

Datasheet: EN CuZn39Pb3 / CW614N Brass with Lead Rods for free machining purposes Alumeco ApS 06-05-2025				Internal alloy name: CW614N Metal: Brass Chemical Symbol: CuZn39Pb3 EN: EN CuZn39Pb3 UNS: C38500 SIS: SS 5170 GB: - JIS: C3603 Also known as: MS58 / Messing 58 Alloy type: Brass with lead				
Main usage: Faucets, fittings and sanitary industry Machined parts, screws, nuts and bolts Components for watches Electrical parts, valves and electronics				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 Reduced chip dimensions								
Chemical composition in %: EN 12164:2024								
Cu	Al	As	Fe	Ni	Pb	Sn	Zn	Others
57,0 – 59,0	Max. 0,05	-	Max. 0,3	Max. 0,3	2,5 – 3,5	Max. 0,3	Remaining	Max. 0,2
Mechanical properties: EN 12164/12165								
Material Condition	Diameter / Bar thickness	Width across flats	Tensile Strength Rm	0,2% Proof Strength Rp _{0,2}	Elongation		Hardness HBW	Tolerance Class
	mm	mm	MPa	MPa	A _{11,3} % Min.	A % Min.		
≤ 80 mm Rods: EN 12164								
R360	6 – 80	5 – 60	360	Max. 350	15	20	-	B
H090	6 – 80	5 – 60	-	-	-	-	90 – 125	
R430	2 – 60	2 – 40	430	Min. 220	10	10	-	
H110	2 – 60	2 – 40	-	-	-	-	110 – 160	
R500	2 - 14	2 - 10	500	Min. 350	5	5	-	
H135	2 - 14	2 - 10	-	-	-	-	Min. 135	
> 80 mm Rods: EN 12165								
M	80 < D	-	-	-	-	-	-	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		
8,47	875	25	117	21,4	450 - 600	97000		
Properties and information's (3 Excellent; 2 Good; 1 Poor/not recommendable)								
Machinability (Zerspanbarkeitsindex): 85* *(CuZn39Pb3 = 100)			Joining Methods: Soldering: 3 Brazing: 2 Oxy-acetylene welding: 1 Gas-shielded arc welding: 1 TIG welding: 1 MIG welding: 1 Gluing/adhesion: 2			Surface Treatment: Polishing: Mechanical: 2-3 Electrolytic/chemical: 1 Galvanizing: 2-3 Hot Dipping: 2-3		
Forming Methods: Hot Formability: 2 Cold Formability: 1								
Corrosion resistance: Atmosphere: 2 Waters and alkaline: 1-2 Acids, Ammonia, Seawater etc.: 1								

Tolerances for Rods of CW614N

Dimensions: EN 12164:2024*		Dimensions in millimetres
Tolerances on diameter of round rod		
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*		Dimensions in millimetres
Tolerances on width across-flats of regular polygonal rod		
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*			Dimensions in millimetres
Tolerances on straightness of rod			
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*			Dimensions in millimetres
Corner radii for square and polygonal rod			
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*			Dimensions in millimetres
Corner radii for square, hexagonal and octagonal rod			
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		