E-COPPER

ISABELLENHÜTTE

Brand Name	E-COPPER
Material Code	2.0060
Abbreviation	Cu-ETP (formerly: E-Cu57)

Chemical Composition (mass components) in %
Average values of alloy components

Cu
≥ 99.9

Form of Delivery

E-COPPER is supplied in the form of round wires in the range 3.0 to 0.1 mm Ø in bare condition.

To a limited extent insulated wires, stranded wires and strips are also manufactured.

Properties and Application Notes

E-COPPER is especially characterized by high conductivity and relatively high corrosion resistance. Like all pure metals, E-COPPER has a high temperature coefficient. The most important properties are listed only for reasons of completeness.
Copper is normally supplied for thermocouples and compensation cables as well as bimetal-heaters.
The maximum working temperature in air is 150 °C.
When used as wire for thermoelectric applications, the maximum temperature can be up to 350 °C.

Electrical Resistance in Annealed Condition

Temperature coefficient of electrical resistance between 0 °C and 100 °C 10^{-6}/K	Electrical resistivity[1] in: µΩ x cm (first line) and Ω/CMF (second line) Reference Values 20 °C	100 °C	200 °C	300 °C	400 °C	500 °C
approx. +4300	1.72	2.3	3.1	-	-	-
	10	14	19	-	-	-

Physical Characteristics (Reference Values)

Density at 20 °C g/cm³	Density at 20 °C lb/cub in	Melting Point °C	Specific heat at 20 °C J/g K	Thermal conductivity at 20 °C W/m K	Average linear thermal expansion coefficient between 20 °C and 100 °C 10^{-6}/K	Average linear thermal expansion coefficient between 20 °C and 400 °C 10^{-6}/K	Thermal EMF against copper at 20 °C µV/K
8.9	0.32	1083	0.38	390	17.5	18.5	0

Strength Properties at 20 °C in Annealed Condition

Tensile Strength[2] MPa	Tensile Strength[2] psi	Elongation (L_0 = 100 mm) % at nominal diameter in mm 0.02 to 0.063	>0.063 to 0.125	> 0.125 to 0.5	> 0.5 to 1	> 1
200	29000	≈ 10	≈ 15	≈ 20	≥ 25	≥ 30

1) The resistivity at 0 °C is 1.56 µΩ x cm.
2) This value applies to wires of 2 mm diameter. For thinner wires the minimum values will substantially increase, depending on the dimensions.

General Note

E-COPPER is not a standard resistance alloy. Therefore no resistance values are quoted. The weight values correspond to those of ISOTAN® wires of the same diameter.

Notes on Treatment

E-COPPER can be worked easily. This alloy can be soldered and brazed without difficulty. All known welding methods can be used.

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