% IACS]	ASTM E1004	93.8	–	–
Thermal Conductivity ⁵ [W/(m·K)]	–	385	–	360
Density ⁶ [%]	–	95.5	94.87	97.65

¹ Nominal values provided by the powder supplier.

² Typical values achieved with Incus process parameters.

³ Tensile samples type B according to ISO 2740.

⁴ As sintered. Per MPIF Standard 35, Materials Standards for Metal Injection Molded Parts (MPIF35-MIM,2018).

⁵ Calculated from Electrical Conductivity (Wiedemann Franz-Law)

⁶ With respect to a powder density of 8,96g/cm³ (Manufacturer information).