CW510L - CuZn42

Good machinability, very good hot working properties.
Available in bars / hollow bars / wire

All data are reference values and are not to be used as a basis for constructive stress calculation.

Designations

EN 12163 Bars (General Use)
EN 12164 Bars
EN 12165 Forgings
EN 12166 Wire
EN 12167 Profiles and edged bars
EN 12168 Hollow bars
EN 12420 Forgings
UNS C28500

Chemical composition

Cu	57.0-59.0	Weight-%
Pb	≤ 0.2	Weight-%
Zn	Rest	Weight-%

Workability

Machinability	■	■	■		
Hot Forming	■	■	■	■	■
Cold Forming	■	■	■		
Mechanical Polishing	■	■	■	■	■
Soft Solderability	■	■	■	■	■
Hard Solderability	■	■	■	■	

Physical properties

Density (20°C)	8.4	g/cm³
Fusion temperature	870-890	°C
Thermal conductivity	112	W/mK
Thermal capacity	381	J/kgK
Electrical conductivity	15,5 27	MS/m % IACS
Young's modulus (20°C, annealed)	106	GPa
Thermal expansion coefficient	21.2	$10^{-6}K^{-1}$

Microstructure

Heterogeneous structure of α- and β-mixed crystals. Due to the fact that lead is largely absent, a different machinability can be expected than with leaded brass. Due to the great dependence on the machining process, it is not meaningful to provide a machining index value.

Corrosion resistance

Depending on the material condition, the area of application, the medium and heat treatment, CW510L is not resistant to acids and humid ammonia, especially in the non-stress-relieved state (stress corrosion cracking).

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Application examples

Fittings, sanitary industry (Pb ≤ 0.2%)

Construction industry

Electrical engineering (Pb ≤ 0.1%)

Mechanical and vehicle engineering

Air-conditioning technology

Mechanical properties at room temperature

EN 12164 (Rod for free machining purposes)											
Condition	Diameter mm da - a	Width across-flats mm da - a	Ultimate Tensile Strength R_m MPa min.	Yield Strength $R_{p\,0,2}$ MPa min.	Yield Strength $R_{p\,0,2}$ MPa max.	Elongation A_{100mm} % min.	Elongation $A_{11,3}$ % min.	Elongation A % min.	Hardness Brinell HBW min.	Hardness Brinell HBW max.
M	all dimensions		as manufactured							
R360	6 - 80	5 - 60	360		320		15	20		
H070									90	125
R410	2 - 40	2 - 35	430	220		6	8	10		
H100									110	160
R500	2-14	2 - 10	500	350			3	5		
H120									135	

EN 12166 (Wire for general purposes)									
Condition	Diameter mm da - a	Ultimate Tensile Strength MPa min.	Yield Strength $R_{p\,0,2}$ MPa min.	Yield Strength $R_{p\,0,2}$ MPa max.	Elongation A_{100mm} % min.	Elongation $A_{11,3}$ % min.	Elongation A % min.	Hardness Brinell HBW min.	Hardness Brinell HBW max.
M	all dimensions	as manufactured							
R360	6 - 20	360		320		15	20		
H095								95	130
R430	0.5 - 14	430	220		6	8	10		
H115	1.5 - 14							115	170
R500	0.5 - 8	500	350		2	5			
H145	1.5 - 8							145	

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EN 12167 (Profile sand bares for general purposes)									
Condition	Diameter mm da - a	Ultimate Tensile Strength MPa min.	Yield Strength $R_{p\,0,2}$ MPa min.	Yield Strength $R_{p\,0,2}$ MPa max.	Elongation A_{100mm} % min.	Elongation $A_{11,3}$ % min.	Elongation A % min.	Hardness Brinell HBW min.	Hardness Brinell HBW max.
M	all dimensions	as manufactured							
R360	6 - 40	360		320		15	20		
H090								90	125
R430	3 - 20	430	220		6	8	10		
H110								110	160
R500	3 - 10	500	350		2	5	8		
H135								135	

EN 12168 (Hollow rod for free machining purposes)									
Condition	Diameter mm da - a	Ultimate Tensile Strength – MPa min.	Yield Strength $R_{p\,0,2}$ MPa min.	Yield Strength $R_{p\,0,2}$ MPa max.	Elongation A % min.	Hardness Brinell HBW min.	Hardness Brinell HBW max.	Hardness Vickers HV min.	Hardness Vickers HV max.
M	all dimensions	as manufactured							
R360	2 - 40	360		320	20				
H090						90	125	100	135
R430	2 - 15	430	220		10				
H110						110	160	120	170
R500	2 - 7	500	350		8				
H135						135		145	

This data sheet is for general information only and is not subject to revision.

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