

PNA 248

CuZn36 / C27000

Release 03_2009_E



PNA 248 is solid solution strengthened copper alloy (brass) with 36% 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 | 63.5 – 65.5 |
| Fe | Maximum 0.05 |
| Pb | Maximum 0.05 |
| Zn | Remainder |

Physical Properties

| | | |
|----------------------------------|---------------------|------|
| Density | g/cm ³ | 8.4 |
| Coefficient of Thermal Expansion | 10 ⁻⁶ /K | 20.3 |
| Electrical Conductivity | MS/m | 15.8 |
| | %IACS | 27 |
| Thermal Conductivity | W/(mK) | 116 |
| Modulus of Elasticity | kN/mm ² | 110 |

Material Designation

| | |
|---------|---------|
| Aurubis | PNA 248 |
| EN | CW507L |
| UNS* | C27000 |
| ISO | CuZn36 |
| BS | CZ108 |

* Unified Numbering System

Mechanical Properties

| | | R 300 | R 350 | R 410 | R 480 | R 550 | G 010 | G 020 | G 030 | G 050 |
|--|-------------------|-----------|-----------|-----------|-----------|-------|-------|-------|-------|-------|
| | | H 055 | H 095 | H 120 | H 150 | H 170 | | | | |
| Tensile Strength <i>R_m</i> | N/mm ² | 300 – 370 | 350 – 440 | 410 – 490 | 480 – 560 | > 550 | 410 | 360 | 340 | 330 |
| Yield Strength <i>R_{p0.2}</i> | N/mm ² | < 180 | > 170 | > 300 | > 430 | > 500 | 210 | 150 | 130 | 110 |
| Elongation A50 | % | 38 | 19 | 8 | 3 | - | 30 | 40 | 40 | 40 |
| Hardness <i>H_v</i> | - | 55 – 95 | 95 – 125 | 120 – 155 | 150 – 180 | >170 | < 120 | < 95 | < 90 | < 80 |
| Grain size <i>DK</i> | µm | - | - | - | - | - | < 15 | 15-30 | 20-40 | 35-70 |

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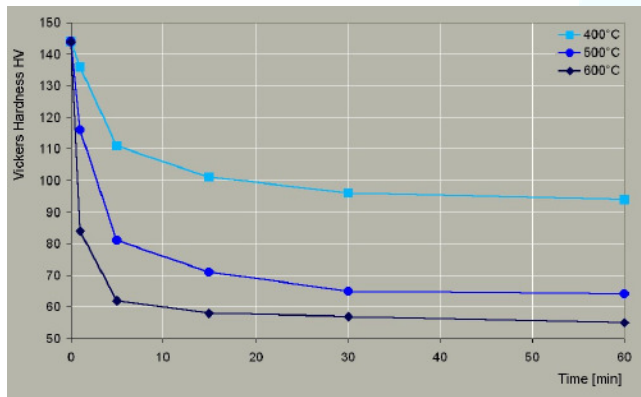
Bendability

| | R 300 | R 350 | R 410 | R 480 | R 550 |
|----------|-------|-------|-------|-------|-------|
| 90° GW** | 0 | 0 | 0 | 0.5 | 1 |
| 90° BW | 0 | 0 | 0 | 1 | 2 |
| 180° GW | 0 | 0 | 0 | 1 | 5 |
| 180° BW | 0 | 0 | 0 | 2 | 6 |

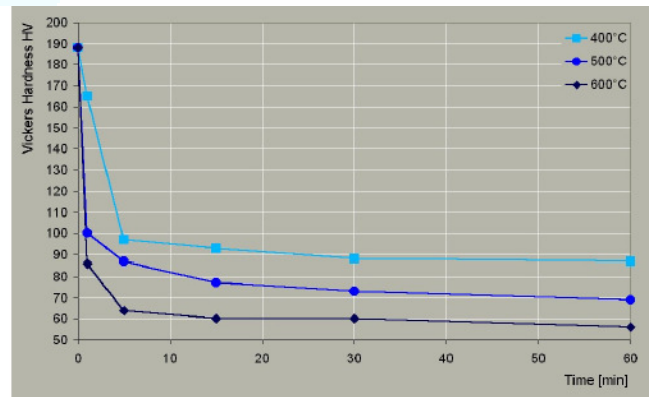
** GW: bending edge \perp rolling direction, BW: bending edge \parallel rolling direction.

Softening Stability

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



(Temper R 550)



Fabrication Properties

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

Typical Applications

Automotive, Architecture
 Components of electrical engineering
 Ordnance, Bending
 Deep Drawing, Stamping Components
 Cases, Springs
 Chains, Locks
 Hinges

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