PNA 243

CuZn37 / C27200 Release 01_2009_E

PNA 243 is a solid solution strengthened copper alloy (brass) with 37% 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	63.2 – 64.0
Fe	Maximum 0.020
Pb	Maximum 0.015
Zn	Remainder

Physical Properties		
Density	g/cm³	8.44
Coefficient of Thermal Expansion	10^{-6}/K	20.5
Electrical Conductivity	MS/m	16.1
	%IACS	27
Thermal Conductivity	W/(mK)	116
Modulus of Elasticity	kN/mm²	110

Material Designation	
Aurubis	PNA 243
EN	CW508L
UNS*	C27200
ISO	CuZn37
BS	CZ108

* Unified Numbering System

Mechanical Properties (1)						
		R 300 H 055	R 350 H 095	R 410 H 120	R 480 H 150	R 550 H 170
Tensile Strength *Rm*	N/mm²	300 – 370	350 – 440	410 – 490	480 – 560	> 550
Yield Strength $Rp_{0.2}$	N/mm²	< 180	> 170	> 300	> 430	> 500
Elongation A_{50}	%	38	19	8	3	-
Hardness *Hv*	-	55 – 95	95 – 125	120 – 155	150 – 180	> 170

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Mechanical Properties (2)

		G 010	G 020	G 030	G 050
Tensile Strength *Rm*	N/mm²	410	360	340	330
Yield Strength $Rp_{0.2}$	N/mm²	210	150	130	110
Elongation A_{50}	%	30	40	40	40
Hardness *Hv*	-	< 120	< 95	< 90	< 80
Grain Size *DK*	µm	< 15	15 – 30	20 – 40	35 – 70

Bendability

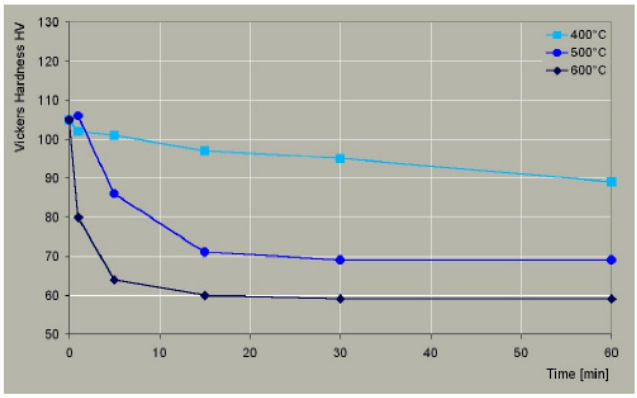
		R 300	R 350	R 410	R 360	R 550
r = x·t (t ≤ 0.5mm)	90° GW**	0	0	0	0	1
	90° BW	0	0	0	0.5	2
	180° GW	0	0	0	1	3
	180° BW	0	0	1	2	4

** GW: bending edge ⊥ rolling direction, BW: bending edge || rolling direction.

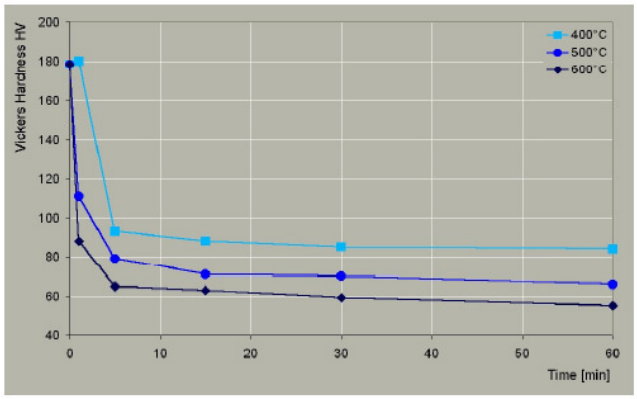
Softening Stability

Vickers hardness after heat treatment (typical values)

(Temper R 350)



(Temper R 550)



Fabrication Properties

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

Typical Applications

Components for Electrical Engineering
Automotive, Architecture, Connectors
Bending and Stamping Components
Cylinder Liners
Heat Exchangers Cases, Fasteners

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