



EMH-Tubes in CuCr1Zr

CuCr1Zr is an age hardenable copper alloy combining good electrical and thermal conductivity with high strength. Depending on the application, different tempers (solution annealed, age hardened, cold worked, etc.) can be defined. CuCr1Zr is highly suitable for use in welding technology, e. g. as welding electrode (especially at high temperatures).

Chemical Composition *

Cu	balance
Cr	0.5 – 1.2 %
Zr	0.03 – 0.3 %

* Standard values in % by weight

Material Description

EN	CuCr1Zr, CW106C
UNS	C18150
DIN*	CuCrZr, 2.1293
BS*	CC102
NF*	not standardized

* former national standards

Physical Properties *

Electrical conductivity

MS/m	≥ 43
% IACS	≥ 74

Thermal conductivity

W/(m*K)	> 320
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Thermal expansion coefficient

(0 – 300 °C) 10-6/K	17.6
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Density

g/cm ³	8.92
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Modulus of elasticity

GPa	130
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* Standard values at room temperature
1 GPa = 1 kN/mm²
1 MS/m = 1 m/Ω · mm

Processing Properties

Forming

Temper	s ¹⁾	a ²⁾	aw ³⁾
Machinability (CuZn39Pb3 = 100%)	30 %	40 %	50 %
Cold forming	excellent	good	good
Hot forming			good

¹⁻³ See notes below the mech. properties

Joining

Resistance welding	fair
Inert gas shielded arc welding	fair
Hard soldering	fair
Soft soldering	good

Surface Treatment

Polishing

mechanical	good
electrolytical	fair

Electroplating	good
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Heat Treatment

Melting point	1,070 – 1,080 °C
Hot forming	850 – 1,020 °C
Soft annealing	600 – 800 °C, 1-3 h
Thermal stress-relieving	300 – 350 °C, 1-3 h

Corrosion Resistance

Pure copper and low-alloyed copper generally show good corrosion resistance due to their precious character and are practically impervious to stress corrosion cracking.

Mechanical Properties (attainable values, depending on the dimension and form)

Standard values	¹⁾ solution annealed "s"	²⁾ age hardened "a"	³⁾ age hardened cold worked "aw"
R _m [MPa]	230	460	470 – 570
R _{p0.2} [MPa]	80	340	420 – 540
A ₅ [%]	40	20	15 – 10
HB	65	130	140 – 170

