

# PNA 212

CuFe2P / C19400

Release 03\_2009\_E



PNA 212 combines strength with electrical and thermal conductivity. It is corrosion-resistant as well as non-tarnishing, is very suitable for connecting parts by soldering, gas welding or electron beam welding and can be very well punched.

PNA 212 is mainly used for spring components with moderate requirements as to springiness and relaxation properties (e.g. semiconductor substrate).

## Chemical Composition (wt. %)

Cu	Remainder
Fe	2.10 – 2.60
Zn	0.05 – 0.20
P	0.015 – 0.15

## Physical Properties

Density	g/cm <sup>3</sup>	8.8
Coefficient of Thermal Expansion	10 <sup>-6</sup> /K	17.6
Electrical Conductivity	MS/m	> 37
	%IACS	> 64
Thermal Conductivity	W/(mK)	280
Modulus of Elasticity	kN/mm <sup>2</sup>	123

## Material Designation

Aurubis	PNA 212
EN	CW107C
UNS*	C19400
ISO	CuFe2P
BS	N/a

\* Unified Numbering System

## Mechanical Properties

		R 300	R 340	R 370	R 420	R 470	R 520
		H 080	H 100	H 120	H 130	H 140	H 150
Tensile Strength <i>R<sub>m</sub></i>	N/mm <sup>2</sup>	300 - 340	340 - 390	370 - 430	420 - 480	470 - 530	520 - 580
Yield Strength <i>R<sub>p0.2</sub></i>	N/mm <sup>2</sup>	< 240	> 240	> 330	> 380	> 440	> 470
Elongation <i>A<sub>50</sub></i>	%	> 16	> 8	> 6	> 6	> 4	> 3
Hardness <i>H<sub>v</sub></i>	-	80 - 100	100 - 120	120 - 140	130 - 150	140 - 160	150 - 165

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## Bendability

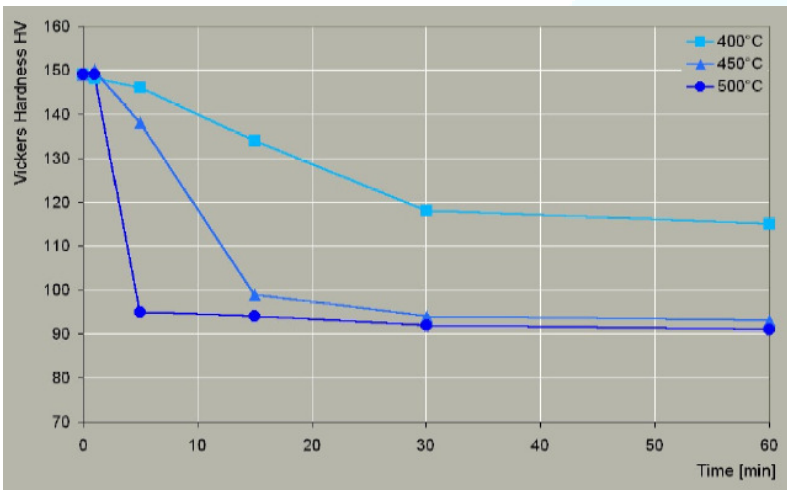
	R 300	R 340	R 370	R 420	R 470	R 520
$r = x \cdot t$ ( $t \leq 0.5\text{mm}$ )						
90° GW**	0	0	0	0.5	0.5	1
90° BW	0	0	0	0.5	0.5	2
180° GW	0	0	0	0.5	0.5	3
180° BW	0	0	0	1.5	5	-

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

## Softening Stability

Vickers hardness after heat treatment (typical values)

(Temper R 520)



## Fabrication Properties

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

## Typical Applications

Automotive, Components of electrical Engineering, Connectors, Contact Springs, Semiconductor bases, Fasteners, Rivets, Weather Strips

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