Wieland-S23

CuZn23 Al3Co | C68800 | CW703R

C68800 is a high strength copper-zinc alloy modified with aluminum and cobalt, thus falling in the family of special brass. With exceptional strength and non-directional formability, C68800 can be used in wiring devices, automotive terminals and electrical interconnections.

Chemical composition (Reference)	
Cu	74 %
Al	3.5 %
Co	0.4 %
Zn	remainder

Physical properties (Reference values at room temperature)				
Electrical conductivity	10	MS/m	17	%IACS
Thermal conductivity	69	W/(m·K)	40	Btu·ft/(ft²·h·℉)
Coefficient of electrical resistance*	1.2	10^{-3}/K	0.7	10^{-3}/℉
Coefficient of thermal expansion*	18.0	10^{-6}/K	10.0	10^{-6}/℉
Density	8.20	g/cm³	0.296	lb/in³
Modulus of elasticity	116	GPa	16,800	ksi
Specific heat	0.375	J/(g·K)	0.089	Btu/(lb·℉)
Poisson´s ratio	0.34		0.34	

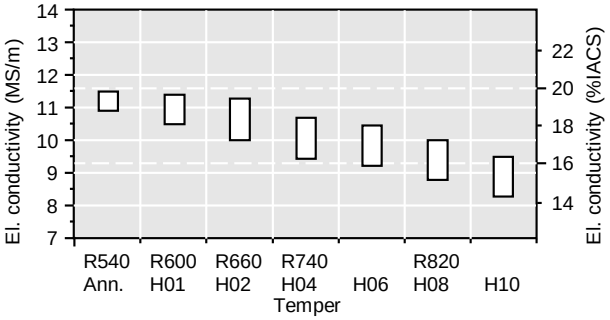
* Between 0 and 300 ℃

Mechanical properties (values in brackets are for information only)

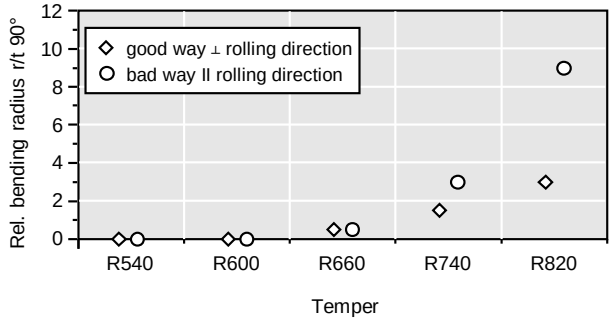
Temper	Tensile strength R_m		Yield strength $R_{p0.2}$		Elongation A_{50}	Hardness HV
	MPa	ksi	MPa	ksi	%	
R540	540-600	78-87	≤ 430	≤ 62	≥ 30	(150-180)
R600	600-700	87-102	≥ 510	≥ 74	≥ 13	(170-210)
R660	660-750	96-109	≥ 580	≥ 84	≥ 10	(190-220)
R740	740-830	107-120	≥ 660	≥ 96	≥ 3	(210-240)
R820	≥ 820	≥ 119	≥ 780	≥ 113	≥ 2	(≥ 230)
Annealed*	530-600	77-87	≥ 305	≥ 44	≥ 30	
H01*	600-695	87-101	≥ 435	≥ 63	≥ 10	
H02*	670-770	97-112	≥ 565	≥ 82	≥ 3	
H04*	730-825	106-120	≥ 655	≥ 95	≥ 2	
H06*	780-875	113-127	≥ 705	≥ 102	≥ 2	
H08*	850-915	123-133	≥ 765	≥ 111	≥ 1	
H10*	≥ 895	≥ 130	≥ 805	≥ 117	≥ 1	

* According to ASTM B888

Electrical conductivity



Bendability (Strip thickness t ≤ 0.5 mm)



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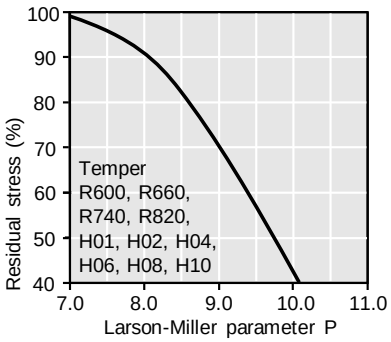
Thermal stress relaxation

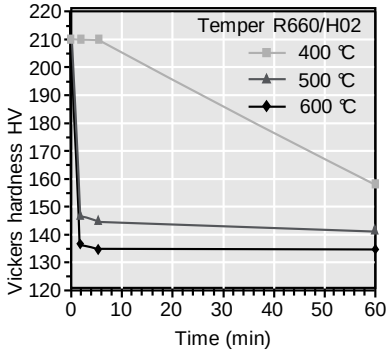


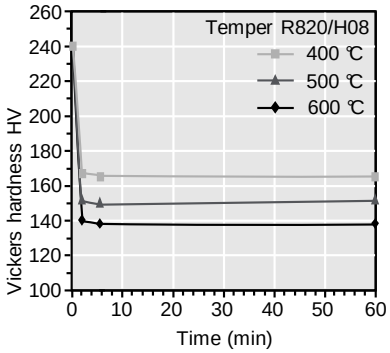
Stress remaining after thermal relaxation as a function of Larson-Miller parameter P
(F. R. Larson, J. Miller, Trans ASME74 (1952) 765–775) given by:
P = (20 + log(t))*(T + 273)*0.001.
Time t in hours, temperature T in ℃.
Example: P = 9 is equivalent to 1,000 h/118 ℃.
Measured on stress relief annealed 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.

Softening resistance





Vickers hardness after heat treatment (typical values)

Types and formats available

- Standard coils with outside diameters up to 1,400 mm
- 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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