

Datasheet: EN CuZn38Pb2 / CW608N Brass with Lead Rods for free machining purposes Alumeco ApS 06-05-2025				Internal alloy name: CW608N Metal: Brass Chemical Symbol: CuZn38Pb2 EN: EN CuZn38Pb2 UNS: C37700 SIS: 5168 GB: HPb60-2 JIS: C3561 Also known as: - Alloy type: Brass with lead											
Main usage: • Wacht parts • Precision mechanical and optical devices • Fittings				Important norms and literature: General Standards EN 12164:2024: Copper and copper alloys – Rod for free machining purposes Geometric Tolerance EN 12164:2024: Copper and copper alloys – Rod for free machining purposes EN 12165:2024: Copper and copper alloys – Wrought and unwrought forging stock											
Main properties: • Excellent machinability • Good cold and hot formability • Great soldering capability															
Chemical composition in %: EN 12164:2024															
Cu		Al		Fe		Ni		Pb		Sn		Zn		Others	
60,0 – 61,0		Max. 0,05		Max. 0,2		Max. 0,3		1,6 – 2,5		Max. 0,2		Remaining		Max. 0,2	
Mechanical properties: EN 12164 / EN 12165															
Material Condition		Diameter / Bar thickness		Width across flats		Tensile Strength Rm		0,2% Proof Strength Rp _{0,2}		Elongation Min. %		Hardness HBW		Tolerance Class	
		mm		mm		MPa		MPa		A _{11,3} A					
≤ 80 mm Rods: EN 12163:2024															
R360		6 – 80		5 – 60		360		Max. 300		15		20		-	
H070		6 – 80		5 – 60		-		-		-		-		70 – 100	
R410		2 – 40		2 – 35		410		Min. 230		10		12		-	
H100		2 – 40		2 – 35		-		-		-		-		100 – 145	
R500		2 – 14		2 – 10		500		Min. 350		5		8		-	
H120		2 – 14		2 – 10		-		-		-		-		Min. 120	
> 80 mm Rods: EN 12165:2024															
M		80 < D		-		As manufactured								A	
* Information values only;															
Physical properties:															
Density (20 °C)		Solidification range		Electrical conductivity		Thermal conductivity (20 °C)		Thermal expansion (20 - 300 °C)		Annealing temperature		E – modulus (20 °C)			
g/cm ³		°C		%IACS		W/m K		µm m ⁻¹ K ⁻¹		°C		N / mm ²			
8,4		885 – 900		24		110		20,7		425 - 500		102000			
Properties and information's (3 Excellent; 2 Good; 1 Poor/not recommendable)															
Machinability (Zerspanbarkeitsindex): 90* *(CuZn39Pb3 = 100) Forming Methods: Hot Formability: 2 Cold Formability: 2 Corrosion resistance: Atmosphere: 2 Waters and alkaline: 2 Acids, Ammonia, Seawater etc.: 1						Joining Methods: Soldering: 2-3 Brazing: 1-2 Oxy-acetylene welding: 1 Gas-shielded arc welding: 1 TIG welding: 1 MIG welding: 1 Gluing/adhesion: 2						Surface Treatment: Polishing: Mechanical: 2 Electrolytic/chemical: 1-2 Galvanizing: 2-3 Hot Dipping: 2-3			

Tolerances for Rods of CW608N

Dimensions: EN 12164:2024* Tolerances on diameter of round rod		Dimensions in millimetres
Nominal diameter	Tolerances Class B	
$2 \leq D \leq 3$	0 - 0,025	
$3 < D \leq 6$	0 - 0,030	
$6 < D \leq 10$	0 - 0,036	
$10 < D \leq 18$	0 - 0,043	
$18 < D \leq 30$	0 - 0,052	
$30 < D \leq 50$	-	
$50 < D \leq 80$	-	

* Values are referred from Table 16 of EN 12164:2024

Dimensions: EN 12164:2024* Tolerances on width across-flats of regular polygonal rod		Dimensions in millimetres
Nominal width across-flats	Tolerances	
$2 \leq W \leq 3$	0 - 0,06	
$3 < W \leq 6$	0 - 0,08	
$6 < W \leq 10$	0 - 0,09	
$10 < W \leq 18$	0 - 0,11	
$18 < W \leq 30$	0 - 0,13	
$30 < W \leq 50$	0 - 0,16	
$50 < W \leq 60$	0 - 0,19	

* Values are referred from Table 17 of EN 12164:2024

Dimensions: EN 12164:2024* Tolerances on straightness of rod			Dimensions in millimetres
Nominal diameter	Maximum deviation from straightness (See Figure 1 in EN 12164:2024)		
	h_2 depth of arch in any length l_2 of 400 mm	h_1 depth of arch in any length l_1 of 1000 mm	
$10 \leq D \leq 50$	0,4	1,0	

* Values are referred from Table 18 of EN 12164:2024

Dimensions: EN 12164:2024* Corner radii for square and polygonal rod			Dimensions in millimetres
Nominal diameter or width across-flats	Preferred lengths	Tolerance on length	
$2 \leq w \leq 30$	3000 or 4000	± 50	
$30 < w \leq 50$	3000 or 4000	± 100	
$50 < w \leq 80$	3000	± 100	

* Values are referred from Table 19 of EN 12164:2024

Dimensions: EN 12164:2024* Corner radii for square, hexagonal and octagonal rod			Dimensions in millimetres
Nominal width across-flats	Radii for sharp and rounded corners		
	Sharp max.	Rounded range	
$2 \leq w \leq 3$	0,2	0,2 – 0,3	
$3 < w \leq 6$	0,3	0,3 – 0,5	
$6 < w \leq 10$	0,4	0,4 – 0,8	
$10 < w \leq 18$	0,5	0,5 – 1,2	
$18 < w \leq 30$	0,6	0,6 – 1,8	
$30 < w \leq 50$	0,7	0,7 – 2,8	
$50 < w \leq 80$	0,8	0,8 – 4,0	

* Values are referred from Table 20 of EN 12164:2024

Dimensions: EN 12164:2024*	
Maximum twist of square, hexagonal and octagonal rod	
Dimensions in millimetres	
Nominal width across-flats W	Maximum permitted twist V in any 1 m length of rod (mm)
$10 \leq W \leq 18$	1,0
$18 < W \leq 30$	2,0
$30 < W \leq 60$	3,0

* Values are referred from Table 21 of EN 12164:2024

Dimensions: EN 12164:2024*	
Sampling rate	
Nominal diameter or width across-flats w (mm)	Mass of inspection lot for one test sample kg
$D/W \leq 25$	≤ 1000
$25 < D/W$	≤ 2000

* Values are referred from Table 22 of EN 12164:2024

Dimensions: EN 12165:2024*	
Tolerances on diameter of round forging stock	
Dimensions in millimetres	
Nominal diameter	Tolerances Class A
$80 < D \leq 120$	± 2
$120 < D \leq 160$	$\pm 2,5$

* Values are referred from Table 10 of EN 12165:2024

Dimensions: EN 12165:2024*		
Tolerances on straightness of round forging stock		
Dimensions in millimetres		
Nominal diameter	Maximum deviation from straightness (See Figure 1 in EN 12164:2024)	
	h_2 depth of arch in any length l_2 of 400 mm	h_1 depth of arch in any length l_1 of 1000 mm
Straightness tolerances for rods over 60 mm diameter shall be agreed between the involved parties		