WIELAND-M05

CuZn5

C21000

wieland

Material Designation	
EN	CW500L
UNS*	C2100

**Unified Numbering System (USA)*

Chemical Composition (Reference)	
Cu	95 %
Zn	balance

Typical Applications

- Jewellery and metal goods
- Components for the electrical industry

Physical Properties*		
Electrical Conductivity	MS/m % IACS	33 57
Thermal Conductivity	W/(m·K)	243
Coefficient of Electrical Resistance**	10^{-3}/K	2.6
Coefficient of Thermal Expansion**	10^{-6}/K	18.0
Density	g/cm³	8.86
Modulus of Elasticity	GPa	127
Specific Heat	J/(g·K)	0.380
Poisson's Ratio		0.34

* *Reference values at room temperature*

** *Between 0 and 300 °C*

Fabrication Properties	
Capacity for Being Cold Worked	excellent
Machinability	less suitable
Capacity for Being Electroplated	excellent
Capacity for Being Hot-Dip Tinned	excellent
Soft Soldering	excellent
Resistance Welding	good
Gas Shielded Arc Welding	good
Laser Welding	fair

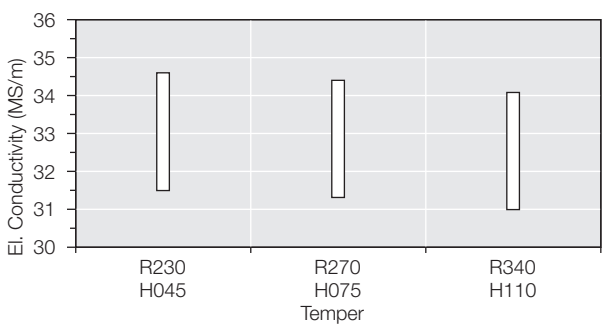
Corrosion Resistance

Wieland-M05 has a very low sensitivity to stress corrosion cracking. The material is largely resistant to industrial atmosphere but not resistant to oxidizing acids.

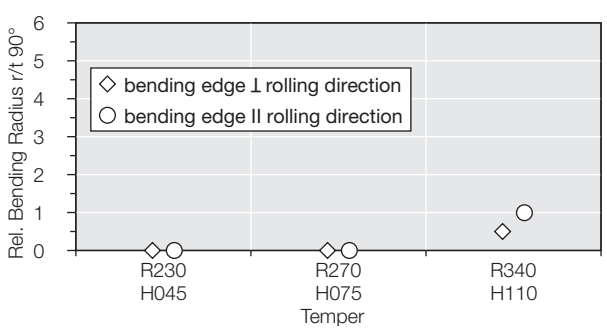
Mechanical Properties				
Temper		**R230**	**R270**	**R340**
Tensile Strength R_m	MPa	230–280	270–350	≥ 340
Yield Strength $R_{p0,2}$	MPa	≤ 130	≥ 200	≥ 280
Elongation A_{50mm}	%	≥ 36	≥ 12	≥ 4

Temper	H045	H075	H110
Hardness HV	45–75	75–110	≥ 110

Electrical Conductivity



Bendability (Strip Thickness t ≤ 0.5 mm)

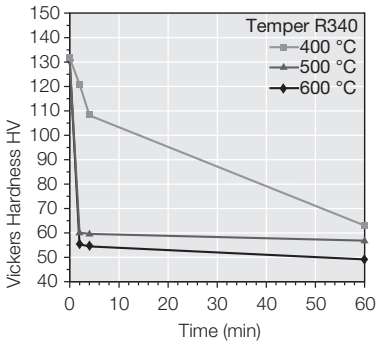


WIELAND-M05

CuZn5

C21000

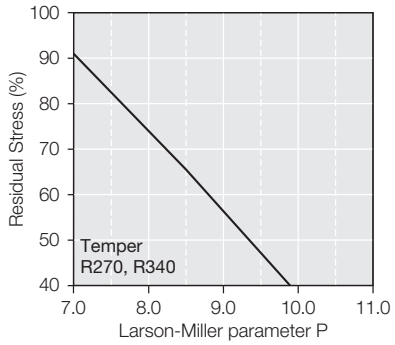
Resistance to Softening



Vickers hardness after heat treatment (typical values)

Thermal Stress Relaxation

M05



Stress remaining after thermal relaxation as a function of Larson-Miller parameter P (F. R. Larson, J. Miller, TransASME74 (1952) 765–775) given by:

$P = (20 + \log(t))*(T + 273)*0.001$.

Time t in hours, temperature T in °C.

Example: P = 9 is equivalent to 1.000 h/118 °C.

Measured on stress relief annealed specimens parallel to rolling direction.

Total stress relaxation depends on the applied stress level. Furthermore, it is increased to some extent by cold deformation.

Fatigue Strength

The fatigue strength is defined as the maximum bending stress amplitude which a material withstands for 10^7 load cycles under symmetrical alternate load without breaking. It is dependent on the temper tested and is about ⅓ of the tensile strength R_m.

Types and Formats available

- Standard coils with outside diameters up to 1.400 mm
- Traverse-wound coils with drum weights up to 1.5 t
- Multicoil up to 5 t
- Hot-dip tinned strip
- Contour-milled strip
- Sheet

Dimensions available

- Strip thickness from 0.10 mm, thinner gauges on request
- Strip width from 3 mm, however min. 10 x strip thickness

Wieland-Werke AG **wieland.com**

Graf-Arco-Str. 36, 89079 Ulm, Germany, P +49 731 944 2030, info@wieland.com

11/18 Bm (MC.ED.UL/Ri