Wieland-Z30

CuZn39Pb2 | C37700 | CW612N

C37700, commonly known as Forging Brass, exhibits a three-phase microstructure with a significant amount of beta crystals that lead to very good hot formability, but cold formability is limited. The beta phase further supports the positive effect of Pb content on machinability which comes close to free-cutting brass. Applications of C37700 comprise of watch and clock parts, precision mechanical components, and milling plates.

Chemical composition (Reference)	
Cu	59 %
Pb	1.8 %
Zn	remainder

Fabrication properties	
Machinability	100 %**

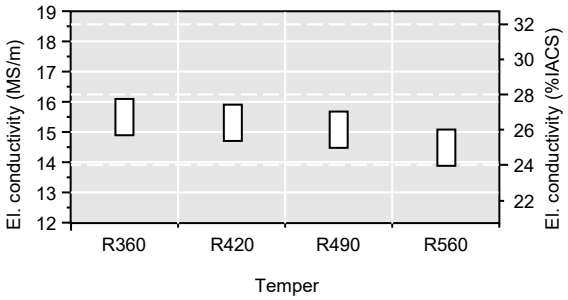
** Value derived from planing test
(Reference CuZn39Pb2 = 100 %)

Physical properties (Reference values at room temperature)				
Electrical conductivity	15	MS/m	26	%IACS
Thermal conductivity	109	W/(m·K)	63	Btu·ft/(ft²·h·°F)
Coefficient of electrical resistance*	1.6	10^{-3}/K	0.9	10^{-3}/°F
Coefficient of thermal expansion*	21.1	10^{-6}/K	11.7	10^{-6}/°F
Density	8.43	g/cm³	0.305	lb/in³
Modulus of elasticity	102	GPa	14,800	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**	**%**	
R360	360-440	52-64	≤ 270	≤ 39	≥ 30	(90-120)
R420	420-500	61-73	≥ 270	≥ 39	≥ 12	(120-150)
R490	490-570	71-83	≥ 420	≥ 61	-	(150-180)
R560	≥ 560	≥ 81	≥ 510	≥ 74	-	(≥ 175)

Electrical conductivity



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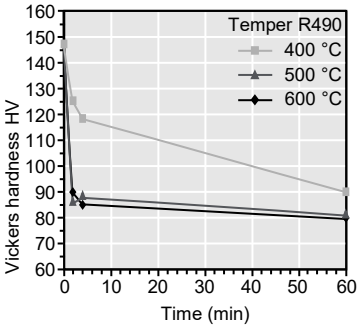
Fatigue strength

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.

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 0.20 mm
- Strip width from 3 mm, however min. 10 x strip thickness

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