**Datasheet:**

# EN CuFe2P / CW107C Low alloyed Copper Tubes

**Alumeco ApS**
**21-03-2025**

| | |
|---|---|
| **Internal alloy name:** | **CW107C** |
| **Metal:** | **Copper** |
| **Chemical Symbol:** | **CuFe2P** |
| **EN:** | **EN CuFe2P** |
| **UNS:** | **C19400** |
| **SS:** | **-** |
| **GB:** | **TFe2.5** |
| **JIS:** | **-** |
| **Also known as:** | **-** |
| **Alloy type:** | **Electrical conducting** |

**Main usage:**

- Automotive
- Cables and wires
- Clamps, connectors and fasteners
- Electrical installations
- Electronic products
- Lightning rods and grounding

**Main properties:**

- High thermal and electrical conductivity
- Excellent forming properties

**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

## Chemical composition in %: EN 12449:2023

| Cu | Fe | Pb | Zn | P | Other elements | |
|---|---|---|---|---|---|---|
| | | | | | Each | Together |
| Rest | 2,1 – 2,6 | Max. 0,03 | 0,05 – 0,2 | 0,015 – 0,15 | - | Max. 0,2 |

## Mechanical properties: EN 12449:2023

| Material Condition | Wall Thickness *t* | Tensile Strength $R_m$ | 0,2% proof strength $R_{p0,2}$ | Elongation *A* | Hardness | |
|---|---|---|---|---|---|---|
| | Max. mm | Min. MPA | MPa | Min. % | HV | HBW |
| M | 20 | - | - | - | 165 – 215 | 160 – 210 |
| R300 | 10 | 300 | Max. 250 | 25 | - | - |
| H085 | 10 | - | - | - | 85 – 115 | 80 – 110 |
| R370 | 5 | 370 | Min. 250 | 15 | - | - |
| H110 | 5 | - | - | - | 110 – 140 | 105 – 135 |
| R420 | 5 | 420 | Min. 320 | 5 | - | - |
| H135 | 5 | - | - | - | Min. 135 | Min. 130 |

*** Information values only;**

## Physical properties:

| Density | 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 $m^{-1}$ $K^{-1}$ | ºC | N / mm² |
| 8,78 | 1084 | 64,7 | 262 | 17 | - | 123.000 |

## Properties and information's (3 Excellent; 2 Good; 1 Poor/not recommendable)[1]

**Machinability (Zerspanbarkeitsindex): 20***
*(CuZn39Pb3 = 100)

**Forming Methods:**

| | |
|---|---|
| Hot Formability: | 2 |
| Cold Formability: | 3 |

**Corrosion resistance:**

| | |
|---|---|
| Atmosphere: | 2 |
| Waters and alkaline: | 2 |
| Acids, Ammonia, Seawater: | 1 |

**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 |

[1]**Information extracted from Kupferverband;**

# Tolerances for Tubes of CW107C

**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 ≤ d ≤ 10 | ± 0,06 | ± 0,12 |
| 10 < d ≤ 20 | ± 0,08 | ± 0,16 |
| 20 ≤ d ≤ 30 | ± 0,12 | ± 0,24 |
| 30 ≤ d ≤ 50 | ± 0,15 | ± 0,30 |
| 50 ≤ d ≤ 100 | ± 0,20 | ± 0,50 |
| 100 ≤ d ≤ 200 | ± 0,50 | ± 1,00 |
| 200 ≤ d ≤ 300 | ± 0,75 | ± 1,50 |
| 300 ≤ d ≤ 450 | ± 1,00 | ± 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 ≤ *t* ≤ 1 | 1 < *t* ≤ 3 | 3 < *t* ≤ 6 | 6 < *t* ≤ 10 | 10 < *t* |
| 3 ≤ D ≤ 40 | ± 15 | ± 13 | ± 11 | ± 10 | - |
| 40 < D ≤ 120 | ± 15 | ± 13 | ± 12 | ± 11 | ± 10 |
| 120 ≤ D ≤ 250 | - | ± 13 | ± 13 | ± 12 | ± 11 |
| 250 ≤ D ≤ 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* ≤ 250 | 250 < *l* ≤ 1000 | 1000 < *l* ≤ 4000 | 4000 < *l* |
| 3 ≤ D ≤ 25 | + 1<br>0 | + 3<br>0 | + 5<br>0 | By agreement |
| 25 < D ≤ 100 | + 2<br>0 | + 5<br>0 | + 7<br>0 | |
| 100 < D ≤ 450 | + 3<br>0 | + 5<br>0 | + 10<br>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* ≤ 50 | + 2<br>0 |
| 50 < *L* ≤ 100 | + 3<br>0 |
| 100 < *L* | + 5<br>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 ≤ D ≤ 6 | ± 0,30 | 400 |
| 6 < D ≤ 10 | ± 0,50 | 600 |
| 10 ≤ D ≤ 20 | ± 0,70 | 800 |
| 20 ≤ D ≤ 30 | ± 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 ≤ 5 | 2 | 0,8 |
| 5 < r ≤ 10 | 3 | 1,2 |
| 10 < r ≤ 20 | 4 | 1,6 |
| 20 < r ≤ 40 | 5 | 2,0 |
| 40 < r | 6 | 2,5 |

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

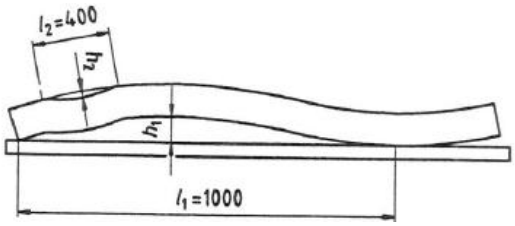



*Figure 1 - Measurement of straightness from EN 12449:1999*

| **Dimensions: EN 12449:1999*** **Sampling rate** | |
|---|---|
| **Mass per unit length** kg/m | **Size of inspection lot for one test sample** kg |
| $\bar{\lambda}_m$ ≤ 0,25 | ≤ 500 |
| 0,25 < $\bar{\lambda}_m$ ≤ 5 | ≤ 1000 |
| 5 < $\bar{\lambda}_m$ | ≤ 2500 |

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