



MATERIALS FOR 3D PRINTING

COPPER



**DANISH
TECHNOLOGICAL
INSTITUTE**

CuCr1Zr

Copper alloy

CuCr1Zr has good material properties, such as corrosion resistance, high mechanical strength, and impressive thermal and electrical conductivity, even at high temperatures. Suitable for applications such as cooling systems and heat exchangers.

We print copper using Laser Powder Bed Fusion technology, which works with powder and uses a laser to weld the powder layers together. This technology requires a support structure to attach the part to the build platform. The support is mechanically removed after printing.

The technology can produce parts that comply with ISO 2768-m 1; however, the tolerances depend significantly on the geometry of the part. At the Danish Technological Institute, our 3D printing production is also ISO 9001 certified.

MATERIAL PROPERTIES (HEAT TREATED)

TENSILE STRENGTH [Rm]	255 ±5 MPa
YIELD STRENGTH [Rp0,2]	170 ±5 MPa
ELONGATION AT BREAK [A]	41 ±3 %
VICKERS HARDNESS [HV5]	75 ±5
PART DENSITY	>99,5 %
ELECTRICAL CONDUCTIVITY	44,28 MS/m

SURFACE TEXTURE

	Media blasted	Deburred	Processed
Average roughness [Ra]	8 ±2	3 ±1	0,8

Technology:

- Laser Powder Bed Fusion

Printer:

- SLM Solutions - SLM280

Build volume:

- 280 x 280 x 365 mm

Application:

- Industrial use

Possible post-processing:

- De-stressing
- Heat treatment
- Deburring
- Media blasting
- Conventional processing

Customization:

Contact us if you have specific requests for surface roughness and material properties.

Design features:

- Minimum feature size 0,6 mm
- Minimum channel size $\varnothing 2$ mm
- Minimum wall thickness 1 mm
- Support for overhangs less than 45°
- Hole for emptying powder $\varnothing 5$ mm

Examples of use

- Advanced cooling fins and heat exchangers for the electronics industry and energy sector.
- Combustion chambers for the aerospace industry.

Danish Technological Institute - Industrial 3D-printing

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