Wieland-M10

CuZn10 | C22000 | CW501L

Known for years as Commercial Bronze, this alloy derives its name from its rich bronze color. More a brass than actually a bronze, C22000 offers a unique set of properties that make it great for applications requiring deep drawing and resistance to corrosion including valves, buttons and pen ink tubes. Its appealing color also makes it ideal for architectural applications such as hinges, doorknobs, escutcheons and kick plates.

Chemical composition (Reference)	
Cu	90 %
Zn	remainder

Physical properties (Reference values at room temperature)				
Electrical conductivity	25	MS/m	44	%IACS
Thermal conductivity	189	W/(m·K)	109	Btu·ft/(ft²·h·℉)
Coefficient of electrical resistance*	1.8	10^{-3}/K	1.0	10^{-3}/℉
Coefficient of thermal expansion*	18.2	10^{-6}/K	10.1	10^{-6}/℉
Density	8.80	g/cm³	0.318	lb/in³
Modulus of elasticity	117	GPa	17,000	ksi
Specific heat	0.380	J/(g·K)	0.091	Btu/(lb·℉)
Poisson´s ratio	0.34		0.34	

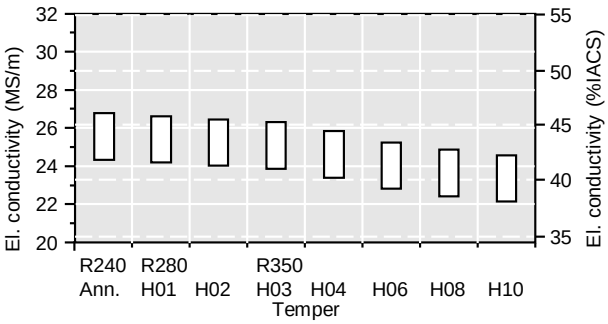
* Between 0 and 300 ℃

Mechanical properties (values in brackets are for information only)

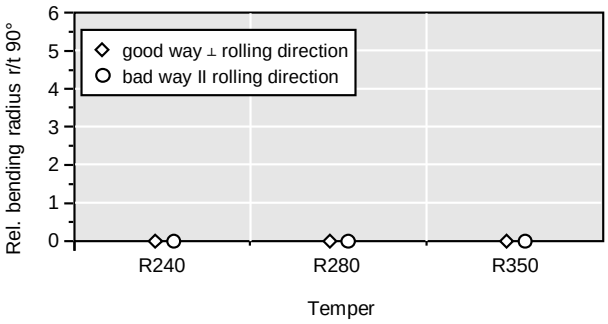
Temper	Tensile strength R_m		Yield strength $R_{p0.2}$		Elongation A_{50}	Hardness HV
	MPa	ksi	MPa	ksi	%	
R240	240-290	33-41	≤ 140	≤ 19	≥ 36	(50-80)
R280	280-360	39-51	≥ 200	≥ 29	≥ 13	(80-110)
R350	≥ 350	≥ 49	≥ 290	≥ 41	≥ 4	(105-140)
Annealed	250-290	36-42	(85)	(12)	(47)	
H01*	275-345	40-50	(230)	(33)	(27)	
H02*	325-395	47-57	(325)	(47)	(12)	
H03*	360-425	52-62	(370)	(54)	(6)	
H04*	395-455	57-66	(400)	(58)	(4)	
H06*	440-495	64-72	(435)	(63)	(2)	
H08*	475-530	69-77	(470)	(68)	(≥ 1)	
H10*	495-550	72-80	(485)	(70)	(≤ 1)	

* According to ASTM B36

Electrical conductivity



Bendability (Strip thickness t ≤ 0.5 mm)



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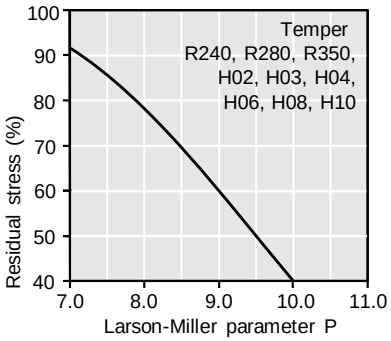
Thermal stress relaxation

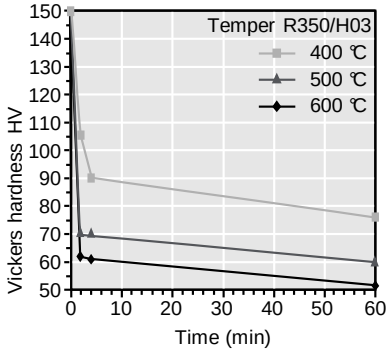


Stress remaining after thermal relaxation as a function of Larson-Miller parameter P
(F. R. Larson, J. Miller, Trans ASME74 (1952) 765–775) given by:
P = (20 + log(t))*(T + 273)*0.001.
Time t in hours, temperature T in ℃.
Example: P = 9 is equivalent to 1,000 h/118 ℃.
Measured on rolled to temper specimens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

Softening resistance



Vickers hardness after heat treatment (typical values)

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
- 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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