

ALLOYS

| Designation of material | | Composition of % (mass fraction) | | | | | | | | Other elements (see note) | |
|-------------------------|-----------|----------------------------------|--------------------|------|--------|--------|-------|-------|-------------------|---------------------------|--|
| Symbolic | Numerical | Element | Cu | Ag | Bi | O | P | Pb | Total | Excluded | |
| Cu-ETP | CW004A | min. | 99.90 ^a | - | - | - | - | - | - | Ag, O | |
| | | max. | - | - | 0,0005 | 0.040b | - | 0,005 | 0,03 | | |
| Cu-FRHC | CW005A | min. | 99.90 ^a | - | - | - | - | - | - | Ag, O | |
| | | max. | - | - | - | 0.040b | - | - | 0,06 ^d | | |
| Cu-OF | CW008A | min. | 99.95 ^a | - | - | - | - | - | - | Ag | |
| | | max. | - | - | 0,0005 | -c | - | 0,005 | 0,03 | | |
| CuAg0,04 | CW011A | min. | Rest | 0,03 | - | - | - | - | - | Ag, O | |
| | | max. | - | 0,05 | 0,0005 | 0,040 | - | - | 0,03 | | |
| CuAg0,07 | CW012A | min. | Rest | 0,06 | - | - | - | - | - | Ag, O | |
| | | max. | - | 0,08 | 0,0005 | 0,040 | - | - | 0,03 | | |
| CuAg0,10 | CW013A | min. | Rest | 0,08 | - | - | - | - | - | Ag, O | |
| | | max. | - | 0,12 | 0,0005 | 0,040 | - | - | 0,03 | | |
| CuAg0,04P | CW014A | min. | Rest | 0,03 | - | - | 0,001 | - | - | Ag, P | |
| | | max. | - | 0,05 | 0,0005 | -c | 0,007 | - | 0,03 | | |
| CuAg0,07P | CW015A | min. | Rest | 0,06 | - | - | 0,001 | - | - | Ag, P | |
| | | max. | - | 0,08 | 0,0005 | -c | 0,007 | - | 0,03 | | |
| CuAg0,10P | CW016A | min. | Rest | 0,08 | - | - | 0,001 | - | - | Ag, P | |
| | | max. | - | 0,12 | 0,0005 | -c | 0,007 | - | 0,03 | | |
| CuAg0,04(OF) | CW017A | min. | Rest | 0,03 | - | - | - | - | - | Ag, O | |
| | | max. | - | 0,05 | 0,0005 | -c | - | - | 0,0065 | | |
| CuAg0,07(OF) | CW018A | min. | Rest | 0,06 | - | - | - | - | - | Ag, O | |
| | | max. | - | 0,08 | 0,0005 | -c | - | - | 0,0065 | | |
| CuAg0,10(OF) | CW019A | min. | Rest | 0,08 | - | - | - | - | - | Ag, O | |
| | | max. | - | 0,12 | 0,0005 | -c | - | - | 0,0065 | | |
| Cu-PHC | CW020A | min. | 99.95 ^a | - | - | - | 0,001 | - | - | Ag, P | |
| | | max. | - | - | 0,0005 | -c | 0,006 | 0,005 | 0,03 | | |
| Cu-HCP | CW021A | min. | 99.95 ^a | - | - | - | 0,002 | - | - | Ag, P | |
| | | max. | - | - | 0,0005 | -c | 0,007 | 0,005 | 0,03 | | |

NOTE- In all other elements (other than copper) is defined as the sum of Ag, As, Bi, Cd, Co, Cr, Fe, Mn, Ni, O, P, Pb, S, Sb, Se, Si, Sn, Te, And Zn, with the exclusion of any item whose value this indicated individually.

a To including silver, to a maximum of 0.015%.

b Is permissible oxygen content up to 0.060%, subject to agreement between customer and supplier.

c The oxygen content should be such that the material meets the requirements of embrittlement by heating in hydrogen atmosphere, the Standard in 1976.

d It is allowed a total impurities content higher, under agreement between customer and supplier.

ALLOYS. Cu-OFE and Cu-PHCE EN 13601

| Designation of material | | Composition of % (mass fraction) | | | | | | | | | | | | | | | | | |
|-------------------------|-----------|----------------------------------|-------|---------|---------|----------|---------|----------|---------|---------|----|---------|---------|---------|---------|----------|---------|----------|---------|
| Symbolic | Numerical | Element | Cu | Ag | As | Bi | Cd | Fe | Mn | Ni | O | P | Pb | S | Sb | Se | Sn | Te | Zn |
| Cu-OFE | CW009A | min. | 99,99 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | | max. | - | 0,002 5 | 0,000 5 | 0,000 20 | 0,000 1 | 0,0001 0 | 0,000 5 | 0,001 0 | _a | 0,000 3 | 0,000 5 | 0,001 5 | 0,000 4 | 0,000 20 | 0,000 2 | 0,000 20 | 0,000 1 |
| Cu-PHCE | CW022A | min. | 99,99 | - | - | - | - | - | - | - | - | 0,001 | - | - | - | - | - | - | - |
| | | max. | - | 0,002 5 | 0,000 5 | 0,000 20 | 0,000 1 | 0,001 0 | 0,000 5 | 0,001 0 | _a | 0,006 | 0,000 5 | 0,001 5 | 0,000 4 | 0,000 20 | 0,000 2 | 0,000 20 | 0,000 1 |

a The oxygen content shall be such that the material conforms to the hydrogen embrittlement requirements of EN 1976.