

Datasheet: EN CuSn6 / CW452K Classic Bronze Rolled product for general purposes Alumecco ApS 06-03-2025		Internal alloy name: CW452K Metal: Bronze Chemical Symbol: CuSn6 EN: CuSn6 UNS: C51900 SIS: 5428 GB: QSn6-0,2 JIS: C5191 Also known as: - Alloy type: Classic Bronze					
Main usage: <ul style="list-style-type: none"> • Springs for contacts and electrical purposes • Switches and relays, terminals • Brushings and gears • Pump parts • Welding wire and electrodes 		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: <ul style="list-style-type: none"> • High strength and hardness • Good cold deformation capabilities • Great soldering and welding capabilities 							
Chemical composition in %: EN 1982:2024							
Cu	Sn	P	Fe	Ni	Pb	Zn	Other
Rest	5,5 – 7,0	0,01 – 0,4	Max. 0,1	Max. 0,2	Max. 0,02	Max. 0,2	Max. 0,2
Mechanical properties: EN 1652							
Material condition	Tensile strength R_m N/mm ² (MPa)	Yield stress $R_{r0,2}$ N/mm ² (MPa)	Elongation A_{50mm} Min. %	Elongation A Min. %	Hardness HBW		
R500	500 – 590	Min. 450	8	10	-		
R560	560 – 650	Min. 500	5	-	-		
R640	640 – 730	Min. 600	3	-	-		
<small>* Information values only;</small>							
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) $\mu\text{m m}^{-1} \text{K}^{-1}$	E – modulus (20 °C) N / mm ²		
8,82	900 – 1050	15,5	75	18,5	102000		
Properties and information's (3 Excellent; 2 Good; 1 Poor/not recommendable)							
Machinability (Zerspanbarkeitsindex): 20* <small>*(CuZn39Pb3 = 100)</small>		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 Electrolytic/chemical: 2 <u>Galvanizing:</u> 2-3 <u>Hot Dipping:</u> 2-3		
Forming Methods: Hot Formability: 1 Cold Formability: 2							
Corrosion resistance: Atmosphere: 2-3 Waters and alkaline: 2 Acids, Ammonia, etc.: 1							

Tolerances for Rolled Products of CW452K

Dimensions: EN 1652:1997*							
Tolerances on thickness of hot rolled products (plate, sheet, strip and circles)							
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), CuNi10Fe1Mn (CW352H), CuNi30Mn1Fe (CW354H) and CuZn20Al2As (CW702R).
2) For alloys CuAl8Fe3 (CW303G), CuNi10Fe1Mn (CW352H), CuNi30Mn1Fe (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 <i>t</i> (mm)	Tolerance on thickness for nominal widths <i>w</i> (mm)			
	<i>w</i> ≤ 350	350 < <i>w</i> ≤ 700	700 < <i>w</i> ≤ 1000	1000 < <i>w</i> ≤ 1250
0,1 < <i>t</i> ≤ 0,2	± 0,018	-	-	-
0,2 < <i>t</i> ≤ 0,3	± 0,022	± 0,03	± 0,04	-
0,3 < <i>t</i> ≤ 0,4	± 0,025	± 0,04	± 0,05	± 0,07
0,4 < <i>t</i> ≤ 0,5	± 0,030	± 0,05	± 0,06	± 0,08
0,5 < <i>t</i> ≤ 0,8	± 0,040	± 0,06	± 0,07	± 0,09
0,8 < <i>t</i> ≤ 1,2	± 0,050	± 0,07	± 0,09	± 0,10
1,2 < <i>t</i> ≤ 1,8	± 0,060	± 0,08	± 0,10	± 0,11
1,8 < <i>t</i> ≤ 2,5	± 0,070	± 0,09	± 0,11	± 0,13
2,5 < <i>t</i> ≤ 3,2	± 0,080	± 0,10	± 0,13	± 0,17
3,2 < <i>t</i> ≤ 4,0	± 0,10	± 0,12	± 0,15	± 0,20
4,0 < <i>t</i> ≤ 5,0	± 0,12	± 0,14	± 0,17	± 0,23
5,0 < <i>t</i> ≤ 6,0	± 0,14	± 0,16	± 0,20	± 0,26
6,0 < <i>t</i> ≤ 7,0	± 0,16	± 0,19	± 0,23	± 0,29
7,0 < <i>t</i> ≤ 8,0	± 0,18	± 0,22	± 0,26	± 0,32
8,0 < <i>t</i> ≤ 9,0	± 0,20	± 0,25	± 0,29	± 0,35
9,0 < <i>t</i> ≤ 10,0	± 0,22	± 0,28	± 0,32	± 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 <i>t</i> (mm)	Tolerance on thickness for nominal widths <i>w</i> (mm)						
	<i>w</i> ≤ 50	50 < <i>w</i> ≤ 100	100 < <i>w</i> ≤ 200	200 < <i>w</i> ≤ 350	350 < <i>w</i> ≤ 500	500 < <i>w</i> ≤ 700	700 < <i>w</i> ≤ 1250
0,1 < <i>t</i> ≤ 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 < <i>t</i> ≤ 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 < <i>t</i> ≤ 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 < <i>t</i> ≤ 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 < <i>t</i> ≤ 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