Metal
Solutions

TRL 3
Core

EOS CopperAlloy CuCrZr
for AMCM M 290 1 kW

EOS CopperAlloy CuCrZr
AMCM M 290 1kW | 80 µm

Copper alloy CuCrZr has a favorable combination of electrical and thermal conductivity accompanied with good mechanical properties. This alloy reaches its good properties during heat treatment.

Main Characteristics

- → High productivity 15.4 mm³/s with 80 µm layer thickness
- → Moderate to high conductivity in heat treated condition together with good mechanical properties
- → Designed for an EOS M 290 with a 1 kW laser which is the AMCM M 290 1 kW sold by AMCM GmbH

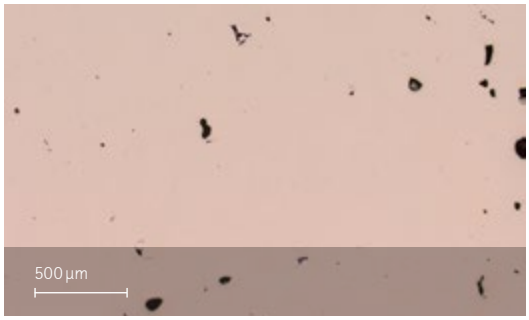
Typical Applications

- → Rocket engine parts
- → Heat exchangers
- → Induction coils

Product Information

DMLS System	EOS M 290 with 1kW laser
Recoater type	HSS blade
Protective gas	Argon
Material	EOS CopperAlloy CuCrZr
Process	CuCrZr_080_CoreM291_1kW_100

Layer thickness 80 µm
Volume rate 15.4 mm³/s
Porosity < 0.5 %



Typical part properties	Yield strength $Rp_{0.2}$ [MPa]	Tensile strength Rm [MPa]	Elongation at break A [%]
Mechanical properties as manufactured	160	210	40
Mechanical properties heat treated	210	340	25
Conductivity as manufactured	> 20 % IACS (tested acc. ASTM E1004-17)		
Conductivity heat treated	> 80 % IACS (tested acc. ASTM E1004-17)		

CuCrZr can be heat treated to reach different mechanical properties and conductivity values. Properties in the table have been achieved with following heat-treatment:
1. Hold 30 min at ~ 980 °C in argon atmosphere, water cooling to room temperature.
2. Hold 3 h at ~ 430 °C in argon atmosphere, slow cooling in argon by taking the samples out of the furnace and rest in air.

Please refer to the application notes for EOS Copper products for further information.

Status 12/2020

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Metal
Solutions

TRL 3
Core

EOS CopperAlloy CuCrZr
for EOS M 400

EOS CopperAlloy CuCrZr
EOS M 400 | 80 µm

Copper alloy CuCrZr has a favorable combination of electrical and thermal conductivity accompanied with good mechanical properties. This alloy reaches its good properties during heat treatment.

Main Characteristics

- → High productivity 12 mm^3/s with 80 µm layer thickness
- → Moderate to high conductivity in heat treated condition together with good mechanical properties
- → Chemical composition corresponds to C18150 and CW106C

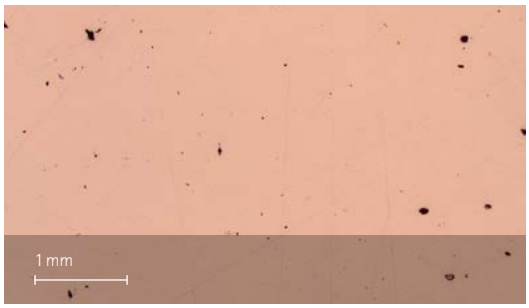
Typical Applications

- → Rocket engine parts
- → Heat exchangers
- → Induction coils

Product Information

Current TRL	3
DMLS System	EOS M 400
Material	EOS CopperAlloy CuCrZr
Process	CuCrZr_080_CoreM400_100

Layer thickness 80 µm
Volume rate 12 mm^3/s Porosity < 0.5 %



Typical part properties	Yield strength $Rp_{0.2}$ [MPa]	Tensile strength Rm [MPa]	Elongation at break A [%]
Mechanical properties as manufactured	160	210	40
Mechanical properties heat treated	200	300	30
Conductivity as manufactured	> 20 % IACS (tested acc. ASTM E1004-17)		
Conductivity Heat-treated	> 85 % IACS (tested acc. ASTM E1004-17)		

CuCrZr can be heat treated to reach different mechanical properties and conductivity values. Properties in the table have been achieved with following heat-treatment:
1. Hold 30 min at ~ 980 °C in argon atmosphere, water cooling to room temperature.
2. Hold 3 h at ~ 430 °C in argon atmosphere, slow cooling in argon by taking the samples out of the furnace and rest in air.

Please refer to the application notes for EOS Copper products for further information.

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Status 11/2019