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DATA SHEET:
39Pb3-HS CW614N

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FREE MACHINING



**Standard alloy
for machining
with chip
removal.**

The need to push mechanical processing to extreme limits has lead Almag Spa to design a highly workable alloy. The optimization of the 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 ED.2016

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 ED.2016

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

*the hardness value is determined in the mid-range
The standard condition produced by Almag is R500 from Ø > 6 to Ø < 12 and R430 from Ø > 12 for Rm, 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	$\alpha + \beta$	Machinability	
Density	8.4 kg/cm ³	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	*at room temperature **use care to ascertain compatibility with chemical substances	
Melting point	875-890 °C		

DIMENSIONS, TOLERANCES, AND STRAIGHTNESS UNI EN 12164 ED.2016

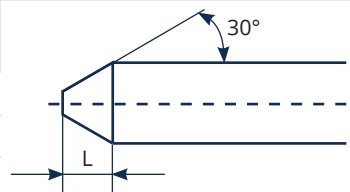
ROUND section bar				
Nominal diameter (mm)		TOLERANCES		
from	to included	Class A	Class B	Class C
6	10	0 - 0.06	0 - 0.036	0 - 0.025
10	18	0 - 0.07	0 - 0.043	
18	30	0 - 0.08	0 - 0.052	
30	50	0 - 0.16		
50	80	0 - 0.19		

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)	Diameter or Key (mm)	Deviation from straightness in mm	
				Every 400 mm	Every m of length L ≥ 1
2	30	3000 o 4000			
30	50	3000 o 4000			
50	80	3000			
				Round section bar	
			10	50	1.0 x L

BAR FINISHING AND PACKAGING

Diameter 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
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 stress relieving treatment could be made on demand



COMPANY WITH
MANAGEMENT SYSTEM
CERTIFIED BY DNV GL
= ISO 9001 =
= ISO 14001 =
= OHSAS 18001 =

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