

CW509L - CuZn40



Good chip removal, good cold workability

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 for General Purposes

EN 12164 Bars

EN 12165 Forgings

EN 12166 Wire

EN 12167 Profiles and edged bars

EN 12168 Hollow bars

EN 12420 Forgings

Chemical composition

Cu	59.0-61.5	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)	8.41	g/cm ³
Fusion temperature	880-910	°C
Thermal conductivity	117	W/mK
Thermal capacity	375	J/kgK
Electrical conductivity	15 26	MS/m % IACS
Young's modulus (20°C, annealed)	102	GPa
Thermal expansion coefficient	20.3	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, CW509L is not resistant to acids and humid ammonia, especially in the non-stress-relieved state (stress corrosion cracking).

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Application examples

Valves and fittings in the sanitary industry

Turned parts

Parts for electrical engineering

Mechanical and vehicle engineering

Mechanical properties at room temperature

EN 12164 (Rod for free machining purposes)										
Condition	Diameter	Width across- flats	Ultimate Tensile Strength R _m	Yield Strength R _{p0,2}		Elongation			Hardness Brinell	
	mm	mm	MPa	MPa		A _{100mm}	A _{11,3}	A	HBW	
	da - a	da - a	min.	min.	max.	%	%	%	min.	max.
	min.	min.	min.	min.	min.	min.	min.	min.	min.	max.
M	all dimensions		as manufactured							
R360	6 - 80	5 - 60	360		300		15	20		
H070									70	100
R410	2 - 40	2 - 35	410	230		8	10	12		
H100									100	145
R500	2-14	2 - 10	500	350		3	5	8		
H120									120	

EN 12166 (Wire for general purposes)									
Condition	Diameter mm da - a	Ultimate Tensile Strength R _m MPa min.	Yield Strength R _{p0,2} MPa		Elongation			Hardness Brinell	
			min.	max.	A _{100mm}	A _{11,3}	A	min.	max.
					%	%	%		
					min.	min.	min.		
M	all	as manufactured							
R360	0.5 - 20	360		300	10	15	20		
H080	1.5 - 20							80	110
R410	0.5 - 14	410	220		8	10	12		
H100	1.5 - 14							100	160
R500	0.5 - 8	500	350		2	5			
H130	1.5 - 8							130	

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EN 12167 (Profile sand bares for general purposes)									
Condition	Diameter mm da - a	Ultimate Tensile Strength R _m MPa min.	Yield Strength R _{p 0,2} MPa min. max.		Elongation			Hardness Brinell HBW min. max.	
					A _{100mm}	A _{11,3}	A		
			%	%	%				
			min.	min.	min.				
M	all	as manufactured							
R360	3 - 20	360		300	10	15	20		
H070								70	100
R410	3 - 10	410	220		8	10	12		
H100								100	145
R500	3 - 10	500	350		2	5	8		
H120								120	

EN 12168 (Hollow rod for free machining purposes)									
Condition	Diameter mm da - a	Ultimate Tensile Strength	Yield Strength		Elongatio n	Hardness Brinell		Hardness Vickers	
		R _m	R _{p0,2}		A				
		MPa	MPa		%	HBW		HV	
		min.	min.	max.	min.	min.	max.	min.	max.
M	all	as manufactured							
R360	2 - 20	360		300	20				
H070						70	100	80	110
R410	2 - 10	410	250		12				
H100						100	145	110	155
R500	2 - 7	500	350		8				
H120						120		130	

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