Wieland-M15

CuZn15 | C23000 | CW502L

Highly resistant to stress corrosion cracking, C23000 or Red Brass as it is commonly known is a choice for a wide range of applications. Easily buffed or polished this material displays its own natural color well in applications like jewelry, plaques and other decorative or architectural items. In addition to attractive aesthetics, C23000 also has moderate strength and is readily deep drawn or otherwise formed making it great for many industrial applications.

Chemical composition (Reference)	
Cu	85 %
Zn	remainder

Physical properties (Reference values at room temperature)				
Electrical conductivity	21	MS/m	37	%IACS
Thermal conductivity	159	W/(m·K)	92	Btu·ft/(ft²·h·℉)
Coefficient of electrical resistance*	2.6	10^{-3}/K	1.4	10^{-3}/℉
Coefficient of thermal expansion*	18.5	10^{-6}/K	10.3	10^{-6}/℉
Density	8.75	g/cm³	0.316	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	

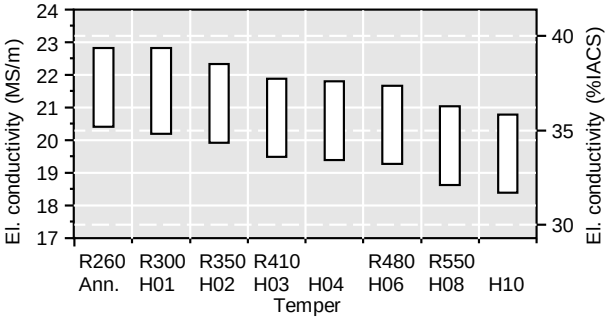
* Between 0 and 300 ℃

Mechanical properties (values in brackets are for information only)

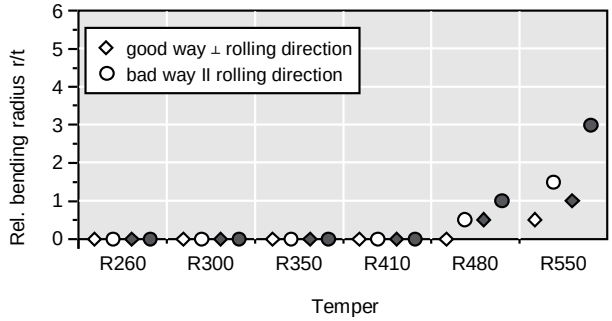
Temper	Tensile strength R_m		Yield strength $R_{p0.2}$		Elongation A_{50}	Hardness HV
	MPa	ksi	MPa	ksi	%	
R260	260-310	38-45	≤ 170	≤ 25	≥ 36	(55-90)
R300	300-370	43-54	≥ 150	≥ 22	≥ 16	(70-115)
R350	350-420	51-61	≥ 250	≥ 36	≥ 8	(105-135)
R410	410-490	59-71	≥ 360	≥ 52	≥ 3	(130-160)
R480	480-560	70-81	≥ 430	≥ 62	-	(150-180)
R550	≥ 550	≥ 80	-	-	-	(≥ 170)
Annealed*	270-325	39-47	≥ 55	≥ 8	≥ 43	
H01*	305-370	44-54	≥ 160	≥ 23	≥ 15	
H02*	350-420	51-61	≥ 295	≥ 43	≥ 8	
H03*	395-460	57-67	≥ 350	≥ 51	≥ 4	
H04*	435-495	63-72	≥ 395	≥ 57	≥ 4	
H06*	495-550	72-80	≥ 450	≥ 65	≥ 3	
H08*	540-595	78-86	≥ 475	≥ 69	≥ 3	
H10*	565-620	82-90	≥ 505	≥ 73	≥ 2	

* According to ASTM B888

Electrical conductivity



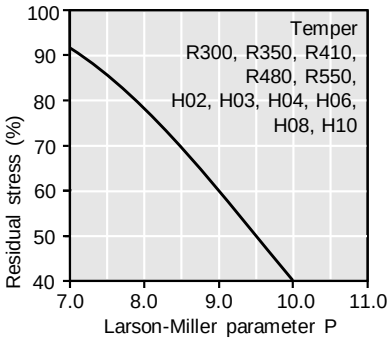
Bendability (Strip thickness t ≤ 0.5 mm) ◇○ 90° ◆● 180°



Wieland-M15

CuZn15 | C23000 | CW502L

Thermal stress relaxation

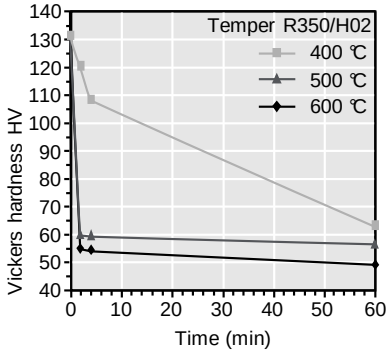


Stress remaining after thermal relaxation as a function of Larson-Miller parameter P
(F. R. Larson, J. Miller, Trans ASME74 (1952) 765–775) given by:
P = (20 + log(t))*(T + 273)*0.001.
Time t in hours, temperature T in ℃.
Example: P = 9 is equivalent to 1,000 h/118 ℃.
Measured on rolled to temper specimens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

Wieland-Werke AG | Graf-Arco-Straße 36 | 89079 Ulm | Germany
info@wieland.com | wieland.com
Wieland Rolled Products North America | 4803 Olympia Park Plaza, Suite 3000 | Louisville, Kentucky | USA
infona@wieland.com | wieland-rolledproductsna.com

06.21 | RP.TMA.UL/Bm