ALMAG

DATA SHEET:
39Pb3 CW614N

FREE MACHINING

HUG

39Pb3 CW614N

Standard alloy for machining with chip removal.

It has excellent workability characteristics for chip removal. The balanced chemical composition guarantees reduced chip dimensions and optimal mechanical characteristics. It is used in taps, accessories, clamps and components in general.

NAME OF ALLOY

UNI EN: CW614N - CuZn39Pb3	**ASTM:** C38500	**DIN**: 2.0401	**BS:** CZ121	**GOST:** LS58-3

CHEMICAL COMPOSITION UNI EN 12164:2024

Cu	Pb	Sn	Fe	Ni*	Al	Si*	Zn	Other elements
min. 57.0 max. 59.0 %	2.5 3.5 %	≤0.3 %	≤0.3 %	≤0.2 %	≤0.05 %	≤0.03 %	difference	≤0.2 %

*Limitation according 4MS. Elements not listed must be ≤0.02 %.
Group of restriction of the surface in contact with drinking water: C,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	KEY 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	60	-	-	360	-	350	20
H090	6	60	90	125	-	-	-	-
R430	2	40	-	-	430	220	-	10
H110	2	40	110	160	-	-	-	-
R500	2	10	-	-	500	350	-	5
H135	2	10	135	-	-	-	-	-

*the hardness value is determined in the mid-range
The standard condition produced by Almag is R430 or H110 for hardness.
Any other conditions must be requested when ordering - subject to feasibility request.

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TECHNOLOGICAL PROPERTIES

low ▯▯▯▯▯▯▯ excellent

Structure	α+β	**Machinability**	■■■■■■■▯
Density	8.4 kg/cm^2	**Weldability**	■■■■■■■▯
Electrical conductivity	28% IACS	**Hot forming**	■▯▯▯▯▯▯
Coeff. of thermal expansion	20.9 10^{-6}/K	**Cold forming**	■■▯▯▯▯▯
Thermal conductivity*	123 W/(m K)	**Corrosion resistance****	Not resistant
Specific heat	380 J/(kg K)		
Elasticity module	105 kN/mm^2		
Melting point	875-890 °C		

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

DIMENSIONS, TOLERANCES, AND STRAIGHTNESS UNI EN 12164:2024

HEXAGONAL and SQUARE

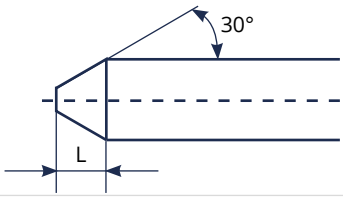
Nominal key (mm) from	Nominal key (mm) to included	Tolerance mm
6	10	0 - 0.09
10	18	0 - 0.11
18	30	0 - 0.13
30	50	0 - 0.16
50	60	0 - 0.19

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

Key (mm)		Deviation from straightness in mm	
		Every 400 mm	Every m of length L ≥ 1
Hexagonal and square section bar			
10	50	0.6	1.5 x L

BAR FINISHING AND PACKAGING

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 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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