

Datasheet: EN Cu-ETP / CW004A 99,9% Pure Copper Profiles and bars for general purposes Alumeco ApS 13-01-2025				Internal alloy name: CW004A Metal: Copper Chemical Symbol: Cu-ETP EN: EN Cu-ETP UNS: C11000 SS: 5010 GB: TU00 / C10100 JIS: C1100 Also known as: - Alloy type: Electrical conducting					
Main usage: - Automotive - Cables and wires - Clamps, connectors and fasteners - Electrical installations - Electronic products - Industrial applications – Food & Chemical - Lightning rods and grounding				Important norms and literature: General Standards EN 12167:2016: Copper and copper alloys – Profiles and bars for general purposes Geometric Tolerance: EN 12167:2016: Copper and copper alloys – Profiles and bars for general purposes					
Main properties: - High thermal and electrical conductivity - Excellent forming properties									
Chemical composition in %: EN 12167:2016									
Cu		Bi		Pb		O		Other elements	
								Each	together
99,9		Max. 0,0005		Max. 0,005		Max. 0,040		-	0,03
Mechanical properties: EN 12167:2016									
Material Condition	Round, Square & Hexagonal	Thickness Range	Width range	Rm	Rp _{0,2}	A _{100mm}	A	Hardness HBW	Hardness HV
	mm	mm	mm	MPa	MPa	%	%		
D	2 - 160	0,5 - 40	1 - 200	COLD WORKED WITHOUT SPECIFIED PROPERTIES					
R250 (F25)	2 - 10	1 - 10	5 - 200	250	Min. 200	Min. 8	Min. 12	-	-
R280 (F30)	2 - 10	1 - 10	5 - 200	280	Min. 240	-	Min. 10	83 - 100	90 - 110
* 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/cm ³	°C	%IACS	W/m K	µm m ⁻¹ K ⁻¹	°C	N / mm ²			
8,93	1083	96,6 – 100	394	17	-	110.000			
Properties and information's (3 Excellent; 2 Good; 1 Poor/not recommendable)¹									
Machinability (Zerspanbarkeitsindex): 20* *(CuZn39Pb3 = 100)			Joining Methods: Soldering: 3 Brazing: 2 Oxy-acetylene welding: 1 Gas-shielded arc welding: 1 TIG welding: 1 MIG welding: 1 Spot/seam welding: 1 Butt welding: 2 Gluing/adhesion: 2				Surface Treatment: Polishing: Mechanical: 2 Electrolytic/chemical: 3 Galvanizing: 3 Hot Dipping: 3		
Forming Methods: Hot Formability: 2 Cold Formability: 3									
Corrosion resistance: Atmosphere: 2 Waters and alkaline: 2 Acids, Ammonia, Seawater: 1									
¹Information extracted from Kupferverband;									

Tolerances for Bars of CW004A

Dimensions: EN 12167:2016*

Tolerances on width and thickness of bar

Nominal thickness t (mm)	Tolerance on width	Tolerance on thickness for range of thickness (mm)					
		3 < t ≤ 6	6 < t ≤ 10	10 < t ≤ 18	18 < t ≤ 30	30 < t ≤ 50	50 < t ≤ 60
Class A tolerance							
3 ≤ t ≤ 18	± 0,27	± 0,18	± 0,22	± 0,27	-	-	-
18 < t ≤ 30	± 0,33	± 0,18	± 0,22	± 0,27	± 0,33	-	-
30 < t ≤ 50	± 0,62	± 0,22	± 0,27	± 0,33	± 0,45	± 0,62	-
50 < t ≤ 80	± 1,20	± 0,27	± 0,33	± 0,45	± 0,52	± 0,74	± 1,00
80 < t ≤ 120	± 2,20	± 0,33	± 0,45	± 0,52	± 0,74	± 1,00	± 1,20
Class B tolerance							
3 ≤ t ≤ 18	± 0,15	± 0,10	± 0,12	± 0,15	-	-	-
18 < t ≤ 30	± 0,22	± 0,10	± 0,12	± 0,15	± 0,22	-	-
30 < t ≤ 50	± 0,30	± 0,13	± 0,15	± 0,18	± 0,22	± 0,30	-
50 < t ≤ 80	± 0,37	± 0,16	± 0,18	± 0,22	± 0,30	± 0,37	-
80 < t ≤ 120	± 0,45	± 0,18	± 0,22	± 0,27	± 0,35	± 0,45	-
Class C tolerance							
3 ≤ t ≤ 18	± 0,10	± 0,07	± 0,09	± 0,10	-	-	-
18 < t ≤ 30	± 0,15	± 0,07	± 0,09	± 0,10	± 0,15	-	-
30 < t ≤ 50	± 0,20	± 0,09	± 0,10	± 0,12	± 0,15	± 0,20	-
50 < t ≤ 80	± 0,25	± 0,11	± 0,12	± 0,15	± 0,20	± 0,25	-
80 < t ≤ 120	± 0,30	± 0,12	± 0,15	± 0,18	± 0,23	± 0,35	-

* Values are referred from Table 17 of EN 12167:2016

Dimensions: EN 12167:2016*

Tolerances on length of bar

Nominal width w (mm)	Preferred (available) lengths (mm)	Tolerance on length (mm)
3 ≤ w ≤ 18	3000, 4000	± 50
18 < w ≤ 30	3000, 4000	± 100
30 < w ≤ 50	2000, 3000, 4000	± 150
50 < w ≤ 80	2000, 3000	± 200
80 < w ≤ 120	1000, 2000	± 200

* Values are referred from Table 18 of EN 12167:2016

Dimensions: EN 12167:2016*

Tolerances on straightness of bar, for widths 10 mm and over

Tolerance class	Maximum deviation from straightness (mm)	
	Localized over any 400 mm length	Over whole length L of bar in metres (L ≥ 1m)
A	2,4	6,0 * L
B	1,6	4,0 * L
C	0,8	2,0 * L

* Values are referred from Table 19 of EN 12167:2016

Dimensions: EN 12167:2016*

Maximum twist of bar

Nominal width w (mm)	Maximum permitted twist V in any 1000 mm length of bar (See Figure 2 in EN 12167:2016)		
	Class A	Class B	Class C
3 ≤ w ≤ 18	2,0	1,5	1,0
18 < w ≤ 30	3,0	2,3	1,5
30 < w ≤ 50	4,0	3,0	2,0
50 < w ≤ 80	6,0	4,5	3,0
80 < w ≤ 120	9,0	9,0	4,5

For bar of total length greater than 2000 mm, the permitted twist over the total length shall be twice the appropriate maximum given in the table for "in any 1000 mm".

* Values are referred from Table 20 of EN 12167:2016

Dimensions: EN 12167:2016* Corner radii of bar		
Nominal thickness	Radii of corners	
	Sharp max.	Rounded range
$3 \leq t \leq 6$	0,3	0,3 – 0,5
$6 < t \leq 10$	0,4	0,4 – 0,8
$10 < t \leq 18$	0,5	0,5 – 1,2
$18 < t \leq 30$	0,6	0,6 – 1,8
$30 < t \leq 40$	0,7	0,7 – 2,8
$40 < t \leq 60$	0,8	0,8 – 4,0
NOTE: A bar having rounded corners of radius greater than those covered by this table is considered to be a profile		

* Values are referred from Table 21 of EN 12167:2016