

| Designation         | DIN | EN Nr. | UNS (ASTM) | AISI | WCA |
|---------------------|-----|--------|------------|------|-----|
| <b>CuZn42Pb0.01</b> | -   | CW510L |            | -    | 207 |

## Chemical composition

| Zn      | Cu          | Fe          | Sn          | Ni          | Si     | Mn     | Pb     |
|---------|-------------|-------------|-------------|-------------|--------|--------|--------|
| Balance | 57.0 - 58.5 | 0.10 – 0.50 | 0.10 - 0.50 | 0.10 - 0.50 | ≤ 0.10 | ≤ 0.10 | ≤ 0.03 |

Values (Weight %). In order to achieve maximum homogeneity and consistent quality, the actual manufacturing tolerances are tighter and more precisely than the composition indicated.

## Main technical properties and features

CuZn42-PNA 378 is a lead-free material which, with a combination of alloy composition and microstructure, offers good performance in machining. The material shows both very good hot formability and good cold formability. It opens up new possibilities for component manufacturing with a combination of high strength and good workability together with good machinability. Due to its very low lead content, the alloy is suitable for jewelry applications according to REACH standards.

## Typical uses

The CuZn42-PNA 378 brass in cold-rolled strips is used in many fields such as machined parts for watch industry, jewelry, components for electrical and mechanical industries.

## Typical manufacturing range

|                                                      | Thickness (mm) | Width (mm) | Length (mm) |
|------------------------------------------------------|----------------|------------|-------------|
| <b>Rolled products</b> Strip in coils <sup>[1]</sup> | 0.10 - 3.00    | 3 - 110    | -           |
| Strip as sheets <sup>[1]</sup>                       | 0.10 - 3.00    | 10 - 110   | 500 - 3000  |

<sup>[1]</sup> Not all our production possibilities are presented here. Other dimensions or product forms available upon request. Some combinations of thicknesses and widths are not possible.

## Mechanical properties of strips

| Temper       | R <sub>p0.2</sub><br>(N/mm <sup>2</sup> ) | R <sub>m</sub><br>(N/mm <sup>2</sup> ) | A <sub>50mm</sub><br>(%) | Hardness<br>HV |
|--------------|-------------------------------------------|----------------------------------------|--------------------------|----------------|
| global range | 200 - 690                                 | 450 - 750                              | 35 - 7                   | 140 - 220      |
| hard         |                                           |                                        |                          | 160 - 210      |
|              |                                           |                                        |                          |                |
|              |                                           |                                        |                          |                |

## Physical properties

|                                            |                       |                       |
|--------------------------------------------|-----------------------|-----------------------|
| Modulus of elasticity                      | kN/mm <sup>2</sup>    | 105                   |
| Density                                    | g/cm <sup>3</sup>     | 8.4                   |
| Melting point                              | °C                    | 900                   |
| Linear dilatation coefficient              | 10 <sup>-6</sup> / °C | 20                    |
| Thermal conductivity at 20°C               | W/m °K                | 113                   |
| Thermal capacity (C <sub>p</sub> ) at 20°C | J/kg K                | 377                   |
| Electrical conductivity                    | MS/m                  | ≥ 14.6 <sup>[1]</sup> |
| Electrical conductivity                    | % IACS                | ≥ 25 <sup>[1]</sup>   |
| Magnetic properties                        |                       |                       |

<sup>[1]</sup> The electrical conductivity only applies to the soft temper. For the other tempers, it is function of the chemical composition, the level of cold deformation and the grain size. A high deformation level as well as small grain size decrease the conductivity.

## Tolerances (strip and foil)

| Thickness                                                                                                                                                                                                  | Thickness (mm)                                                                                                                                                                    |       | EN Standard        |                 | WEBER + CALIBRA |               |             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|--------------------|-----------------|-----------------|---------------|-------------|
|                                                                                                                                                                                                            | ≥                                                                                                                                                                                 | <     | 10140 Precision    | 10258 Precision | WCA Standard    | WCA Precision | WCA Extreme |
|                                                                                                                                                                                                            | -                                                                                                                                                                                 | 0.025 | -                  | -               | -               | -             | ± 0.001     |
| The table shown is an outline of our typical thickness tolerances available. They are tighter than industry standards.<br><br>Our "WCA Precision" and "WCA Extreme" tolerances are available upon request. | 0.025                                                                                                                                                                             | 0.050 | -                  | -               | ± 0.003         | ± 0.002       | ± 0.0015    |
|                                                                                                                                                                                                            | 0.050                                                                                                                                                                             | 0.065 | -                  | ± 0.003         | ± 0.003         | ± 0.0025      | ± 0.002     |
|                                                                                                                                                                                                            | 0.065                                                                                                                                                                             | 0.100 | -                  | ± 0.004         | ± 0.004         | ± 0.0035      | ± 0.003     |
|                                                                                                                                                                                                            | 0.100                                                                                                                                                                             | 0.125 | ± 0.005            | ± 0.006         | ± 0.005         | ± 0.004       | ± 0.003     |
|                                                                                                                                                                                                            | 0.125                                                                                                                                                                             | 0.150 | ± 0.005            | ± 0.006         | ± 0.005         | ± 0.005       | ± 0.004     |
|                                                                                                                                                                                                            | 0.150                                                                                                                                                                             | 0.250 | ± 0.010            | ± 0.008         | ± 0.008         | ± 0.006       | ± 0.004     |
|                                                                                                                                                                                                            | 0.250                                                                                                                                                                             | 0.300 | ± 0.010            | ± 0.009         | ± 0.009         | ± 0.007       | ± 0.005     |
|                                                                                                                                                                                                            | 0.300                                                                                                                                                                             | 0.400 | ± 0.010            | ± 0.010         | ± 0.010         | ± 0.007       | ± 0.005     |
|                                                                                                                                                                                                            | 0.400                                                                                                                                                                             | 0.500 | ± 0.015            | ± 0.012         | ± 0.012         | ± 0.008       | ± 0.006     |
|                                                                                                                                                                                                            | 0.500                                                                                                                                                                             | 0.600 | ± 0.015            | ± 0.014         | ± 0.014         | ± 0.010       | ± 0.007     |
|                                                                                                                                                                                                            | 0.600                                                                                                                                                                             | 0.800 | ± 0.015            | ± 0.015         | ± 0.015         | ± 0.010       | ± 0.007     |
|                                                                                                                                                                                                            | 0.800                                                                                                                                                                             | 1.000 | ± 0.015            | ± 0.018         | ± 0.018         | ± 0.012       | ± 0.009     |
|                                                                                                                                                                                                            | 1.000                                                                                                                                                                             | 1.200 | ± 0.020            | ± 0.020         | ± 0.020         | ± 0.015       | ± 0.012     |
|                                                                                                                                                                                                            | 1.200                                                                                                                                                                             | 1.250 | ± 0.020            | ± 0.020         | ± 0.020         | ± 0.015       | ± 0.012     |
|                                                                                                                                                                                                            | 1.250                                                                                                                                                                             | 1.500 | ± 0.020            | ± 0.020         | ± 0.020         | ± 0.015       | ± 0.014     |
| <b>Width</b>                                                                                                                                                                                               | Our width tolerances "Standard" is +0.2, -0.0 (or ± 0.1 mm upon request). They are available for slit widths < 125 mm and thicknesses < 1.00 mm. Special tolerances upon request. |       |                    |                 |                 |               |             |
| <b>Camber</b>                                                                                                                                                                                              | Width (mm)                                                                                                                                                                        |       | Camber max. (mm/m) |                 |                 |               |             |
|                                                                                                                                                                                                            |                                                                                                                                                                                   |       | WCAA Standard      |                 | WCA Extreme     |               |             |
|                                                                                                                                                                                                            | >                                                                                                                                                                                 | ≤     | ≤ 0.5 mm           | > 0.5 mm        | ≤ 0.5 mm        | > 0.5 mm      |             |
|                                                                                                                                                                                                            | 3                                                                                                                                                                                 | 6     | 12                 | -               | 6               | -             |             |
|                                                                                                                                                                                                            | 6                                                                                                                                                                                 | 10    | 8                  | 10              | 4               | 5             |             |
| Our tolerance "WCA Standard" respects the EN Standard 1654 (Length of measurement 1000 mm).<br>Other tolerances upon request.                                                                              | 10                                                                                                                                                                                | 20    | 4                  | 6               | 2               | 3             |             |
|                                                                                                                                                                                                            | 20                                                                                                                                                                                | 250   | 2                  | 3               | 1               | 1.5           |             |
| <b>Surface</b>                                                                                                                                                                                             | Special surface qualities upon request                                                                                                                                            |       |                    |                 |                 |               |             |
| <b>Flatness</b>                                                                                                                                                                                            | Special requirement on the longitudinal or transversal flatness upon request                                                                                                      |       |                    |                 |                 |               |             |

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