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BAKIR ALAŞIMLARI SANAYİ VE TİCARET A.Ş.

Technical Specifications

CW612N

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Alloy	
EN Symbol	CuZn39Pb2
EN No	CW612N
ASTM	C37700
DIN	20.380

CW612N Chemical Composition								
	Cu	Pb	Sn	Fe	Ni	Al	Si	Zn
Min	59,00	1,60	-	-	-	-	-	-
Max	60,00	2,50	0,30	0,30	0,30	0,05	-	Kalan

CW612N-DW Chemical Composition								
	Cu	Pb	Sn	Fe	Ni	Al	Si	Zn
Min	59,00	1,60	-	-	-	-	-	-
Max	60,00	2,20	0,30	0,30	0,10	0,05	-	Kalan

Applications and Features
It is suitable for machinability and hole drilling.
It is suitable for the hot and cold forging process due to its ductility.
For use in drinking water installations; to CW612N-DW the 4MS and UBA material constraint is B,D

Production Standard	
Solid Bar for Machining (Chamfered)	EN 12164
Solid Bar for Forging	EN 12165
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		α+β
Density	g/cm^3	8,44
Coefficient of Thermal Expansion	10-6/K	00021
Electrical Conductivity (%)	IACS	00027
Thermal Conductivity	W/(m K)	00109
Elastic Modulus	GPa	00102
Melting Temperature	°C	880-900

Machining Properties	
Machinability	Good
Hot Forming (650-760 °C)	Very Good
Cold Forming	Good

Corrosion Resistance
Good Corrosion Resistance

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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	Inc.	Abv.	Inc.	Min	Min	Max	Min	Min	Min	Min	max
M	All		All		As produced							
R360	5	60	5	55	360	-	300	-	15	20	-	-
H070	5	60	5	55	-	-	-	-	-	-	70	700
R410	5	60	5	40	410	230	-	8	10	12	-	-
H100	5	60	5	40	-	-	-	-	-	-	100	145
R500	5	20	5	10	500	350	-	3	5	8	-	-
H120	5	20	5	10	-	-	-	-	-	-	120	-

* Please contact us for R360 condition.

EN 12165:2024 - Forging Stock Standard Mechanical Properties				
Material Condition	Diameter (mm)		Hardness	
	(mm)		(HBW)	
	Above	Including	Min	max
M	All		As produced	
H070	5	110	70	170

* Mechanical properties are referenced according to the EN 12164:2024 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 produced					
R360	3	20	360	-	300	20	-	-
H070	3	20	-	-	-	-	70	100
R410	3	10	410	250	-	12	-	-
H100	3	10	-	-	-	-	100	145
R500	3	7	500	350	-	8	-	-
H120	3	7	-	-	-	-	120	-

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

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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		Preferred (Available) Lengths	Length Tolerances
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 12165:2024 - Round Forging Stock Diameter Tolerance			
Nominal Diameter(mm)		Tolerance(mm)	
Above	Up to and including...	Class A	Class B
10	18	±0,25	±0,14
18	30	±0,30	±0,17
30	50	±0,60	±0,20
50	65	±0,70	±0,37
65	80	±0,70	-
80	110	±2	-

* For forged stocks, length and length tolerance are determined mutually. If no request is specified, the manufacturer will decide on the length.

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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 Bore Diameter (mm)		Bore Diameter Tolerance(mm)	
Above	Inc.	Class A	Class B	Class C	Abv.	Inc.		Above	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;
1- The minimum outer diameter is produced as 19mm.
2- Minimum wall thickness is 3mm.
3- Maximum diamete is 89mm.

EN 12168:2024 - Free Machining Hollow Rod Length Standard			
Length Tolerance (mm) for Bars in Nominal Lengths			
Nominal Diameter or Width Between Parallel Surfaces		Preferred (Available) Lengths	Length Tolerances
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.

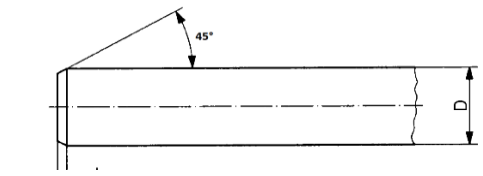

Fig.1 Chamfer

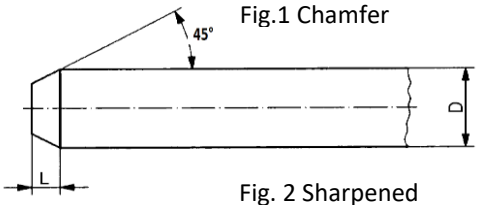

Fig. 2 Sharpened

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.