KME

ENGINEERING
COPPER
SOLUTIONS

KME COPPER POWDER

MATERIAL
DATA SHEET

KME Germany GmbH & Co. KG
SPECIAL DIVISION
[EN]

KME COPPER POWDER

KME offers copper powder for **additive manufacturing** based on its high-quality materials. The production of the copper powders is done by melting the known **KME alloys** in order to achieve the highest requirements for purity and composition.

AVAILABLE MATERIALS AND ALLOYS ARE:

- Cu-OFE
- Cu-HCP
- CuAg0.1P
- CuTeP
- CuCr1Zr
- CuNi2.5SiCr
- CuNi30Mn1Fe
- NiCu30Fe

Other materials can be supplied on request.

DESCRIPTION

The KME copper powders are produced by gas atomisation with subsequent screening and air separation processes. This ensures that the KME copper powder has almost spherical particles, optimal particle sizes and a good particle size distribution.

This results in a high flowability and very good bulk density. In addition, KME copper powders are characterized by very low humidity.

In the additive manufacturing process, this combination of properties leads to a uniform and dense copper powder layer. The component density achievable with KME copper powders is very high.

TECHNICAL DATA

Table 1 lists the unalloyed and low-alloyed copper powders. The Cu-OFE is characterized by highest electrical and thermal conductivity. The Cu-HCP and CuAg0.1P offer an increased recrystallization temperature while still maintaining a very high conductivity of the printed component.

The age-hardenable copper powders CuCr1Zr and CuNi2.5SiCr achieve highest strengths after the selective manufacturing process by age-hardening and belong to the thermally most stable copper alloys, **Table 2**.

The high-alloyed copper-based alloy CuNi30Mn1Fe is characterised by high corrosion resistance and is primarily used in seawater. The nickel-based material NiCu30Fe has even higher strength values. In addition to higher seawater resistance, the high temperature resistance in a carbon-rich atmosphere is excellent.

TABLE 1: Unalloyed and low-alloyed KME powders

KME COPPER POWDER		Cu-OFE*	Cu-HCP	CuAg0.1P	CuTeP
MATERIAL	EN	CW009A	CW021A	CW016A	CW118C
	ASTM	C10100	C10300	C10700	C14500
MATERIAL COMPOSITION	%	Other elements: max. 0.01 Cu > 99.99	P 0.004 Other elements: max. 0.03 rest Cu	Ag 0.1 P 0.004 Other elements: max. 0.05 rest Cu	Te 0.5 P 0.008 Other elements: max. 0.1 rest Cu
PARTICLE SIZE D 10 D 50 D 90	µm	 15 35 60	 15 35 60	 15 35 60	 8 15 40
FLOWABILITY	s/50g	14	16	16	-
BULK DENSITY	g/cm³	4.8	4.6	4.7	-
MOISTURE	%	<0.01	<0.01	<0.01	<0.01

* *The analysis of the oxygen content is carried out on basic materials. Due to oxidation of the surface of the powder, the oxygen content is higher after production and storage.*

TABLE 2: Hardenable KME copper powders and copper-nickel and nickel-copper KME powders

KME COPPER POWDER		CuCr1Zr	CuNi2.5SiCr	CuNi30Mn1Fe	NiCu30Fe
MATERIAL	EN	CW106C	-	CW354H	2,4360
	ASTM	C18150	C18000	C71520	N04400
MATERIAL COMPOSITION	%	Cr 0.65 Zr 0.08 Other elements: max. 0.2 rest Cu	Ni 2,5 Si 0,65 Cr 0.3 Other elements: max. 0.3 rest Cu	Ni 31 Mn 0.8 Fe 0.8 Other elements: max. 0.3 rest Cu	Cu 30 Fe 2 Other elements: max. 3 rest Ni
PARTICLE SIZE D 10 D 50 D 90	µm	 15 35 60	 25 40 60	 20 45 80	 20 45 85
FLOWABILITY	s/50g	16	15	14	18
BULK DENSITY	g/cm³	4.2	4.1	4.5	4.1
MOISTURE	%	<0.01	<0.01	<0.01	<0.01

QUALITY ASSURANCE

The consistently high quality of the delivered KME copper powder is guaranteed through processes of quality assurance.

- Particle measurement by laser light diffraction according to ISO 131320
- Particle shape by means of metallographic investigation methods
- Flowability according to DIN EN ISO 4490
- Bulk density according to DIN EN ISO 3923-1
- Moisture according to DIN 51006

LEGAL INFORMATION

The information provided corresponds to our knowledge and level of experience at the time of publication.

In the context of the continuous development and improvement processes the information can change without prior notice.

SAFETY INSTRUCTIONS

See KME safety data sheet at:
www.kme.com/reach

ENGINEERING
COPPER
SOLUTIONS

Further information:

WWW.KME.COM

KME Germany GmbH & Co. KG
T +49 541 321-2144 kmepowder@kme.com

All rights reserved.