

Datasheet: EN CuZn20 / CW503L Classic Brass Rolled Products Alumeco ApS 16-01-2025				Internal alloy name: CW503L Metal: Brass Chemical Symbol: CuZn20 EN: EN CuZn20 UNS: C24000 SIS: SS 5114 GB: H80 JIS: C2400 Also known as: Tombak Alloy type: Classic Brass			
Main usage: Electrical components – Caps, motor parts Industrial – Lines and hoses Fasteners, clamps and switch contacts Metals goods – decorative, jewelry, instruments, watch parts				Important norms and literature: General Standards EN 1652:1998: Copper and copper alloys – Plate, sheet, strip and circles for general purposes Geometric Tolerance EN 1652:1998: Copper and copper alloys - Plate, sheet, strip and circles for general purposes			
Main properties: Great formability properties Good corrosion resistance against atmospheric and certain fluids Good welding and soldering properties Similar coloration to bronze							
Chemical composition in %: EN 1652:1998							
Cu	Al	Fe	Ni	Pb	Sn	Zn	Others
79,0 – 81,0	Max. 0,02	Max. 0,05	Max. 0,3	Max. 0,05	Max. 01	Remaining	Max. 0,1
Mechanical properties: EN 1652:1998							
Material Condition	Thickness range	Rm MPa	Rp0,2 MPa	A50mm for thickness up to 2,5 mm	A for thickness up to 2,5 mm	Hardness HBW	Hardness HV
	mm	(Min. – Max.)		%	%		
R320	0,2 – 5	320 – 400	Min. 200	20	28	-	85 – 120
R400	0,2 – 5	400 – 480	Min. 320	5	12	-	120 – 155
R480	0,2 – 2	Min. 480	Min. 440	-	-	-	155 ≤
* 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/cm³	°C	%IACS	W/m K	µm m ⁻¹ K ⁻¹	°C	N / mm²	
8,7	1025 - 1045	32,8	142	18,8	450 - 600	119000	
Properties and information's (3 Excellent; 2 Good; 1 Poor/not recommendable)							
Machinability (Zerspanbarkeitsindex): 25* *(CuZn39Pb3 = 100)		Joining Methods: Soldering: 3 Brazing: 3 Oxy-acetylene welding: 2 Gas-shielded arc welding: 2 TIG welding: 1-2 MIG welding: 1-2 Gluing/adhesion: 2			Surface Treatment: Polishing: Mechanical: 3 Electrolytic/chemical: 2 Galvanizing: 3 Hot Dipping: 3		
Forming Methods: Hot Formability: 2 Cold Formability: 3							
Corrosion resistance: Atmosphere: 2 Waters and alkaline: 2 Acids, Ammonia, Seawater etc.: 1							

Tolerances for Rolled Products of CW503L

Dimensions: EN 1652:1997*

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

Tolerance on thickness for nominal products (plate, sheet, strip and coil)							
Nominal thickness <i>t</i> (mm)	Tolerance on thickness for nominal widths <i>w</i> (mm)						1500 < <i>w</i>
	<i>w</i> ≤ 700		700 < <i>w</i> ≤ 1000		1000 < <i>w</i> ≤ 1500		
	1)	2)	1)	2)	1)	2)	
<i>t</i> ≤ 2,5	By agreement						By agreement
2,5 < <i>t</i> ≤ 5,0	± 0,25	± 0,30	± 0,30	± 0,35	± 0,35	± 0,45	
5,0 < <i>t</i> ≤ 7,5	± 0,35	± 0,45	± 0,40	± 0,50	± 0,45	± 0,55	
7,5 < <i>t</i> ≤ 10	± 0,45	± 0,60	± 0,50	± 0,65	± 0,55	± 0,75	
10 < <i>t</i> ≤ 15	± 0,75	± 0,95	± 0,80	± 1,00	± 0,90	± 1,10	
15 < <i>t</i> ≤ 25	± 0,95	± 1,20	± 1,05	± 1,30	± 1,30	± 1,60	
25 < <i>t</i> ≤ 50	± 1,30	± 1,60	± 1,40	± 1,75	± 1,50	± 1,90	
50 < <i>t</i>	± 1,50	± 1,90	± 1,65	± 2,05	± 1,80	± 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