# C22000 (CuZn10)

18 08 US

Comparable standards: UNS C22000 • EN CW501L • JIS C2200

Aurubis designations: C220 • PNA222 • SM1090

## Description

Commercial Bronze, 90% with a nominal composition of 90% copper and 10 % zinc has a rich and pleasing bronze color together with such practical properties as excellent malleability, ductility, and corrosion resistance. Its strength exceeds Gilding, 95 %. CuZn10 Alloy is the standard bronze color alloy for builder's hardware. Its excellent resistance to stress-corrosion cracking as well as dezincification makes it suitable as an engineering alloy, being widely used for ammunition components and applications requiring outdoor exposure. The alloy has a high capacity for being cold worked and does not work harden as rapidly as higher zinc alloys, CuZn20 and CuZn30. Thus requiring fewer anneals between operations.

## Composition

| Cu* [%] | Fe [%] | Pb [%] | Zn [%] |
|---|---|---|---|
| 89.0 – 91.0 | 0.05 max | 0.05 max | rem. |

*) Cu + sum of named elements min 99.8 %

## Physical properties

| Melting point [°F] [°C] | Density [lb/in³] [g/cm³] | Specific heat cap. at 20°C [Btu/lb°F] [kJ/kgK] | Electrical cond. [%IACS] [MS/m] | Thermal cond. at 20°C [Btu/ft h °F] [W/mK] | Mod. of elasticity x1000 ksi [GPa] | Coef. of therm exp. at 20°C [$10^{-6}$/°F] [$10^{-6}$/K] |
|---|---|---|---|---|---|---|
| 1910<br>1043 | 0.318<br>8.8 | 0.09<br>0.38 | 44<br>26 | 109<br>189 | 17<br>117 | 10.2<br>18.4 |

The specified conductivity applies to the soft condition only

## Mechanical properties

| Temper | Tensile strength Rm [ksi] [MPa] | Yield strength Rp0.2 nominal [ksi] [MPa] | Elon-gation 2" nominal [%] | Hard-ness nominal HR30T HV | min bend ratio 90° | | min. bend ratio 180° | |
|---|---|---|---|---|---|---|---|---|
| | | | | | GW | BW | GW | BW |
| Soft | 36-42<br>248-290 | 12<br>83 | 47 | | 0 | 0 | 0 | 0 |
| H02 | 47-57<br>324-393 | 47<br>324 | 12 | 57 | 0 | 0 | 1.0 | 1.0 |
| H04 | 57-66<br>393-455 | 58<br>400 | 4 | 66 | 0 | 1.0 | 1.5 | 3.0 |
| H06 | 64-72<br>441-497 | 63<br>435 | 4 | 68 | 1.0 | 2.0 | 1.5 | |
| H08 | 69-77<br>476-531 | 68<br>469 | 1 | 69 | 1.5 | | 2.0 | |
| H10 | 72-80<br>497-552 | 70<br>483 | 1 | 70 | 1.5 | | 3.0 | |

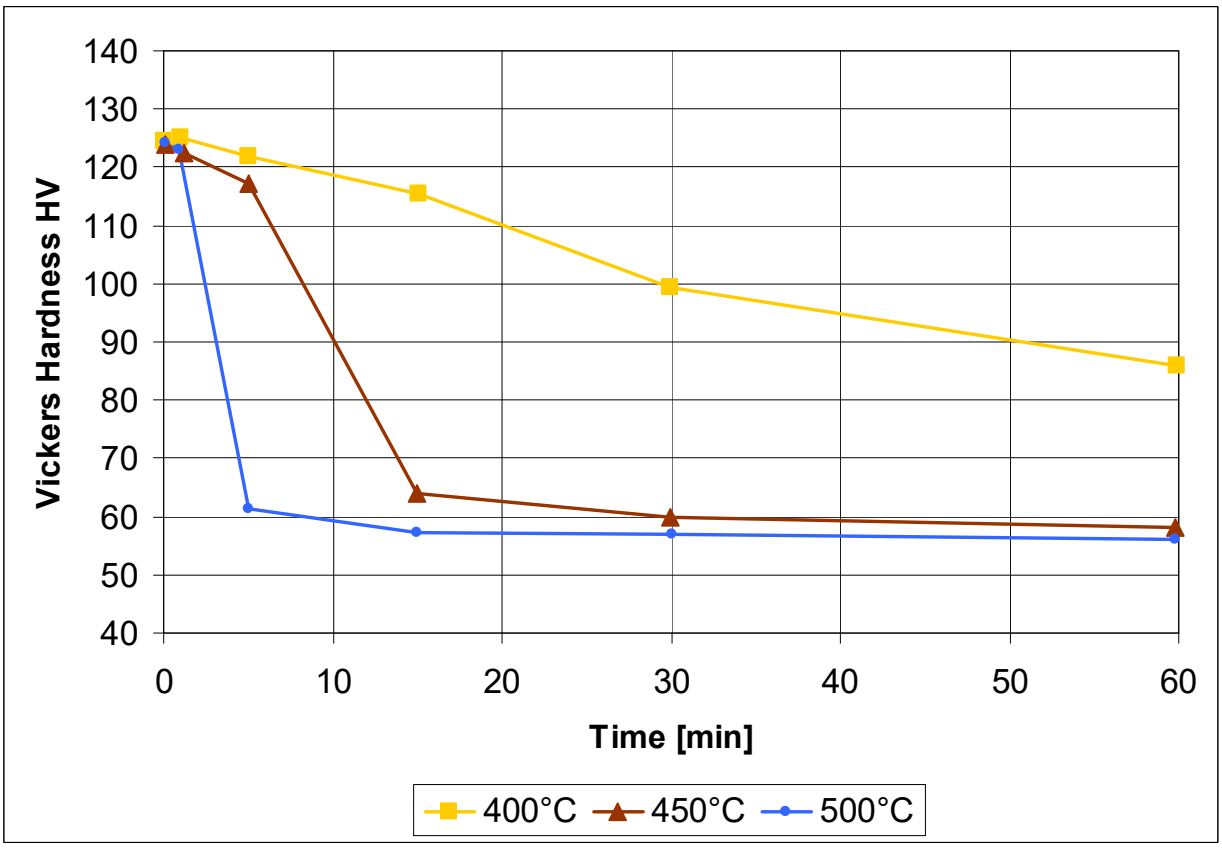
Other tempers are available upon request.
GW bend axis transverse to rolling direction. BW bend axis parallel to rolling direction

**Fabrication properties**

| | |
|---|---|
| Soldering | excellent |
| Gas shielded arc welding | good |
| Spot Welding | not recommended |
| Butt Welding | good |
| Cold formability | excellent |

**Softening resistance**

Vickers hardness after heat treatment.




**Typical uses**

Architectural metalwork, weather-strip, base metal for bronze colored builders hardware, escutcheons, knobs, strikes, roses, hinges, compacts, lipstick cases, cosmetic containers, marine hardware, screw shells, bullet jackets, primer caps, costume jewelry, ornamental trim, vitreous enamel base, outside lighting fixtures, electric meter jaws, sprinkler brackets, caskets.

**Applicable specifications**

ASTM B36, B694