

Wieland-M42

CuZn42 | CW510L

CuZn42 is a lead-free brass alloy, that is highly suitable for machining due to its two-phase microstructure. This alloy is, therefore, a perfect option to replace common lead-containing machining brasses, particularly when lead content is required to be lower than 0.05 %.

Chemical composition (Reference)

Cu	58 %
Zn	remainder

Fabrication properties

Machinability	90 %**
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** Value derived from planing test
(Reference CuZn39Pb2 = 100 %)

Physical properties (Reference values at room temperature)

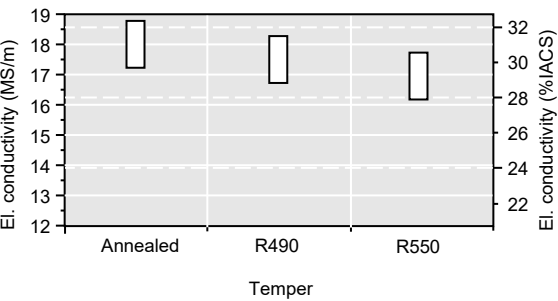
Electrical conductivity	18 MS/m	31 %IACS
Thermal conductivity	113 W/(m·K)	65 Btu·ft/(ft ² ·h·°F)
Coefficient of electrical resistance*	1.1 10 ⁻³ /K	0.6 10 ⁻³ /°F
Coefficient of thermal expansion*	20.3 10 ⁻⁶ /K	11.3 10 ⁻⁶ /°F
Density	8.40 g/cm ³	0.303 lb/in ³
Modulus of elasticity	105 GPa	15,000 ksi
Specific heat	0.377 J/(g·K)	0.090 Btu/(lb·°F)
Poisson's ratio	0.34	0.34

* Between 0 and 300 °C

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	%	
Annealed	(400-470)	(58-69)	(≤ 180)	(≤ 27)	(≥ 37)	85 - 125
R490	490-560	71-82	≥ 360	≥ 52	≥ 17	(160-190)
R550	550-650	79-95	≥ 450	≥ 65	≥ 10	(175-205)

Electrical conductivity



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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 .

Information on the planing test

The machinability value expressed as a percentage is based on data generated in a so-called planing test. In this test, a cutting tool is guided across the material surface while various parameters are measured, including surface roughness, bending moment, chip morphology, as well as burr formation. The reference material used for comparison is Wieland-Z30 (CuZn39Pb2) in the hard temper.

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 0.20 mm, thinner gauges on request
- Strip width from 3 mm, however min. 10 x strip thickness

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