

Datasheet: EN CuSn7Zn4Pb7-C / CC493K Classic Bronze Rolled product for general purposes Alumeco ApS 06-03-2025				Internal alloy name: CC493K Metal: Bronze Chemical Symbol: CuSn7Zn4Pb7-C EN: EN CuSn7Zn4Pb7-C-GC UNS: C93200 SIS: - GB: - JIS: - Also known as: RG7 / Gun metal / rødgods Alloy type: Classic bronze									
Main usage: Bearings and sliding elements Components for hydraulics, valves, bushings Friction rings/discs				Important norms and literature: General Standards EN 1982:2024: Copper and copper alloys – Ingots and castings Geometric Tolerance EN 1652:1997: Copper and copper alloys - Plate, sheet, strip and circles for general purposes									
Main properties: Excellent machinability Good wear resistance Good resistance to corrosion against air, water/seawater and some weak acids													
Chemical composition in %: EN 1982:2024													
Cu	Ni	P	Pb	Sn	Zn	Al	Fe	S	Sb	Si			
81,0 – 85,0	Max. 2,0	Max. 0,1	5,0 – 8,0	6,0 – 8,0	2,0 – 5,0	Max. 0,01	Max. 0,2	Max. 0,1	Max. 0,3	Max. 0,01			
Mechanical properties:													
Casting process and designation		Tensile Strength R_m N/mm² Min.		R_{p0,2} MPa Min.		Elongation A % Min.		Hardness HBW Min.					
		Continuous GC		260		120		12		70			
		Centrifugal GZ		260		120		12		70			
		* Information values only;											
Physical properties:													
Density (20 °C) g/cm³		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 / mm²	
8,83		860 - 1020		10		47		18		450 - 600		101000	
Properties and information's (3 Excellent; 2 Good; 1 Poor/not recommendable)													
Machinability (Zerspanbarkeitsindex): 85* *(CuZn39Pb3 = 100)				Joining Methods: Soldering: 2 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: 1-2 Electrolytic/chemical: 2 Galvanizing: 2 Hot Dipping: 2					
Forming Methods: Hot Formability: 1 Cold Formability: 1													
Corrosion resistance: Atmosphere: 2-3 Waters and alkaline: 2 Acids, Ammonia, etc.: 1													

Tolerances for Rolled Products of CC493K

Dimensions: EN 1652:1997*

Tolerances on thickness of hot rolled products (plate, sheet, strip and circles)

Tolerance on thickness for nominal widths w (mm)							
Nominal thickness t (mm)	$w \leq 700$		$700 < w \leq 1000$		$1000 < w \leq 1500$		$1500 < w$
	1)	2)	1)	2)	1)	2)	
$t \leq 2,5$	By agreement						By agreement
$2,5 < t \leq 5,0$	$\pm 0,25$	$\pm 0,30$	$\pm 0,30$	$\pm 0,35$	$\pm 0,35$	$\pm 0,45$	
$5,0 < t \leq 7,5$	$\pm 0,35$	$\pm 0,45$	$\pm 0,40$	$\pm 0,50$	$\pm 0,45$	$\pm 0,55$	
$7,5 < t \leq 10$	$\pm 0,45$	$\pm 0,60$	$\pm 0,50$	$\pm 0,65$	$\pm 0,55$	$\pm 0,75$	
$10 < t \leq 15$	$\pm 0,75$	$\pm 0,95$	$\pm 0,80$	$\pm 1,00$	$\pm 0,90$	$\pm 1,10$	
$15 < t \leq 25$	$\pm 0,95$	$\pm 1,20$	$\pm 1,05$	$\pm 1,30$	$\pm 1,30$	$\pm 1,60$	
$25 < t \leq 50$	$\pm 1,30$	$\pm 1,60$	$\pm 1,40$	$\pm 1,75$	$\pm 1,50$	$\pm 1,90$	
$50 < t$	$\pm 1,50$	$\pm 1,90$	$\pm 1,65$	$\pm 2,05$	$\pm 1,80$	$\pm 2,20$	

1) For all materials except for CuAl8Fe3 (CW303G), CuNi10FeIMN (CW352H), CuNi30MnIFe (CW354H) and CuZn20Al2As (CW702R).

2) For alloys CuAl8Fe3 (CW303G), CuNi10FeIMN (CW352H), CuNi30MnIFe (CW354H) and CuZn20Al2As (CW702R).

* Values are referred from Table 4 of EN 1652:1997

Dimensions: EN 1652:1997*

Tolerances on thickness of cold rolled products (sheet, strip and circles)

Nominal thickness t (mm)	Tolerance on thickness for nominal widths w (mm)			
	$w \leq 350$	350 < $w \leq 700$	700 < $w \leq 1000$	1000 < $w \leq 1250$
$0,1 < t \leq 0,2$	$\pm 0,018$	-	-	-
$0,2 < t \leq 0,3$	$\pm 0,022$	$\pm 0,03$	$\pm 0,04$	-
$0,3 < t \leq 0,4$	$\pm 0,025$	$\pm 0,04$	$\pm 0,05$	$\pm 0,07$
$0,4 < t \leq 0,5$	$\pm 0,030$	$\pm 0,05$	$\pm 0,06$	$\pm 0,08$
$0,5 < t \leq 0,8$	$\pm 0,040$	$\pm 0,06$	$\pm 0,07$	$\pm 0,09$
$0,8 < t \leq 1,2$	$\pm 0,050$	$\pm 0,07$	$\pm 0,09$	$\pm 0,10$
$1,2 < t \leq 1,8$	$\pm 0,060$	$\pm 0,08$	$\pm 0,10$	$\pm 0,11$
$1,8 < t \leq 2,5$	$\pm 0,070$	$\pm 0,09$	$\pm 0,11$	$\pm 0,13$
$2,5 < t \leq 3,2$	$\pm 0,080$	$\pm 0,10$	$\pm 0,13$	$\pm 0,17$
$3,2 < t \leq 4,0$	$\pm 0,10$	$\pm 0,12$	$\pm 0,15$	$\pm 0,20$
$4,0 < t \leq 5,0$	$\pm 0,12$	$\pm 0,14$	$\pm 0,17$	$\pm 0,23$
$5,0 < t \leq 6,0$	$\pm 0,14$	$\pm 0,16$	$\pm 0,20$	$\pm 0,26$
$6,0 < t \leq 7,0$	$\pm 0,16$	$\pm 0,19$	$\pm 0,23$	$\pm 0,29$
$7,0 < t \leq 8,0$	$\pm 0,18$	$\pm 0,22$	$\pm 0,26$	$\pm 0,32$
$8,0 < t \leq 9,0$	$\pm 0,20$	$\pm 0,25$	$\pm 0,29$	$\pm 0,35$
$9,0 < t \leq 10,0$	$\pm 0,22$	$\pm 0,28$	$\pm 0,32$	$\pm 0,38$

* Values are referred from Table 5 of EN 1652:1997

Dimensions: EN 1652:1997*

Tolerances on width of cold rolled strip

Nominal thickness t (mm)	Tolerance on thickness for nominal widths w (mm)						
	$w \leq 50$	50 < $w \leq 100$	100 < $w \leq 200$	200 < $w \leq 350$	350 < $w \leq 500$	500 < $w \leq 700$	700 < $w \leq 1250$
$0,1 < t \leq 1,0$	+0,2 0	+0,3 0	+0,4 0	+0,6 0	+1,0 0	+1,5 0	+2,0 0
$1,0 < t \leq 2,0$	+0,3 0	+0,4 0	+0,5 0	+1,0 0	+1,2 0	+1,5 0	+2,0 0
$2,0 < t \leq 2,5$	+0,5 0	+0,6 0	+0,7 0	+1,2 0	+1,5 0	+2,0 0	+2,5 0
$2,5 < t \leq 3,0$	+1,0 0	+1,1 0	+1,2 0	+1,5 0	+2,0 0	+2,5 0	+3,0 0
$3,0 < t \leq 4,0$	+2,0 0	+2,3 0	+2,5 0	+3,0 0	+4,0 0	+5,0 0	+6,0 0

* Values are referred from Table 6 of EN 1652:1997

Dimensions: EN 1652:1997* Tolerances on width of plate and sheet			
Nominal thickness t (mm)	Tolerance on thickness for nominal widths w (mm)		
	$w \leq 350$	$350 < w \leq 1250$	$1250 < w$
$t \leq 2,0$	+2,0 0	+6,0 0	By agreement
$2,0 < t \leq 5,0$	+4,0 0	+8,0 0	
$5,0 < t$	+8,0 0	+10,0 0	

* Values are referred from Table 7 of EN 1652:1997

Dimensions: EN 1652:1997* Tolerances on length of plate, sheet and strip cut for lengths up to 5000 mm		
Length	Nominal thickness (mm)	Tolerance on length (mm)
As Manufactured (ML)	$t \leq 15$	± 50
Fixed length (FL)	$t \leq 5,0$	+10 0
	$5,0 < t$	+15 0

* Values are referred from Table 8 of EN 1652:1997

Dimensions: EN 1652:1997* Squareness of cut plate and sheet			
Nominal width w (mm)	Maximum allowable differences between diagonals, for lengths l (mm)		
	$1000 < l \leq 2000$	$2000 < l \leq 3000$	$3000 < l$
$350 < w \leq 700$	6	7	8
$700 < w \leq 1250$	8	9	10
$1250 < w$	By agreement		

* Values are referred from Table 9 of EN 1652:1997

Dimensions: EN 1652:1997* Tolerances on diameter for circles			
Nominal diameter d (mm)	Maximum allowable differences between diagonals, for lengths l (mm)		
	$1000 < l \leq 2000$	$2000 < l \leq 3000$	$3000 < l$
$d \leq 500$	± 1	$\pm 1,5$	± 2
$500 < d \leq 1000$	± 2	$\pm 2,5$	± 3
$1000 < d \leq 2000$	± 3	$\pm 3,5$	± 4
$700 < d$	-	-	By agreement

* Values are referred from Table 10 of EN 1652:1997

Dimensions: EN 1652:1997* Edgewise curvature c		
Nominal width w (mm)	Maximum edgewise curvature c for thicknesses t (mm)	
	$t \leq 1,0$	$1,0 < t \leq 4,0$
$3 < w \leq 8$	12	-
$8 < w \leq 15$	8	10
$15 < w$	4	6

* Values are referred from Table 11 of EN 1652:1997