



EVREN

**CuZn40 - CW509L
E509L**

TECHNICAL DATA SHEET

FREE MACHINING / HOT FORGING / HOLLOW RODS

Suitable for High copper content & Low leaded alloy production.

**CW509L
CuZn40**

ALLOY NAME

UNI EN: CW509L - CuZn40

DIN: 2.0360

ASTM: C27540

BS: CZ109

CHEMICAL COMPOSITION

(%)	Cu	Pb	Fe	Sn	Al	Ni	As	Zn	Others
min.	59,00	-	-	-	-	-	-	rem.	-
max.	61,50	0,2	0,2	0,2	0,05	0,3	-		0,2

TOLERANCES AND LENGTH

STANDARD		EN 12164			EN 12165		EN 12168					
Nominal Diameter		Round		Regular polygonal rod	Round		Tolerance on diameter or width across-flats			Tolerances on bore diameter		Bore dia. Polygonal
over	up to & incl.	Class A	Class B		Class A	Class B	Class A	Class B	Class C	Class A	Class B	
6	10	0 -0,06	0 -0,036	0 -0,09	+0,25	+0,14	-	-	-	-	-	-
10	13	0 -0,07	0 -0,43	0 -0,11	+0,25	+0,14	-	-	-	-	-	-
13	18	0 -0,07	0 -0,43	0 -0,11	+0,25	+0,14	-	-	-	+0,35	-	+0,70 -0
18	30	0 -0,08	0 -0,52	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	+0,31	0 -0,25	0 -0,16	+0,80	+0,20	+1,6 -0
50	80	0 -0,19	-	0 -0,19	+0,70	+0,37	+0,60	0 -0,46	0 -0,30	+0,95	-	-
80	120	-	-	-	+2	-	-	-	-	-	-	-
120	140	-	-	-	+2,5	-	-	-	-	-	-	-

Nominal external diameter or width across-flats(mm)		Preferred Lengths (mm)	Tolerance on Length (mm)
over	up to and including		
2	30	3000 and 4000	50
30	50	3000 and 4000	100
50	80	3000	100

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STRAIGHTNESS

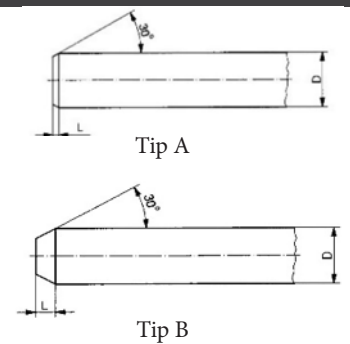
Nominal diameter or width across-flats (mm)	Maximum Deviation from straightness (TS EN 12164:2016)			
	any 400mm length	over whole length 1m	any 400mm length	over whole length 1m
	Round Rod		Polygonal Rod	
10mm - 50mm (including)	0,4	1,0 X M	0,6	1,5 X M

Nominal diameter or width across-flats (mm)	Maximum Deviation from straightness (TS EN 12165:2016)	
	any 400mm length	over whole length 1m
	Round Rod	
10mm - 60mm (including)	1,5	3,0 X M

Nominal diameter or width across-flats (mm)	Maximum Deviation from straightness (TS EN 12168:2012)			
	any 400mm length	over whole length 1m	any 400mm length	over whole length 1m
	Round Rod		Polygonal Rod	
12mm - 50mm (including)	0,7	1,5 X M	1,0	2,0 X M

CHAMFER

Nominal diameter or width across-flats(mm)		Type A (Chamfer) Length L		Type B (Point) Length L	
over	up to and including.	min	max	min	max
5	10	0,2	1,5	2	7
10	20	0,2	2	3	10
20	30	0,2	3	4	12



TECHNICAL PROPERTIES

Density (g/cm ³)	8,39	Coef. of thermal exp. (10 ⁻⁶ /K)	20,8
Melting point (°C)	880	Hot Forming	Good
Specific Heat (J/g°C)	375	Cold Forming	Good
Electrical Conductivity %IACS	28	Machinability	50%
Thermal Conductivity	122	Stress Relieving	200°C - 250°C
Elasticity Module (Gpa)	105	Annealing	450°C - 550°C

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MECHANICAL PROPERTIES / FREE MACHINING RODS

TS EN 12164:2016

Material Condition	Diameter(mm)		Width across-flats (mm)		Hardness HB		Tensile strength Rm N/mm ² min	0,2 % proof strength Rp _{0,2} N/mm ²		Elongation			
	over	up to and including	over	up to and including	min	max		min	max	A11,3 %	A%		
										min	max	min	max
M	All		All		As manufactured								
R360	6	80	5	60	-	-	360	-	300	15	20		
H070	6	80	5	60	70	110	-	-	-	-	-		
R410	2	40	2	35	-	-	410	250	-	8	10		
H100	2	40	2	35	100	145	-	-	-	-	-		
R500	2	14	2	10	-	-	500	350	-	5	8		
H120	2	14	2	10	120	-	-	-	-	-	-		

MECHANICAL PROPERTIES / HOT FORGING RODS

TS EN 12165:2016

Designations		Material Condition	Diameter (mm)		Hardness HB	
Material			over	up to and including	min.	max.
Symbol	Number					
CuZn40	CW509L	M	All		As manufactured	
		H070	8	120	70	100

MECHANICAL PROPERTIES / HOLLOW RODS

TS EN 12168:2012

Material Condition	Thickness (mm)		Hardness HB		Tensile Strength Rm N/mm ² min.	0,2 % proof strength Rp _{0,2} N/mm ²		Elongation		
	from	up to and including	min.	max.		min.	max.	A%		
								min.	max.	max.
M	All		As manufactured							
R360	2	20	-	-	360	-	300	20		
H070	2	20	70	110	-	-	-	-		
R410	2	10	-	-	410	250	-	12		
H100	2	10	100	145	-	-	-	-		
R500	2	7	-	-	500	350	-	8		
H120	2	7	120	-	-	-	-	-		

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