

Datasheet: EN Cu-HCP / CW021A 99,95% Pure Copper Tubes Alumeco ApS 21-03-2025			Internal alloy name: CW021A Metal: Copper Chemical Symbol: Cu-HCP EN: EN Cu-HCP UNS: C10300 SS: - GB: TU0.003 / C10300 JIS: - Also known as: - Alloy type: Electrical conducting			
Main usage: - Electrical conductors - Industrial applications – e.g. boilers, pressure tanks, piping etc. - Components for impact extrusion			Important norms and literature: General Standards EN 12449:2023: Copper and copper alloys – Seamless, round tubes for general purposes Geometric Tolerance: EN 12449:2023: Copper and copper alloys – Seamless, round tubes for general purposes			
Main properties: - High thermal and electrical conductivity - Good atmospheric corrosion resistance - Good welding and soldering properties as well as resistance to hydrogen						
Chemical composition in %: EN 12449:2023						
Cu		Bi	P	Pb	Other elements	
					Each	Together
Min. 99,95		Max. 0,0005	0,002 – 0,007	Max. 0,005	-	0,03
Mechanical properties: EN 12449:2023						
Material Condition	Wall Thickness <i>t</i>	Tensile Strength <i>R_m</i>	0,2% proof strength <i>R_{p0,2}</i>	Elongation <i>A</i>	Hardness	
	Max. mm	Min. MPA	MPa	Min. %	HV	HBW
M	20	-	-	-	-	-
H040	20	-	-	-	40 – 65	35 – 60
R200	20	200	Max. 110	40	-	-
H070	10	-	-	-	70 – 100	65 – 95
R250	10	250	Min. 150	30/20/15	-	-
H095	5	-	-	-	95 – 120	90 – 115
R290	5	290	Min. 250	3	-	-
H110	3	-	-	-	Min. 110	Min. 105
R360	3	360	Min. 320	-	-	-
* 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
8,94	1083	98 – 100	385	17	-	115.000
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 Tubes of CW021A

Dimensions: EN 12449:1999*

Tolerances on diameter

Nominal diameter d (mm)	Tolerances on nominal diameter (mm)	
	Applicable to mean diameter	Applicable to any diameter including deviation from circular form for straight lengths
$3 \leq d \leq 10$	$\pm 0,06$	$\pm 0,12$
$10 < d \leq 20$	$\pm 0,08$	$\pm 0,16$
$20 \leq d \leq 30$	$\pm 0,12$	$\pm 0,24$
$30 \leq d \leq 50$	$\pm 0,15$	$\pm 0,30$
$50 \leq d \leq 100$	$\pm 0,20$	$\pm 0,50$
$100 \leq d \leq 200$	$\pm 0,50$	$\pm 1,00$
$200 \leq d \leq 300$	$\pm 0,75$	$\pm 1,50$
$300 \leq d \leq 450$	$\pm 1,00$	$\pm 2,00$

* Values are referred from Table 16 of EN 12449:1999

Dimensions: EN 12449:1999*

Tolerances on wall thickness

Nominal outside diameter D (mm)	Tolerances on nominal wall thickness t (mm)				
	%				
	$0,3 \leq t \leq 1$	$1 < t \leq 3$	$3 < t \leq 6$	$6 < t \leq 10$	$10 < t$
$3 \leq D \leq 40$	± 15	± 13	± 11	± 10	-
$40 < D \leq 120$	± 15	± 13	± 12	± 11	± 10
$120 \leq D \leq 250$	-	± 13	± 13	± 12	± 11
$250 \leq D \leq 450$	-	-	± 15	± 15	± 15

* Values are referred from Table 17 of EN 12449:1999

Dimensions: EN 12449:1999*

Tolerances on fixed lengths, tubes in straight lengths

Nominal outside diameter D (mm)	Tolerance on fixed length l (mm)			
	$l \leq 250$	$250 < l \leq 1000$	$1000 < l \leq 4000$	$4000 < l$
$3 \leq D \leq 25$	+1 0	+3 0	+5 0	By agreement
$25 < D \leq 100$	+2 0	+5 0	+7 0	
$100 < D \leq 450$	+3 0	+5 0	+10 0	

* Values are referred from Table 18 of EN 12449:1999

Dimensions: EN 12449:1999*

Tolerances on fixed lengths, tube in coils (not level wound)

Specified length L (m)	Tolerance %
$L \leq 50$	+2 0
$50 < L \leq 100$	+3 0
$100 < L$	+5 0

* Values are referred from Table 19 of EN 12449:1999

Dimensions: EN 12449:1999*

Tolerances on diameter including deviation from circular form, tube in coils

Nominal outside diameter D (mm)	Tolerances on nominal diameter including deviation from circular form	Applicable for coil inside diameter min.
$3 \leq D \leq 6$	$\pm 0,30$	400
$6 < D \leq 10$	$\pm 0,50$	600
$10 \leq D \leq 20$	$\pm 0,70$	800
$20 \leq D \leq 30$	$\pm 0,90$	1000

* Values are referred from Table 20 of EN 12449:1999

Dimensions: EN 12449:1999*
Tolerances on straightness

Ratio of	Depth of arc (see Figure 1)	
	h_1 in any length l_1 of 1000 mm max.	h_2 in any length l_2 of 400 mm max.
$r \leq 5$	2	0,8
$5 < r \leq 10$	3	1,2
$10 < r \leq 20$	4	1,6
$20 < r \leq 40$	5	2,0
$40 < r$	6	2,5

* Values are referred from Table 21 of EN 12449:1999

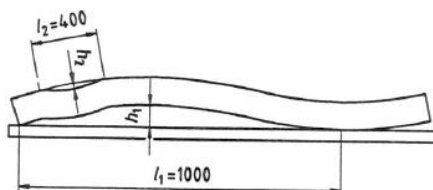


Figure 1 - Measurement of straightness from EN 12449:1999

Dimensions: EN 12449:1999*
Sampling rate

Mass per unit length kg/m	Size of inspection lot for one test sample kg
$\bar{\lambda}_m \leq 0,25$	≤ 500
$0,25 < \bar{\lambda}_m \leq 5$	≤ 1000
$5 < \bar{\lambda}_m$	≤ 2500

* Values are referred from Table 22 of EN 12449:1999