ALMAG

DATA SHEET:
NLB CW510L

FREE MACHINING

HUG

NLB CW510L

Certified to NSF/ANSI/CAN 372

Lead-free alloy with optimized workability.

This alloy without lead (<0.1%) uses in the US market and in those sectors where a very low lead content and a strict control on impurities are required. Inserted in the 4MS "Positive List", it is used in the parts used in contact with drinking water.

NAME OF ALLOY

UNI EN: CW510L - CuZn42 | **ASTM:** C28500

CHEMICAL COMPOSITION UNI EN 12164:2024

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 %

*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.

ANNEALING

Re-crystallizes the alloy, reducing its hardness and increasing its ductility.
The temperature of the treatment varies from 450°C to 550°C for an amount of time relative to the required results. The high temperature can induce changes in the surface appearance and in the tolerance of the finished part.

MECHANICAL PROPERTIES UNI EN 12164:2024

Condition of material	Diameter in mm		Hardness HBW*		Rm	$Rp_{0.2}$ N/mm²		Elongation %
	from	to (included)	min.	max.	min.	min.	max.	min.
M	All		As a product					
R360	6 (5)	80 (60)	-	-	360	-	320	20
H090	6 (5)	80 (60)	90	125	-	-	-	-
R430	2	40 (35)	-	-	430	220	-	10
H110	2	40 (35)	110	160	-	-	-	-
R500	2	14 (10)	-	-	500	350	-	5
H135	2	14 (10)	135	-	-	-	-	-

*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 R400 for Ø ≤ 39 and R500 from Ø > 39 for Rm, or H110 for hardness.
Any other conditions must be requested when ordering - subject to feasibility request.

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Lead-free alloy with optimized workability.

TECHNOLOGICAL PROPERTIES

low — excellent

Structure	α+β	**Machinability**	■■■□□□□
Density	8.4 kg/cm^2	**Weldability**	■■■■□□□
Electrical conductivity	27% IACS	**Hot forming**	■■■■□□□
Coeff. of thermal expansion	21.2 10^{-6}/K	**Cold forming**	■■□□□□□
Thermal conductivity*	112 W/(m K)	**Corrosion resistance****	Not resistant
Specific heat	381 J/(kg K)		
Elasticity module	85 kN/mm^2		
Melting point	870-890 °C		

*at room temperature
**use care to ascertain compatibility with chemical substances

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

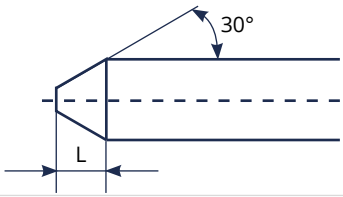
The standard tolerance for the round bar is Class A. Any different tolerances must be agreed upon when ordering
Semi-finished products can be supplied from Ø63 to Ø80 mm with Class A tolerances

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 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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