AMCopper-100™ (High Thermal and Electrical conductivity)

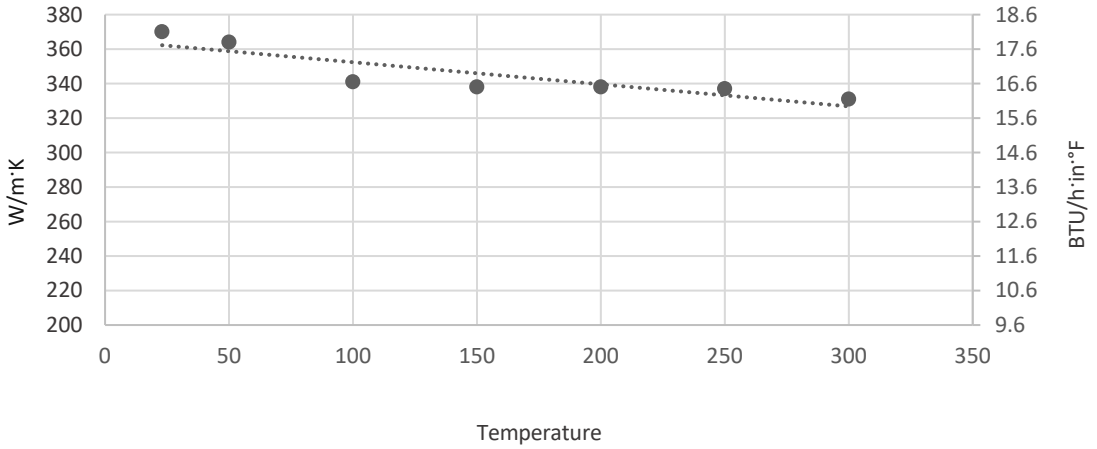
Product Information

Copper is one of the most versatile materials available and is used for applications in every type of industry. Commercially pure copper has excellent thermal and electrical conductivity, good ductility and low magnetic permeability. Applications include heat exchangers, induction coils and complex bus bars.

Physical and Chemical Properties

Material composition: Proprietary Copper (Annealed)	**Ultimate tensile strength[1]:** 38±1 (265MPa)
Theoretical maximum density: 8.9 g/cm³	**Yield strength[1]:** 22 ± 4 ksi (155 MPa)
Printed relative density: > 98%	**Elongation[1]:** 25±4%
Deposition rate[6]: 0.45 in³/h (2.05 mm³/s)	**Modulus of elasticity[3]:** Approx. 16.1 Msi (111 GPa)
Surface roughness as built[7]: • Upskin - Ra 11.1 µm, Ra 0.44 x 10-3 inch • Downskin - Ra 18.0 µm, Ra 0.71 x 10-3 inch	**Electrical conductivity[5]:** Approx. 95% IACS (International Annealed Copper Standard)
Hardness[2]: 21 ±2 HRB	

Thermal conductivity[4]:



Test Temperature		Thermal Conductivity	
°C	°F	W/mK	BTU/hr·in·°F
23	**73**	**370**	**17.82**
50	122	364	17.53
100	212	341	16.42
150	302	338	16.27
200	392	338	16.27
250	482	337	16.23
300	572	331	15.94

[1]ASTM E8, [2]ASTM E18, [3]ASTM E494-15, [4]ASTM E1461 and ASTM E1269 (perpendicular and parallel to build plane), [5]ASTM E1004-17 (parallel to build plane). Data reflects properties annealed at 650°C for 3-hours/furnace cooled, [6] Deposition rate calculation is for comparison purposes on an EOS M290 and does not include recoating time, laser migration time, contour exposures, etc., [7]Surface roughness determined by stylus profilometry.

All stated values are approximate values. All details given above are our current knowledge and experience, and are dependent on the equipment, parameters, and operating conditions. The data provided in this document is subject to change and only intended as general information on a material set that is continually improving and developing. The data does not provide a sufficient basis for engineering parts. All samples were produced on an EOS M290. All tensile tests were performed at third party certified test labs such as Westmoreland Mechanical Testing & Research and Product Evaluations Systems.

Please contact us at sales@elementum3d.com for additional information.