wieland

Wieland-M20

CuZn20 | C24000 | CW503L

Low Brass, named for its relatively low zinc content, is a choice of many design engineers for applications where strength and formability are required. Due to the higher content of zinc found in the alloy, compared to Red Brass it develops a beautiful antique brass color when chemically treated making it ideal for many decorative or architectural applications. Other advantages of C24000 include: high solderability, high fatigue limit, and excellent grain size control.

Chemical composition (Reference)	
Cu	80 %
Zn	remainder

Physical properties (Reference values at room temperature)				
Electrical conductivity	19	MS/m	33	%IACS
Thermal conductivity	142	W/(m·K)	82	Btu·ft/(ft²·h·℉)
Coefficient of electrical resistance*	1.5	10^{-3}/K	0.8	10^{-3}/℉
Coefficient of thermal expansion*	18.8	10^{-6}/K	10.4	10^{-6}/℉
Density	8.67	g/cm³	0.313	lb/in³
Modulus of elasticity	110	GPa	16,000	ksi
Specific heat	0.380	J/(g·K)	0.091	Btu/(lb·℉)
Poisson´s ratio	0.34		0.34	

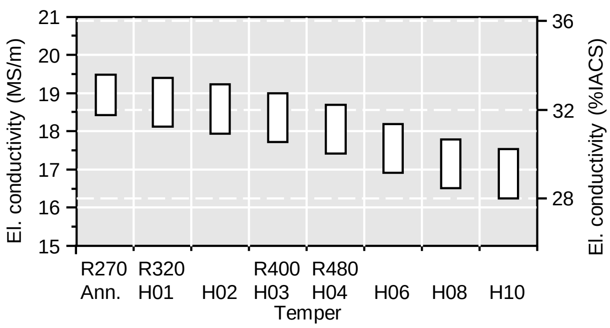
* Between 0 and 300 ℃

Mechanical properties (values in brackets are for information only)

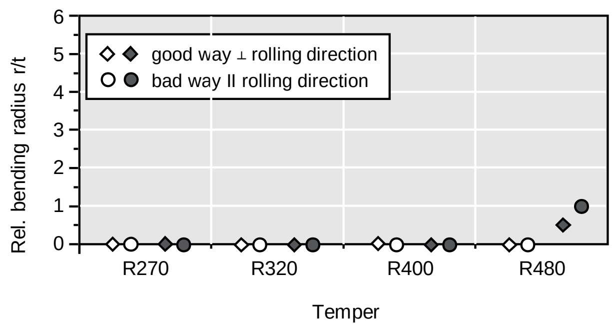
Temper	Tensile strength R_m		Yield strength $R_{p0.2}$		Elongation A_{50}	Hardness HV
	MPa	ksi	MPa	ksi	%	
R270	270-320	39-46	≤ 150	≤ 22	≥ 38	(55-85)
R320	320-400	46-58	≥ 200	≥ 29	≥ 20	(85-120)
R400	400-480	58-70	≥ 320	≥ 46	≥ 5	(120-155)
R480	≥ 480	≥ 70	≥ 440	≥ 64	-	(155-190)
Annealed	305-370	44-54	(140)	(20)	(50)	
H01*	330-400	48-58	(200)	(29)	(26)	
H02*	380-450	55-65	(290)	(42)	(18)	
H03*	420-490	61-71	(365)	(53)	(10)	
H04*	470-530	68-77	(420)	(61)	(4)	
H06*	540-600	78-87	(470)	(68)	(2)	
H08*	585-640	85-93	(525)	(76)	(≥ 1)	
H10*	615-670	89-97	(540)	(78)	(≤ 1)	

* According to ASTM B36

Electrical conductivity



Bendability (Strip thickness t ≤ 0.5 mm) ◇○90° ◆●180°



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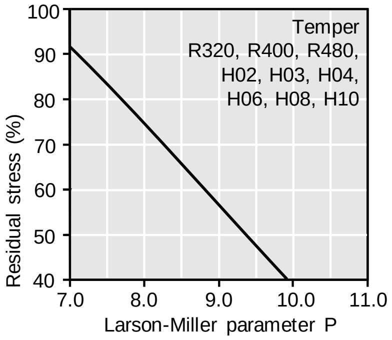
Thermal stress relaxation

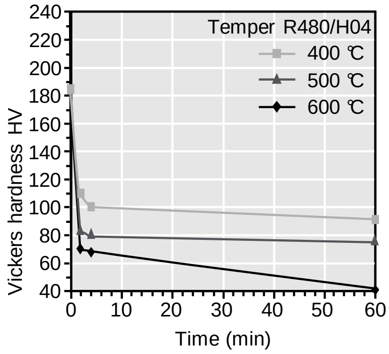


Stress remaining after thermal relaxation as a function of Larson-Miller parameter P
(F. R. Larson, J. Miller, Trans ASME74 (1952) 765–775) given by:
P = (20 + log(t))*(T + 273)*0.001.
Time t in hours, temperature T in ℃.
Example: P = 9 is equivalent to 1,000 h/118 ℃.
Measured on rolled to temper specimens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