METALLURGICA SAN MARCO

DATA SHEET: CW511L

HOT FORGING

aggiornato al 06 / 23

ALLOY: CW511L

Lead-free antidezincification alloy. Included in the 4MS Positive List.

ALLOY DESIGNATION

UNIEN: CW511L - CuZn38As	**ASTM:** C27453

CHEMICAL COMPOSITION UNI EN12165 ED.2016

Cu	Pb	Sn	Fe	Ni*	Al	As	Zn	Other elements
Min 61,5% max 63,5%	≤0.2 %	≤0.1 %	≤0.1 %	≤0.3 %	≤0.05 %	0.02 % 0.15 %	difference	≤0.2 %

Restrictions according to 4MS. Each unnamed element must be less than 0.02%.
Restriction group of the surface in contact with drinking water according to the «common composition list»: C and D

HEAT TREATMENTS

Two types of heat treatments are recommended to be carried out according to one's needs

STRESS RELIEVING

It specifically allows redistribution of tension induced by machining or cold plastic deformation, reducing the risk of stress corrosion cracking.

TREATMENT: heating of parts at 200°C to 250°C for 2 hours and cooling within the furnace.
Validation of stress relief treatment can be performed with the ISO 6957 test.
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SOLUBILIZATION OF RESIDUAL β PHASE

After hot stamping, to improve the corrosion resistance of the material, heat treatment between 500°C and 550°C is prescribed for a dwell time at the temperature of at least 2 hours to furnace cooling.
This treatment following the hot stamping operation allows solubilization of the residual beta phase to bring the material to a dezincification-resistant state. The omission of the treatment does not allow the alloy to provide the performance for which it was designed

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TECHNOLOGICAL PROPERTIES

Structure	Density	Electrical conductivity	Coeff. of thermal expansion	Thermal conductivity*	Specific heat	Elasticity module	Melting point
α	8.4 kg/cm^2	28% IACS	20.4 10^{-6}/K	125 W/(m K)	376 J/(kg K)	100 KN/mm^2	880-910 °C

low ○○○○○○○ excellent

Machinability: ●○○○○○○
Weldability: ●●●●○○○
Hot forming: ●●●●○○○

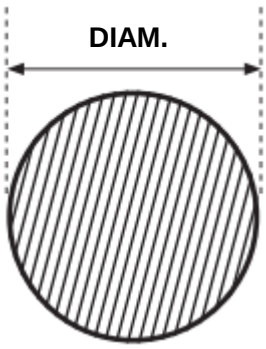
Cold Forming: ●●●●●●○
Corrosion resistance**: <100 µm

*at room temperature.
**compatibility with chemical substances should be carefully checked.

MECHANICAL PROPERTIES UNI EN12165 ED.2016

Condition of material	Diameter in mm		Hardness HB*	
	from	to (included)	min.	max
M	ALL		AS MANUFACTURED	
H070	8	120	70	150

Special hardness values must be defined when ordering.



Rm N/mm^2	$Rp_{0,2}$ N/mm^2	A%
320-360*	200-250*	20-25*

Values purely indicative.

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DIMENSIONS, TOLERANCES, AND STRAIGHTNESS UNI EN 12165 ED 2016

Nominal diameter (mm)		Tolerances		Diameter (mm)		Length of bar	Tolerance (mm)
		Class A	Class B				
10	18	+/- 0.25	+/- 0.14	10	30	3.0 – 5.0	+/- 100
18	30	+/- 0.30	+/- 0.17	30	50	3.0 – 5.0	+/- 200
30	50	+/- 0.60	+/- 0.20	50	80	3.0	+/- 300
50	80	+/- 0.70	+/- 0.37				
80	120	+/- 2					

The standard "Extruded Calibrated" product is made in Class B up to and including Ø80 mm.
Semi-finished products larger than Ø45 mm can be supplied in the "pressed" and "rolled" forms with Class A tolerance

Diameter (mm)		Deviation from straightness in mm	
		Every 400 mm	Every m of length L ≥ 1
10	60	3.0	6.0 x L

FINISHING AND PACKAGING

Bar ends	Finishing with saw cut.
Bar surface	Not pickled.
Packaging	1000 kg bundle – 3/5 metal straps. Different bundle packaging and quantities are possible on specific request.
Identification	Adhesive label on strap or bar ends.

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TECHNICAL NOTES

Anti-dezincification alloy complying with the standards of 4MS and the prerogatives of the European regulation for materials in contact with drinking water.