

CW617N - CuZn40Pb2

Very 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 12164 Bars
- EN 12165 Forgings
- EN 12166 Wire
- EN 12167 Profiles and edged bars
- EN 12168 Hollow bars
- EN 12420 Forgings
- ASTM B124 (UNS C37700)

Chemical composition

Cu	57.0-59.0	Weight-%
Pb	1.6-2.2	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	880-895	°C
Thermal conductivity	113	W/mK
Thermal capacity	380	J/kgK
Electrical conductivity	14	MS/m
	24	% IACS
Young's modulus (20°C, annealed)	96	GPa
Thermal expansion coefficient	21.1	10 ⁻⁶ K ⁻¹

Microstructure

Heterogeneous structure of α - and β' -mixed crystals. Lead is insoluble in this alloy and precipitates in finely distributed form at the grain boundaries. Lead has a grain refining effect on the microstructure and improves machinability.

Corrosion resistance

Depending on the material condition, the area of application, the medium and heat treatment, CW617N 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
 Shaped turned parts
 Electrical engineering
 Mechanical and vehicle engineering
 Precision engineering, optics

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 $R_{p0,2}$ MPa		Elongation			Hardness Brinell	
						A_{100mm}	$A_{11,3}$	A	HBW	
				min.	max.	% min.	% min.	% min.	min.	max.
M	all dimensions		as manufactured							
R360	6 - 80	5 - 60	360		350		15	20		
H090								90	125	
R430	2 - 40	2 - 35	430	220		6	8	10		
H110								110	160	
R500	2-14	2 - 10	500	350			3	5		
H135								135		

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		
					A_{100mm}	$A_{11,3}$	A	HBW		
			min.	max.	% min.	% min.	% min.	min.	max.	
M	all	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 R_m MPa min.	Yield Strength $R_{p0,2}$ MPa		Elongation			Hardness Brinell HBW	
			min.	max.	A_{100mm} %	$A_{11,3}$ %	A %	min.	max.
					min.	min.	min.		
M	all	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 R_m MPa min.	Yield Strength $R_{p0,2}$ MPa		Elongatio n A % min.	Hardness Brinell HBW		Hardness Vickers HV	
			min.	max.		min.	max.	min.	max.
M	all	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.