Wieland-S23
CuZn23Al3Co
C68800

Rolled Products

Wieland

Material Designation	
EN	CuZn23Al3Co
UNS*	C68800

** Unified Numbering System (USA)*

Chemical Composition (Reference)	
Cu	74 %
Al	3.5 %
Co	0.4 %
Zn	balance

Typical Applications

- Components for the electrical industry
- Contact springs
- Insulation displacement connectors

Physical Properties*		
Electrical Conductivity	MS/m %IACS	10 17
Thermal Conductivity	W/(m·K)	78
Coefficient of Electrical Resistance**	10^{-3}/K	1.2
Coefficient of Thermal Expansion**	10^{-6}/K	18.2
Density	g/cm³	8.23
Modulus of Elasticity	GPa	116
Specific Heat	J/(g·K)	0.375
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	less suitable
Soft Soldering	less suitable
Resistance Welding	good
Gas Shielded Arc Welding	fair
Laser Welding	less suitable

Corrosion Resistance

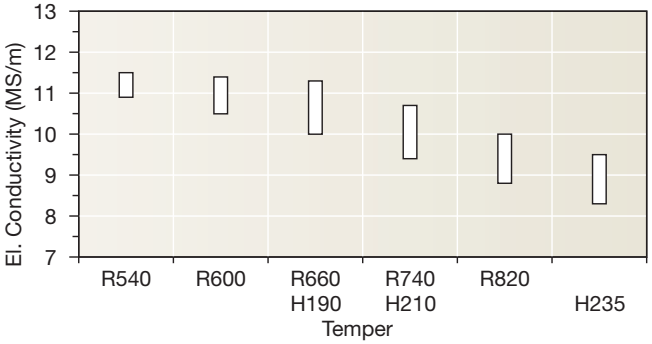
Good general corrosion resistance, also in seawater. Much lower sensitivity to stress corrosion cracking than CuZn37. Due to the aluminium content, S23 has a much better tarnish resistance than e. g. brass or bronze.

Mechanical Properties

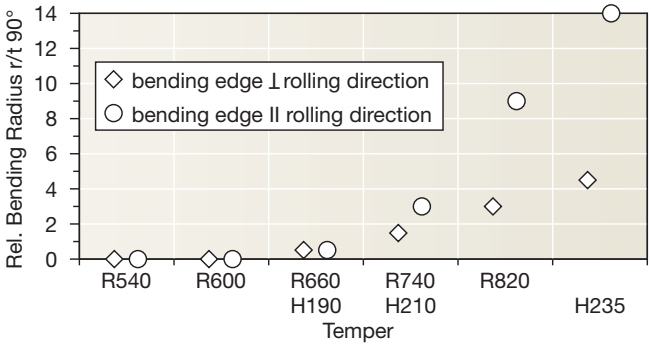
Temper		R540	R600	R660	R740	R820
Tensile Strength R_m	MPa	540–600	600–700	660–750	740–830	≥ 820
Yield Strength $R_{p0.2}$	MPa	≤ 430	≥ 510	≥ 580	≥ 660	≥ 780
Elongation A_{50mm}	%	≥ 30	≥ 13	≥ 10	≥ 3	≥ 2

Temper	H190	H210	H235
Hardness HV	190–220	210–240	≥ 235

Electrical Conductivity



Bendability (Strip Thickness t ≤ 0.5 mm)



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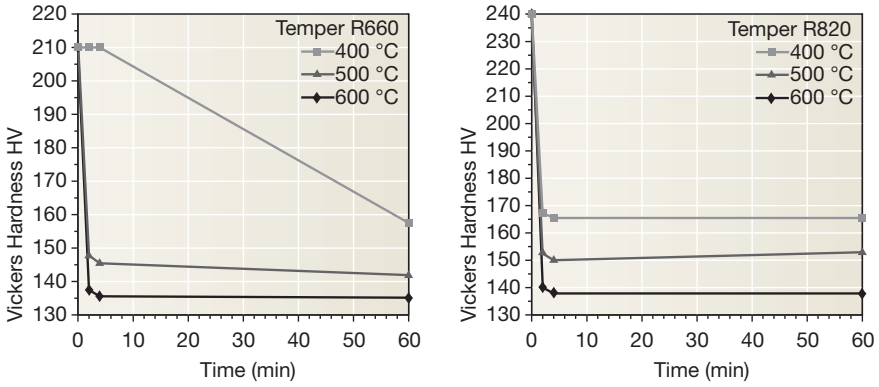
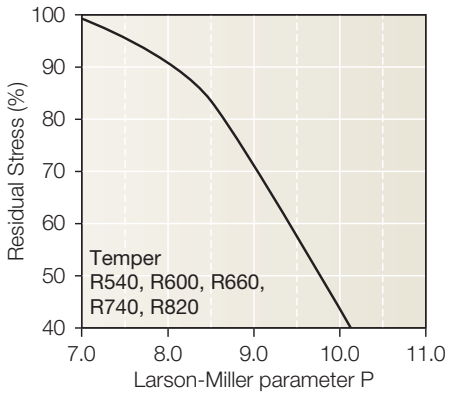
Resistance to Softening



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 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 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
- 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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10/14 Bm (R+G)