

Datasheet: EN CuZn38As / CW511L Classic Brass Profiles, Bars & Rods for general purposes Alumeco ApS 06-05-2025		Internal alloy name: Metal: Chemical Symbol: EN: UNS: SIS: GB: JIS: Also known as: Alloy type:	CW511L Brass CuZn38As EN CuZn38As C27453 SS 5150 - C2720 - Classic Brass
Main usage: - Approved in Northern America for contact with drinking water - Faucets and hoses	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: - Low lead content and resistant to dezincification - Great formability properties - Good soldering properties			

Chemical composition in %: EN 12164:2024:

Cu	Al	As	Fe	Ni	Pb	Sn	Zn	Others
61,5 – 63,5	Max. 0,05	0,02 – 0,15	Max. 0,1	Max. 0,3	Max. 0,2	Max. 0,1	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		Hardness HBW	Tolerance Class
	mm	mm	MPa	MPa	A _{11,3} % Min.	A % Min.		
≤ 80 mm Rods: EN 12164								
R280	6 - 80	5 – 60	280	Max. 200	25	30	-	B
H070	6 - 80	5 – 60	-	-	-	-	90 – 125	
R320	6 - 60	5 – 50	320	Min. 200	15	20	-	
H090	6 - 60	5 – 50	-	-	-	-	110 – 160	
R400	4 - 15	4 – 13	400	Min. 250	5	8	-	
H105	4 - 15	4 – 13	-	-	-	-	Min. 135	
> 80 mm Rods: EN 12165								
M	80 < D	-	-	-	-	-	-	A

* Information values only;

Physical properties:

Density (20 °C) g/cm ³	Solidification range °C	Electrical conductivity %IACS	Thermal conductivity (20 °C) W/m K	Thermal expansion (20 - 300 °C) μm m ⁻¹ K ⁻¹	Annealing temperature °C	E – modulus (20 °C) N / mm ²
8,41	880 - 910	28	120	21,7	450 – 550	103400

Properties and information's (3 Excellent; 2 Good; 1 Poor/not recommendable)

Machinability (Zerspanbarkeitsindex): 35* *(CuZn39Pb3 = 100) Forming Methods: Hot Formability: 2 Cold Formability: 3 Corrosion resistance: Atmosphere: 2 Waters and alkaline: 2 Acids, Ammonia, Seawater etc.: 1	Joining Methods: Soldering: 3 Brazing: 2 Oxy-acetylene welding: 1 Gas-shielded arc welding: 2 TIG welding: 1-2 MIG welding: 1-2 Gluing/adhesion: 2	Surface Treatment: <u>Polishing:</u> Mechanical: 3 Electrolytic/chemical: 2 <u>Galvanizing:</u> 3 <u>Hot Dipping:</u> 3
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Tolerances for Rods of CW511L

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		