

sarbak



## TECHNICAL DATA SHEET

**CW614N - CuZn39Pb3**

S614 - S614DW  
RODS / HOLLOW RODS

Product Code	EN Symbol	EN No	ASTM		Cu	Zn	Pb	Sn	Fe	Ni	Al	Si	Others Total
S614	CuZn39Pb3	CW614N	C38500	Min (%)	57,0	Rem.	2,5	-	-	-	-	-	-
				Max (%)	59,0	Rem.	3,5	0,3	0,3	0,3	0,05	-	0,2
(*) S614DW	CuZn39Pb3-DW	CW614N-DW	C38500	Min (%)	57,0	Rem.	2,5	-	-	-	-	-	-
				Max (%)	59,0	Rem.	3,5	0,3	0,3	0,2	0,05	0,03	0,2

(\*) Each of the other elements < 0,02 %

## Features And Applications

CW614N called MS58 in the market, is the most widely used standard free machining material with a 100% machinability index. It has got limited hot forming and poor cold forming capability. Also this alloy compliance with RoHS II and REACH directives. CW614N-DW alloy be used suitable for 4MS vs UBA list for drinking water applications.

4MS and UBA Hygienic list group for CW614N-DW alloy: C and D

## Area of Usage

General parts produced by machining.

## TECHNICAL SPECIFICATIONS

<b>Structure</b>	$\alpha + \beta$	<b>Hot Forming</b>	650-800 °C
<b>Machinability</b>	% 100	<b>Soft Annealing</b>	450-600 °C
<b>Density</b>	8,46 g/cm <sup>3</sup>	<b>Soft Annealing Time</b>	1-3 hours
<b>Electrical Conductivity</b>	14,6 MS/m, 25 %IACS	<b>Stress Relieving</b>	200-300 °C
<b>Thermal Conductivity</b>	113 W/(m·K)	<b>Stress Relieving Time</b>	1-3 hours
<b>Elasticity Module</b>	96 GPa		
<b>Coeff. of Thermal Expansion</b>	21,4 10 <sup>-6</sup> /K		
<b>Melting Point</b>	880-895 °C		

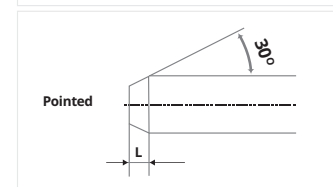
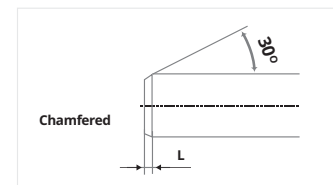
## Range of Products

S614 and S614-DW alloys can be produced in our extrusion and cold drawing unit as rods, hollows and profiles suitable for both forging and machining. Please contact us for other technical informations.

### INDICATIVE SHAPED ENDS DIMENSIONS

Nominal Diameter or Width		Type A - Chamfer Length(L)		Type B - Point Length(L)	
Across-flats (mm)		Min (mm)	Max (mm)	Min (mm)	Max (mm)
Over	Up to and including				
7	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.



Nominal Diameter or Width Across-flats (mm)		Preferred (available) Lengths (mm)	Tolerance on Length (mm)
Over	Up to and including		
7	30	3.000 - 4.000	±50
30	65	3.000 - 4.000	±100

**Stress Relieving** The polygonal rods and hollow rods are subjected to stress relieving treatment

**Packaging** 500 or 1000 kg bundle – 3/5 metal straps different bundle packagings, up to 10 mm dimension products are packed with wooden case

### EN 12164 - Rods for Free Machining

Material Condition	Nominal Diameter (mm)		Width Across-flats (mm)		Tensile Strength R <sub>m</sub> N/mm <sup>2</sup> (MPa) <b>Min</b>	0,2 % Proof Strength N/mm <sup>2</sup> (MPa)		Elongation			Hardness (HBW)	
	Over	Up to and inc.	Over	Up to and inc.		Min	Max	A <sub>100mm</sub> (%)	A <sub>11,3</sub> (%)	A (%)	Min	Max
	As manufactured											
M	All		All									
R360	7	65	7	55	360	-	350	-	15	20	-	-
H090	7	65	7	55	-	-	-	-	-	-	90	125
R430	7	60	7	40	430	220	-	6	8	10	-	-
H110	7	60	7	40	-	-	-	-	-	-	110	160
R500	7	14	7	10	500	350	-	-	3	5	-	-
H135	7	14	7	10	-	-	-	-	-	-	135	-

### EN 12168 - Hollow Rods for Free Machining

Material Condition	Wall Thickness (mm)		Tensile Strength R <sub>m</sub> N/mm <sup>2</sup> (MPa) <b>Min</b>	0,2 % Proof Strength N/mm <sup>2</sup> (MPa)		Elongation A (%) <b>Min</b>	Hardness (HBW)		Hardness (HV)	
	Over	Up to and inc.		Min	Max		Min	Max	Min	Max
	As manufactured									
M	All									
R360	3	40	360	-	320	20	-	-	-	-
H090	3	40	-	-	-	-	90	125	100	135
R430	3	15	430	220	-	10	-	-	-	-
H110	3	15	-	-	-	-	110	160	120	170
R500	3	7	500	350	-	8	-	-	-	-
H135	3	7	-	-	-	-	135	-	145	-

### EN 12165 - Wrought and Unwrought Forging Stocks

Material Condition	Nominal Diameter (mm)		Hardness (HBW)	
	Over	Up to and including	Min	Max
M	All		As manufactured	
H080	8	65	80	125

STANDARD		EN 12164			EN 12165		EN 12168					
Dimension Range		Round Rod		Hexagonal, Square	Round Rod		Round and Hexagonal Hollow Rod, Outer Dim. Tol.			Hole Tolerance Round		Hole Tol. Hexagonal
	Up to & inc.	Class A	Class B	Rod	Class A	Class B	Class A	Class B	Class C	Class A	Class B	-
7	10	0 -0,06	0 -0,036	0 -0,09	±0,25	±0,14	-	-	-	-	-	-
10	13	0 -0,07	0 -0,043	0 -0,11	±0,25	±0,14	-	-	-	-	-	-
13	18	0 -0,07	0 -0,043	0 -0,11	±0,25	±0,14	-	-	-	±0,35	-	+0,70 -0
18	20	0 -0,08	0 -0,052	0 -0,13	±0,30	±0,17	-	-	-	±0,42	-	+0,84 -0
20	23	0 -0,08	0 -0,052	0 -0,13	±0,30	±0,17	-	-	-	±0,42	±0,17	+0,84 -0
23	26	0 -0,08	0 -0,052	0 -0,13	±0,30	±0,17	-	0 -0,21	-	±0,42	±0,17	+0,84 -0
26	30	0 -0,08	0 -0,052	0 -0,13	±0,30	±0,17	-	0 -0,21	0 -0,13	±0,42	±0,17	+0,84 -0
30	50	0 -0,16	-	0 -0,16	±0,60	±0,20	-	0 -0,25	0 -0,16	±0,80	±0,20	+1,6 -0
50	55	0 -0,19	-	0 -0,19	±0,70	±0,37	-	0 -0,46	0 -0,30	±0,95	±0,37	-
55	65	0 -0,19	-	-	±0,70	±0,37	±0,60	0 -0,46	0 -0,30	±0,95	-	-
65	80	-	-	-	±0,70	-	±0,60	0 -0,46	0 -0,30	±0,95	-	-
80	110	-	-	-	±2	-	-	-	-	-	-	-

### For Hollow Rods

Minimum wall thickness is 3 mm. Eccentricity : % 8 (max.)

" For hollows, maximum outer diameter is 78 mm and maximum producible weight 28 kg in 1 meter."

**Outer Cold Drawn - Internal Extruded**  
Outer Class B - Hole Class A tolerance

**Inner-Outer Cold Drawn**  
Outer Class C - Hole Class B tolerance

**Inner-Outer Extruded**  
Outer Class A - Hole Class A tolerance





**Headquarter**

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