

Brand Name	E-COPPER		
Material Code	2.0060		
Abbreviation	TP (X) / UP (X) / KPCB / NPC / SPCA / SPCB / RPCA / RPCB / BNC		
Chemical Composition (mass components) in %. Average values of alloy components			
Cu			
100			

### Form of Delivery

E-COPPER is supplied in the form of wires with dimensions from 0.05 to 10 mm Ø in bare condition. Enamelled wires are available in dimensions between 0.05 and 1.5 mm Ø. E-COPPER can also be supplied in form of

stranded wire, ribbon, flat wire and rods. Please contact us for the range of dimensions.

### Features and Application Notes

E-COPPER is used in a wide range of thermocouple, extension and compensating lead types.

As a thermocouple, it is used as positive leg for types T and U.

As an extension lead, it is used for types TPX and UPX. E-COPPER is also used as the positive leg for the compensating lead to the elements Pt10Rh-Pt, Pt13Rh-Pt, NiCr-Ni (KCB) und Nicrosil-Nisil (NC), as well as the negative leg for compensating lead to the element Pt30Rh-Pt6Rh.

The standardized temperature range of the different application possibilities of E-COPPER is available in the tables on pages 10 and 11, 14 and 15 as well as 18 and 19. We supply E-COPPER for applications up to 400 °C. Above this temperature strong oxidation of the metal will start. E-COPPER is standardized up to 200 °C for extension or compensating lead.

### Thermoelectrical and Electrical Values in Soft-Annealed Condition <sup>1)</sup>

EMF versus Cu/NIST 175 0 – 100 °C / mV	EMF versus Pt67/NIST 175 0 – 100 °C / mV	EMF versus Cu 0 – 400 °C / mV	EMF versus Pt67/NIST 175 0 – 400 °C / mV	Electrical resistivity in μΩ x cm at 20 °C
0	0.773	0	- 4.69	1.7

### Physical Characteristics (Reference Values)

Density at 20 °C	Melting point	Specific heat at 20 °C	Thermal conductivity at 20 °C	Average linear thermal expansion coefficient between 20 °C and 100 °C	Magnetic at room temperature
g/cm <sup>3</sup>	°C	J/g K	W/m K	10 <sup>-6</sup> /K	
8.9	1083	0.38	390	17	no

### Mechanical Properties at 20 °C in Annealed Condition <sup>2)</sup>

	Tensile strength MPa	Elongation %	Hardness HV10
hard	400	3	120
soft	200	30	55

- 1) The exact EMF values according to NIST 175 can be calculated with the "EMF-Software", which can be downloaded from our homepage.
- 2) The mechanical values considerably depend on dimension. The indicated values refer to a dimension of 1 mm diameter.

### Notes on Treatment

E-COPPER is easy to process. The alloy can be soldered and brazed without difficulty. All known welding methods are applicable.