

Datasheet: EN CuZn21Si3P / CW724R Brass with other alloying elements Rods for free machining purposes Alumeco ApS 06-05-2025		Internal alloy name: Metal: Chemical Symbol: EN: UNS: SIS: GB: JIS: Also known as: Alloy type:	CW724R Brass CuZn21Si3P EN CuZn21Si3P C69300 - - - Ecobrass Brass with other alloying elements
Main usage: - Sanitary fixtures/faucets - Plumbing and piping - Automotive and naval parts	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: - Great machinability and good recyclability - Great resistance against dezincification and corrosion - High hardness and tensile strength - Approved contact with drinking water			

Chemical composition in %: EN 12164:2024

Cu	Al	Fe	Mn	Ni	P	Pb	Si	Sn	Zn	Other
75 – 77	Max. 0,05	Max. 0,3	Max. 0,05	Max. 0,2	0,02 – 0,1	Max. 0,10	2,7 – 3,5	Max. 0,3	Remaining	Max. 0,2

Mechanical properties: EN 12164

Material Condition	Diameter	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							
R500	6 – 80	5 – 80	Min. 500	Max. 450	-	15	-	B
H130	6 – 80	5 – 80	-	-	-	-	130 – 180	
R600	10 – 40	15 – 40	Min. 600	Min. 300	-	12	-	
H150	10 – 40	15 – 40	-	-	-	-	150 – 220	
R670	2 – 20	2 – 15	Min. 670	Min. 400	9	10	-	
H170	2 – 20	2 – 15	-	-	-	-	Min. 170	
> 80 mm Rods: EN 12165								
M	80 < D	-	As manufactured					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
8,25	880	7,8	33	21,4	530 - 650	100000

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

Machinability (Zerspanbarkeitsindex): 80* *(CuZn39Pb3 = 100) Forming Methods: Hot Formability: 2 Cold Formability: 1-2 Corrosion resistance: Atmosphere: 2 Waters and alkaline: 2 Acids, Ammonia, Seawater etc.: 1	Joining Methods: Soldering: 3 Brazing: 2 Oxy-acetylene welding: 2 Gas-shielded arc welding: 2 TIG welding: 2 MIG welding: 2 Gluing/adhesion: 2	Surface Treatment: <u>Polishing:</u> Mechanical: 2-3 Electrolytic/chemical: 1 <u>Galvanizing:</u> 2-3 <u>Hot Dipping:</u> 2-3
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Tolerances for Rods of CW724R

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			