

PNA 223

CuZn15 / C23000

Release 03_2009_E



PNA 223 is solid solution strengthened copper alloy (brass) with 15% 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	84.2 – 85.2
Fe	Maximum 0.05
Pb	Maximum 0.05
Zn	Remainder

Physical Properties

Density	g/cm ³	8.75
Coefficient of Thermal Expansion	10 ⁻⁶ /K	18.7
Electrical Conductivity	MS/m	21.6
	%IACS	37
Thermal Conductivity	W/(mK)	159.2
Modulus of Elasticity	kN/mm ²	122

Material Designation

Aurubis	PNA 223
EN	CW502L
UNS*	C23000
ISO	CuZn15
BS	CZ102

* Unified Numbering System

Mechanical Properties

		R 260	R 300	R 350	R 410	R 480	G 010	G 020	G 035
		H 050	H 085	H 105	H 125	H 150			
Tensile Strength <i>R_m</i>	N/mm ²	260 – 310	300 – 370	350 – 420	410 – 490	> 480	340	300	290
Yield Strength <i>R_{p0.2}</i>	N/mm ²	< 170	> 150	> 250	> 360	> 430	190	125	110
Elongation <i>A₅₀</i>	%	36	16	4	2	1	50	50	50
Hardness <i>H_v</i>	-	55 – 85	85 – 115	105 – 135	125 – 155	< 150	< 105	< 85	< 75
Grain size <i>DK</i>	μm	-	-	-	-	-	< 15	15-30	25-50

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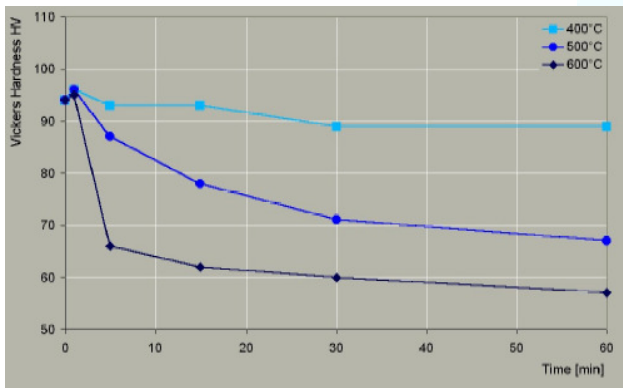
Bendability

	R 260	R 300	R 350	R 410	R 480
90° GW**	0	0	0	0	0.5
90° BW	0	0	0	1	3
180° GW	0	0	0	0.5	1
180° BW	0	0	0	1	3.5

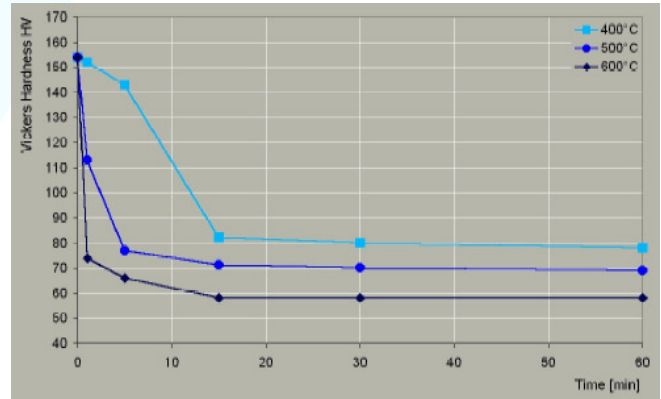
** GW: bending edge \perp rolling direction, BW: bending edge \parallel rolling direction.

Softening Stability

Vickers hardness after heat treatment (typical values)
(Temper R 410)



(Temper R 480)



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. Weather Strips
Contacts, Radiators
Conduits, Costume Jewellery
Hardware, Heat Exchangers

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