

PNA 285

CuSn5 / C51000

Release 03_2009_E



PNA 285 is a solid solution strengthened copper alloy (bronze) with 5% tin, It's higher tin content compared with PNA 228 and 284 results in higher strength and springiness.

It is used whenever the emphasis is on the combination of conductivity and strength. PNA 285 has excellent cold-workability and can be readily soldered.

Chemical Composition (wt. %)

Cu	Remainder
Sn	4.5 – 5.5
P	0.03 – 0.40
Zn	Maximum 0.2

Physical Properties

Density	g/cm ³	8.9
Coefficient of Thermal Expansion	10 ⁻⁶ /K	18
Electrical Conductivity	MS/m	10
	%IACS	17.2
Thermal Conductivity	W/(mK)	96
Modulus of Elasticity	kN/mm ²	120

Material Designation

Aurubis	PNA 285
EN	CW451K
UNS*	C51000
ISO	CuSn5
BS	PB102

* Unified Numbering System

Mechanical Properties

		R 310	R 400	R 490	R 550	R 630	R 690
		H 075	H 120	H 160	H 180	H 200	H 220
Tensile Strength <i>R_m</i>	N/mm ²	310 – 390	400 – 500	490 – 580	550 – 640	630 – 720	> 690
Yield Strength <i>R_{po.2}</i>	N/mm ²	< 250	> 340	> 450	> 520	> 600	> 670
Elongation <i>A₅₀</i>	%	45	14	8	4	3	-
Hardness <i>H_v</i>	-	75 – 105	120 – 160	160 – 190	180 – 210	200 – 230	> 220

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Bendability

	R 310	R 400	R 490	R 550	R 630	R 690	
r = x·t (t ≤ 0.5mm)	90° GW**	0	0	0	0	1.5	2.5
	90° BW	0	0	0	1.5	4	9
	180° GW	0	0	1	2	3	-
	180° BW	0	0	2	3	5	-

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

Fabrication Properties

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

Typical Applications

Automotive, Components of electrical Engineering, Connectors, Spring rings, Frame connectors, Retaining Clamps, Relays and conductor Springs, Switch springs

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