

PNA 209

Cu-PHC / C10300

Release 01_2009_E



PNA 209 is a deoxidised, oxygen-free copper with a low residual phosphorus content.

It is used for semis with special requirements as to formability, weld-ability and brazability, e.g. in electronics, process equipment manufacture or in the cable industry.

Chemical Composition (wt. %)

Cu	Minimum 99.95
P	0.001 – 0.005

Physical Properties

Density	g/cm ³	8.94
Coefficient of Thermal Expansion	10 ⁻⁶ /K	17.7
Electrical Conductivity	MS/m	58
	%IACS	100
Thermal Conductivity	W/(mK)	390
Modulus of Elasticity	kN/mm ²	127

Material Designation

Aurubis	PNA 209
EN	CW020A
UNS*	C10300
ISO	Cu-PHC
BS	C102

* Unified Numbering System

Mechanical Properties

		R 220	R 240	R 290	R 360
		H 040	H 065	H 090	H 110
Tensile Strength R_m	N/mm ²	220 – 260	240 – 300	290 – 360	> 360
Yield Strength $R_{p0.2}$	N/mm ²	< 140	> 180	> 250	> 320
Elongation A_{50}	%	> 33	> 8	> 4	> 2
Hardness H_v	-	40 – 65	65 – 95	90 – 110	> 110

Bendability

		R 220	R 240	R 290	R 360
$r = x \cdot t$ ($t \leq 0.5\text{mm}$)	90° GW**	0	0	0	0
	90° BW	0	0	0	0.5

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

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Fabrication Properties

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

Typical Applications

Electrical Engineering
Contacts, Pressure Vessels
Commutators

Other Properties

Corrosion Resistance	Resistant to corrosion in most atmospheres including marine and industrial environments. Material corroded by oxidising acids, halogens, sulphides and ammonia based solutions.
Work Hardening	Work hardens relatively slowly during cold working and can be annealed in neutral or oxidising atmospheres. Annealing can be achieved by rapid cooling after heating (370°C to 650°C).

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