Wieland-M10
CuZn10
C22000

Rolled Products

Wieland

Material Designation	
EN	CuZn10
UNS*	C22000

** Unified Numbering System (USA)*

Chemical Composition (Reference)	
Cu	90 %
Zn	balance

Typical Applications

- Jewellery and metal goods
- Components for the electrical industry
- Leadframes

Physical Properties*		
Electrical Conductivity	MS/m %IACS	25 43
Thermal Conductivity	W/(m·K)	184
Coefficient of Electrical Resistance**	10^{-3}/K	1.8
Coefficient of Thermal Expansion**	10^{-6}/K	18.2
Density	g/cm³	8.80
Modulus of Elasticity	GPa	124
Specific Heat	J/(g·K)	0.376
Poisson's Ratio		0.34

* *Reference values at room temperature*
** *Between 0 and 300 °C*

Fabrication Properties	
Capacity for Being Cold Worked	good
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

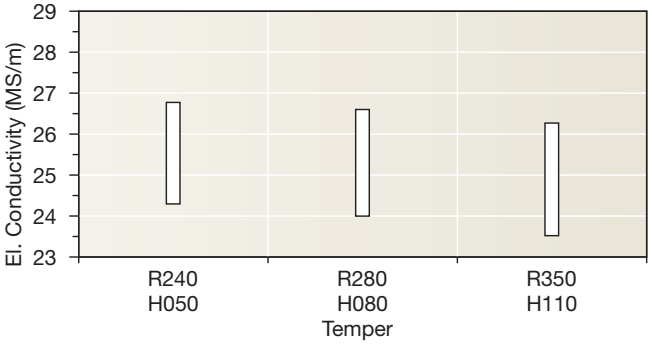
Good resistance to: fresh water, neutral or alkaline saline solutions, organic compounds as well as land, sea, and industrial atmosphere.

Not resistant to: acids, hydrous sulphur compounds, hydrous ammonia in the non-stress-relieved condition. Low sensitivity to stress corrosion cracking.

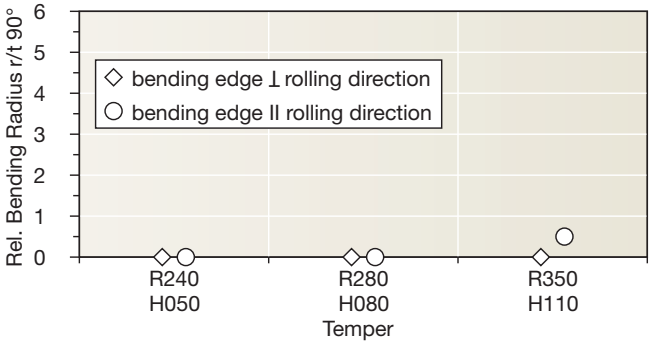
Mechanical Properties				
Temper		**R240**	**R280**	**R350**
Tensile Strength R_m	MPa	240–290	280–360	≥ 350
Yield Strength $R_{p0.2}$	MPa	≤ 140	≥ 200	≥ 290
Elongation A_{50mm}	%	≥ 36	≥ 13	≥ 4

Temper	H050	H080	H110
Hardness HV	50–80	80–110	≥ 110

Electrical Conductivity

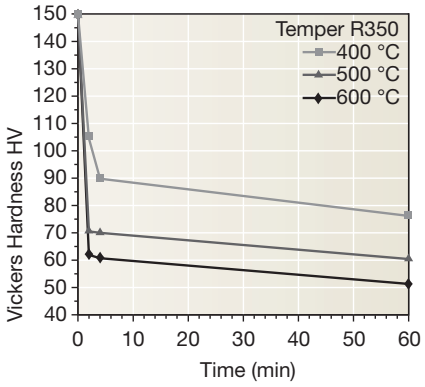


Bendability (Strip Thickness t ≤ 0.5 mm)



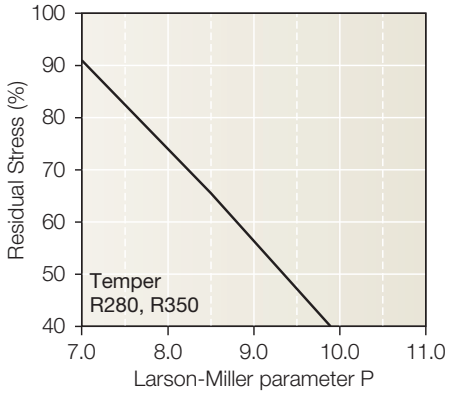
Wieland-M10
CuZn10
C22000

Resistance to Softening



Vickers hardness
after heat treatment
(typical values)

Thermal Stress Relaxation



Stress remaining after thermal relaxation as a function of Larson-Miller parameter (F. R. Larson, J. Miller, Trans ASME74 (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 rolled to temper 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 $^1/_3$ of the tensile strength R_m.

Types and Formats Available

- Standard coils with outside diameters up to 1400 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
- Strip and sheet with protective coating

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 **www.wieland.com**

Graf-Arco-Str. 36, 89079 Ulm, Germany, Phone +49 731 944 2030, Fax +49 731 944 4257, info@wieland.de

10/14 Bm (R+G)