



**METALLURGICA
SAN MARCO**

DATA SHEET: CW510L

HOT FORGING

aggiornato al 06 / 23

ALLOY: CW510L

Lead-free hot forging alloy.

ALLOY DESIGNATION

UNIEN: CW510L - CuZn42

ASTM: C28500

CHEMICAL COMPOSITION UNI EN12165 ED.2016

Cu	Pb	Sn	Fe	Ni*	Al	Zn	Other elements
Min 57,0% max 59,0%	≤0.1 %	≤0.3 %	≤0.3 %	≤0.2 %	≤0.05 %	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

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.

ANNEALING

Recrystallization of the alloy reduces hardness and increases ductility. The treatment temperature ranges from 450°C to 550°C for a period of time relative to the intended result. The high temperature can cause variations in the surface appearance and tolerances of the finished part.

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TECHNOLOGICAL PROPERTIES

Structure	Density	Electrical conductivity	Coeff. of thermal expansion	Thermal conductivity*	Specific heat	Elasticity module	Melting point
$\alpha+\beta$	8.4 kg/cm ²	27% IACS	21.2 10 ⁻⁶ /K	112 W/(m K)	381 J/(kg K)	85 KN/mm ²	870-890 °C

low ○○○○○○ excellent

Machinability: ●●●○○○

Weldability: ●●●○○○

Hot forming: ●●●○○○

Cold Forming: ●●○○○○

Corrosion resistance**: ○○○○○○

*at room temperature.

**compatibility with chemical substances should be carefully checked.

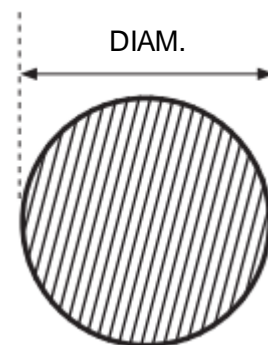
MECHANICAL PROPERTIES UNI EN12165 ED.2016

Condition of material	Diameter in mm		Hardness HB*	
	from	to (included)	min.	max
M	ALL		AS MANUFACTURED	
H090	8	120	90	190

Special hardness values must be defined when ordering.

Rm N/mm ²	Rp _{0.2} N/mm ²	A%
430-480*	310-380*	20-30*

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 $L \geq 1$
10	50	0.4	1.0 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

Lead-free alloy, which due to good machinability by chip removal and good hot deformability is ideal for those looking for an alloy with controlled impurities. This alloy is included in the Positive List of metallic materials suitable for use in contact with potable water.