

Technical Specifications

CW603N

Alloy	
EN Symbol	CuZn36Pb3
EN No	CW603N
ASTM	C35600-C36000
DIN	20.375

CW603N Chemical Composition								
	Cu	Pb	Sn	Fe	Ni	Al	Si	Zn
Min	60,00	2,50	-	-	-	-	-	-
Max	62,00	3,50	0,20	0,30	0,30	0,05	-	Kalan

CW603N-DW Chemical Composition								
	Cu	Pb	Sn	Fe	Ni	Al	Si	Zn
Min	60,00	2,50	-	-	-	-	-	-
Max	62,00	3,50	0,20	0,30	0,20	0,05	0,03	Kalan

Applications and Features

It is referred to as automatic brass.

It is used in the manufacture of parts that high-speed machining and high clamping force components such as collar bolts.

For use in drinking water installations; to CW603N-DW 4MS and UBA material constraint group is C,D.

Production Standard

Solid Bar for Machining (Chamfered)	EN 12164
Hollow Bar for Machining (Chamfered upon request)	EN 12168
Profile for Machining	EN 12167

Heat Treatment

Annealing	450 – 550 °C	1 – 2 hours
Stress Relieving Annealing	200 – 320 °C	1 – 2 hours

Technical Properties

Structure		$\alpha+\beta$
Density	g/cm ³	8,5
Coefficient of Thermal Expansion	10-6/K	00020,5
Electrical Conductivity (%)	IACS	00026
Thermal Conductivity	W/(m K)	00120
Elastic Modulus	GPa	00097
Melting Temperature	°C	875-900

Machining Properties

Machinability	Very Good
Hot Forming (700-800 °C)	Good
Cold Forming	Very Good

Corrosion Resistance

Poor Corrosion Resistance

EN 12164:2024 - Free Machining Rod Standard Mechanical Properties

Material Condition	Diameter		Parallel Surface (mm)		Tensile Strength Rm	0,2 % Yield Strength Rp 0,2		Elongation			Hardness	
	(mm)		(mm)		N/mm2 (MPa)	N/mm2 (MPa)		A100 mm (%)	A11,3 (%)	A (%)	(HBW)	
	Above	Including	Abv.	Inc.	Min	Min	Max	Min	Min	Min	Min	max
M	All		All		As produced							
R340	5	60	5	55	340	-	280	-	-	20	-	-
H070	5	60	5	55	-	-	-	-	-	-	70	120
R400	5	25	5	20	400	200	-	4	8	12	-	-
H100	5	25	5	20	-	-	-	-	-	-	100	140
R480	5	14	5	10	480	350	-	3	5	8	-	-
H125	5	14	5	10	-	-	-	-	-	-	125	-

* Please contact us for R340 condition.

* Mechanical properties are referenced according to the EN 12164 standard.

EN 12168:2024 - Free Machining Hollow Rod Standard Mechanical Properties

Material Condition	Wall Thickness		Tensile Strength Rm		0,2 % Yield Strength Rp 0,2		Elongation	Hardness	
	(mm)		N/mm2 (MPa)		N/mm2 (MPa)		A (%)	(HBW)	
	Above	Including	Min		Min	Max	Min	Min	Min
M	All		As produces						
R340	3	20	340		-	280	20	-	-
H070	3	20	-		-	-	-	70	120
R400	3	10	400		200	-	12	-	-
H1100	3	10	-		-	-	-	100	140
R480	3	7	480		350	-	8	-	-
H125	3	7	-		-	-	-	125	-

* Hollow tubes are produced in M condition. Please contact us for special requests.

EN 12164:2024 - Free Machining Rod Standard Dimensional Tolerances

Dimensional tolerances of the round bar (including deviation from roundness)					Dimensional tolerances of the width between parallel surfaces of regular polygon bars
Nominal Diameter (mm)		Tolerance(mm)			
Above	Up to and including...	Class A	Class B	Class C	Tolerance(mm)
2	3	-0,04	-0,025	-0,015	-0,06
3	6	-0,05	-0,03	-0,020	-0,08
6	10	-0,06	-0,036	-0,025	-0,09
10	18	-0,07	-0,043	-	-0,11
18	30	-0,08	-0,052	-	-0,13
30	50	-0,16	-	-	-0,016
50	55	-0,19	-	-	-0,19

* Please contact us for Class C tolerances.

EN 12164:2024 - Free Machining Rod Length Standard

Length tolerance (mm) for bars in nominal lengths			
Nominal diameter or width between parallel surfaces		Nominal diameter or width between parallel surfaces	Nominal diameter or width between parallel surfaces
Above	Up to and including...		
2	30	3000 or 4000	±0,50
30	50	3000 or 4000	±0,100
50	60	3000	±0,100

EN 12168:2024 - Free Machining Hollow Rod Standard Dimensional Tolerances

Outer diameter or width between parallel surfaces tolerances					Wall Thickness Tolerance		Wall Thickness Tolerance (%)	Bore Diameter Tolerances			
Nominal outer diameter or distance between parallel surfaces (mm)		Tolerance(mm)			Nominal Wall Thickness (mm)			Nominal outer diameter or distance between parallel surfaces (mm)		Tolerance(mm)	
Abv.	Inc.	Class A	Class B	Class C	Abv.	Inc.		Abv.	Inc.	Class A	Class B
17	18	-	-0,18	-0,11	2a	3	±12*Wall Thickness	10	18	±35	±14
18	30	-	-0,21	-0,13	3	6	±10* Wall Thickness	18	30	±42	±17
30	50	±0,31	-0,25	-0,16	6	10	±9* Wall Thickness	30	50	±80	±20
50	80	±0,60	-0,46	-0,30	10	-	±8* Wall Thickness	50	70	±95	±37

*For hollow tubes; The minimum outer diameter is produced as 19mm.

Minimum wall thickness is 3mm.

EN 12168:2024 - Free Machining Hollow Rod Length Standard

Length Tolerance (mm) for Bars in Nominal Lengths			
Preferred (Available) Lengths		Preferred (Available) Lengths	Preferred (Available) Lengths
Above	Up to and including...		
18	30	2700 - 4000	±0,50
30	50	2500 - 3500	±0,100
50	80	2000 - 3000	±0,100

Chamfer					
Determining Shaped End Dimensions (mm)					
Nominal Diameter D or Distance Between Parallel Surfaces W		Figure 1 – Chamfer, Length L		Figure 2 – Sharpened, Length L	
Above	Up to and including...	Min.	Max.	Min.	Max.
5	10	0,2	1,5	2,0	7,0
10	20	0,2	2,0	3,0	10,0
20	30	0,2	3,0	4,0	12,0
*Chamfering is done to remove burrs. *Tapering is done for easy feeding of bars into automatic feeding devices. *Please contact us for chamfering on products over 50mm.					

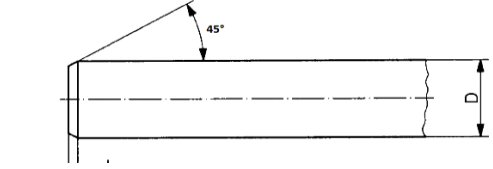


Fig. 1 Chamfer

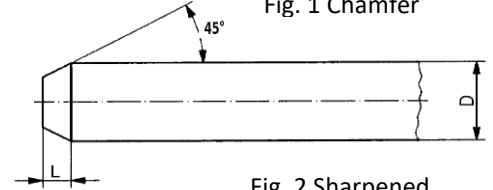


Fig. 2 Sharpened

Stress Relieving
According to the EN 12164 standard, stress relieving annealing is not performed unless a special request is specified.
Stress relieving annealing is performed on all products that have undergone cold forming according to the EN 12168 standard.

Packaging
After chamfering, all products according to the EN 12164 and EN 12168 standards are packaged in thick nylon.
Bundles range from 500 to 1000 kg.
If there is a special request, the products are shipped in wooden crates.