

# PNA 222

CuZn10 / C22000

Release 03\_2009\_E



PNA 222 is solid solution strengthened copper alloy (brass) with 10% zinc. As the zinc content increases in the alloy, the strength improves, but is accompanied by losses in conductivity and ductility.

Moreover, it should be noted that as the zinc content rises, the inclination to stress corrosion cracking increases in the event of exposure to an ammoniacal atmosphere. This type of corrosion can, however, be combated in many cases by the removal of thermal stress.

As the zinc content rises, the user may under certain circumstances have an economic advantage due to the different metal values.

## Chemical Composition (wt. %)

Cu	89 – 91
Fe	Maximum 0.01
Pb	Maximum 0.01
Zn	Remainder

## Physical Properties

Density	g/cm <sup>3</sup>	8.8
Coefficient of Thermal Expansion	10 <sup>-6</sup> /K	18.4
Electrical Conductivity	MS/m	25.7
	%IACS	44
Thermal Conductivity	W/(mK)	188.7
Modulus of Elasticity	kN/mm <sup>2</sup>	124

## Material Designation

Aurubis	PNA 222
EN	CW501L
UNS*	C22000
ISO	CuZn10
BS	CZ101

\* Unified Numbering System

## Mechanical Properties

		R 240 H 050	R 280 H 080	R350 H110
Tensile Strength <i>R<sub>m</sub></i>	N/mm <sup>2</sup>	240 – 290	280 – 360	> 350
Yield Strength <i>R<sub>p0.2</sub></i>	N/mm <sup>2</sup>	< 140	> 200	> 290
Elongation <i>A<sub>50</sub></i>	%	> 36	> 13	> 4
Hardness <i>H<sub>v</sub></i>	-	50 – 80	80 – 110	> 110

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## Bendability

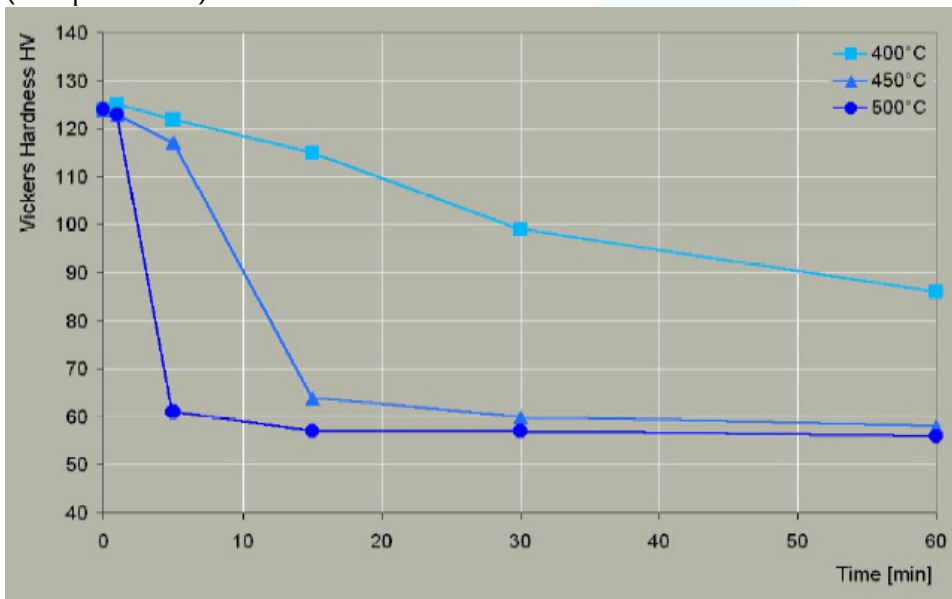
	R 230	R 270	R 340
90° GW**	0	0	0
90° BW	0	0	0.5
180° GW	0	0	1
180° BW	0	0.5	1.5

$$r = x \cdot t \quad (t \leq 0.5\text{mm})$$

\*\* GW: bending edge  $\perp$  rolling direction, BW: bending edge  $\parallel$  rolling direction.

## Softening Stability

Vickers hardness after heat treatment (typical values)  
(Temper R 350)



## Fabrication Properties

Cold Formability	Good
Hot Formability	Good
Soldering	Excellent
Brazing	Excellent
Oxyacetylene Welding	Good
Gas Shield Arc Welding	Good
Resistance Welding	Good

## Typical Applications

Components for Electrical Engineering  
Architecture, Ordnance, Leadframes  
Wave Guides, Rotor Bars  
Detonator Caps, Shell casings

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