ALMAG

# DATA SHEET:
# CZ-NL CW511L

FREE MACHINING

HUG

# CZ-NL CW511L

Certified to NSF/ANSI/CAN 372

## Antidezincifying alloy with Pb < 0.1%.

Compliant with the requirements of the USA market with limits placed on Lead for materials in contact with water for human consumption. Its NSF372 certification is a guarantee of compliance with American standards. The good hot deformability and the high copper content makes the CZ-NL alloy an excellent material for stamping with truly modest dezincification values. The reduced lead release when in contact with water makes the alloy compliant with 4MS indications and its hygiene list.

## NAME OF ALLOY

**UNI EN:** CW511L - CuZn38As | **ASTM:** C27453

## CHEMICAL COMPOSITION UNI EN 12164:2024

| Cu | Pb | Sn | Fe | Ni | Al | Mn* | As | Zn | Other elements |
|---|---|---|---|---|---|---|---|---|---|
| min. 61.5<br>max. 63.5 % | ≤0.1 % | ≤0.1 % | ≤0.1 % | ≤0.3 % | ≤0.05 % | ≤0.1 % | 0.02<br>0.15 % | difference | ≤0.2 % |

*Limitation according 4MS. Elements not listed must be ≤0.02 %.
Group of restriction of the surface in contact with drinking water: B,D.

## HEAT TREATMENTS

### STRESS RELIEVING

Enables the redistribution of tensions induced by mechanical processing of cold plastic deformation, reducing the risk of stress corrosion cracking.
The treatment consists of heating the items to 200°C - 250°C for 2 hours and cooling within the furnace. The validation of the stress relieving treatment can be performed with the ISO 6957 test.

### SOLUBILIZATION OF RESIDUAL β PHASE

For the drawn products this treatment is performed by Almag Spa to eliminate the remaining beta phase left over from the extrusion. This treatment optimizes dezincification resistance for the alloy.

## MECHANICAL PROPERTIES UNI EN 12164:2024

| Condition of material | Diameter in mm | | Hardness HBW* | | Rm | $Rp_{0.2}$ N/mm² | | Lengthening % |
|---|---|---|---|---|---|---|---|---|
| | from | to (included) | min. | max. | min. | min. | max. | min. |
| **M** | All | | As a product | | | | | |
| **R280** | 6 (5) | 80 (60) | - | - | 280 | - | 200 | 30 |
| **H070** | 6 (5) | 80 (60) | 70 | 110 | - | - | - | - |
| **R320** | 6 (5) | 60 (50) | - | - | 320 | 200 | - | 20 |
| **H090** | 6 (5) | 60 (50) | 90 | 135 | - | - | - | - |
| **R400** | 4 | 15 (13) | - | - | 400 | 250 | - | 8 |
| **H105** | 4 | 15 (13) | 105 | - | - | - | - | - |

*the hardness value is determined in the mid-range.
The values in brackets refer to the hexagonal section bar.
The standard condition produced by Almag is R320 for Rm or H090 for hardness.
Any other conditions must be requested when ordering - subject to feasibility request.

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**Antidezincifying alloy with Pb < 0.1%.**

## TECHNOLOGICAL PROPERTIES

| | | | low ▯▯▯▯▯▯▯ excellent |
|---|---|---|---|
| **Structure** | α | **Machinability** | ■□□□□□□□ |
| **Density** | 8.4 kg/cm² | **Weldability** | ■■■■□□□□ |
| **Electrical conductivity** | 28% IACS | **Hot forming** | ■■■■□□□□ |
| **Coeff. of thermal expansion** | 20.4 $10^{-6}$/K | **Cold forming** | ■■■■■■□□ |
| **Thermal conductivity*** | 125 W/(m K) | **Corrosion resistance**** | <100 µm |
| **Specific heat** | 376 J/(kg K) | | |
| **Elasticity module** | 100 kN/mm² | *at room temperature<br>**use care to ascertain compatibility with chemical substances | |
| **Melting point** | 880-910 °C | | |

## DIMENSIONS, TOLERANCES, AND STRAIGHTNESS UNI EN 12164:2024

| ROUND section bar | | | | | HEXAGONAL and SQUARE | | |
|---|---|---|---|---|---|---|---|
| Nominal diameter (mm) | | TOLERANCES | | | Nominal key (mm) | | Tolerance mm |
| from | to included | Class A | Class B | Class C | from | to included | |
| 6 | 10 | 0 - 0.06 | 0 - 0.036 | 0 - 0.025 | 6 | 10 | 0 - 0.09 |
| 10 | 18 | 0 - 0.07 | 0 - 0.043 | | 10 | 18 | 0 - 0.11 |
| 18 | 30 | 0 - 0.08 | 0 - 0.052 | | 18 | 30 | 0 - 0.13 |
| 30 | 50 | 0 - 0.16 | | | 30 | 50 | 0 - 0.16 |
| 50 | 80 | 0 - 0.19 | | | 50 | 60 | 0 - 0.19 |

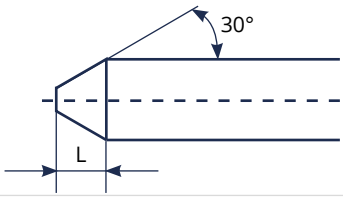
The standard tolerance for the round bar is Class A. Any different tolerances must be agreed upon when ordering
Semi-finished products can be supplied from Ø63 to Ø80 mm with Class A tolerances

| Diameter (mm) | | Length of bar (mm) | Tolerance (mm) |
|---|---|---|---|
| 2 | 30 | 3000 o 4000 | +/- 50 |
| 30 | 50 | 3000 o 4000 | +/- 100 |
| 50 | 80 | 3000 | +/- 100 |

| Diameter or Key (mm) | | Deviation from straightness in mm | |
|---|---|---|---|
| | | Every 400 mm | Every m of length L ≥ 1 |
| **Round section bar** | | | |
| 10 | 50 | 0.4 | 1.0 x L |
| **Hexagonal and square section bar** | | | |
| 10 | 50 | 0.6 | 1.5 x L |

## BAR FINISHING AND PACKAGING

| Diameter or Key (mm) | | Chamfer Length L mm | | Tip Length L mm | |
|---|---|---|---|---|---|
| 5 | 10 | 0.2 | 1.5 | 2 | 7 |
| 10 | 20 | 0.2 | 2 | 3 | 10 |
| 20 | 30 | 0.2 | 3 | 4 | 12 |




Unless otherwise specified by the buyer, the shape of the ends of products larger than 30 mm is up to the supplier

| | |
|---|---|
| **Ends of round bars** | finishing with chamfer and tip up to and including Ø40 mm |
| | finishing with chamfer and cut greater than Ø40 mm |
| **Ends of hexagonal bars** | finishing with chamfer and cut |
| **Bar surface** | pickled |
| **Packaging** | 1000 kg bundle – 3/5 metal straps<br>different bundle packagings and quantities are possible upon request |
| **Identification** | adhesive label on bundle strap |
| **Stress relieving** | the polygonal bar was subjected to stress relieving treatment |

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