Wieland-M37

CuZn37
C27200

Rolled Products

Wieland

Material Designation

EN	CuZn37
UNS*	C27200

** Unified Numbering System (USA)*

Chemical Composition (Reference)

Cu	63 %
Zn	balance

Typical Applications

- Metal goods
- Deep drawn parts
- Stamped parts
- Connectors
- Components for the electrical industry

Physical Properties*

Electrical Conductivity	MS/m %IACS	15 26
Thermal Conductivity	W/(m·K)	120
Coefficient of Electrical Resistance**	10^{-3}/K	1.7
Coefficient of Thermal Expansion**	10^{-6}/K	20.2
Density	g/cm³	8.44
Modulus of Elasticity	GPa	110
Specific Heat	J/(g·K)	0.377
Poisson's Ratio		0.34

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

Fabrication Properties

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

Corrosion Resistance

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

Not resistant to: acids, hydrous sulphur compounds, hydrous ammonia (stress corrosion cracking) in non-stress-relieved condition.

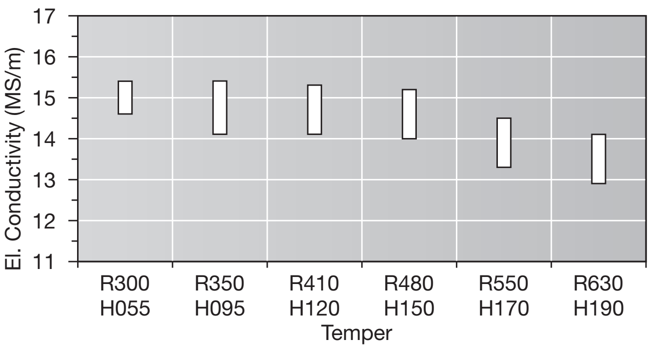
Mechanical Properties

Temper		R300	R350	R410	R480	R550	R630
Tensile Strength R_m	MPa	300–370	350–440	410–490	480–560	550–640	≥ 630
Yield Strength $R_{p0.2}$	MPa	≤ 180	≥ 170	≥ 300	≥ 430	≥ 500	≥ 600
Elongation A_{50mm}	%	≥ 38	≥ 19	≥ 8	≥ 3	–	–

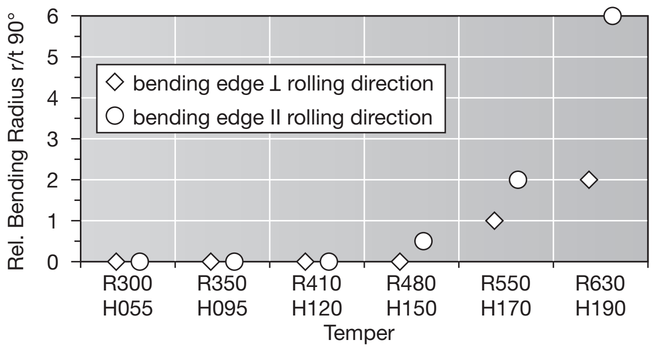
Temper	H055	H095	H120	H150	H170	H190
Hardness HV	55–95	95–125	120–155	150–180	170–200	≥ 190

Temper		G010	G020	G030	G050
Grain Size	mm	≤ 0.015	0.015–0.030	0.020–0.045	0.035–0.070
Hardness HV		≤ 120	≤ 95	≤ 90	≤ 80

Electrical Conductivity



Bendability (Strip Thickness t ≤ 0.5 mm)



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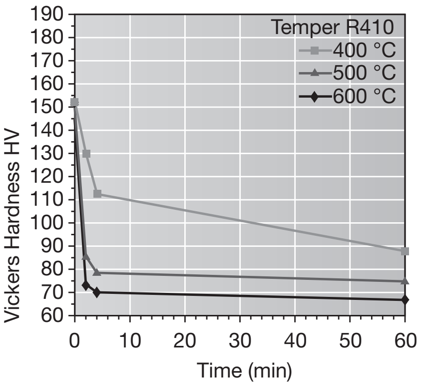
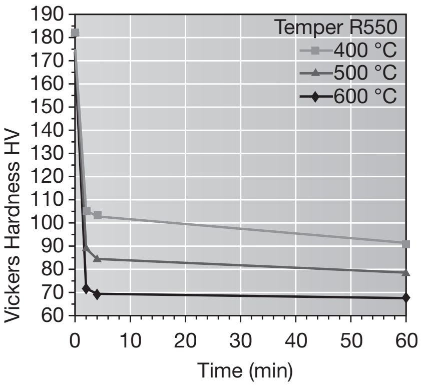
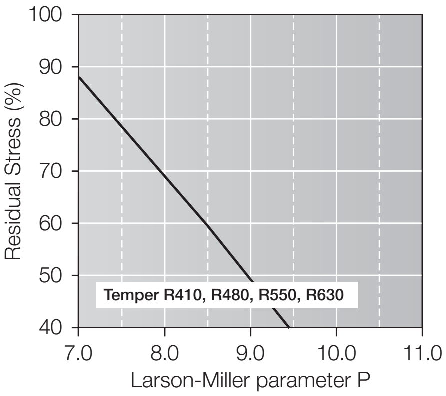
Resistance to Softening





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

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10/12 Bm (GSW/Ri)