

Material Datasheet:
CuZn40
(CW509L)

# CuZn40

# for both machining and hot stamping rods

CuZn40 alloy, also known as "Muntz Metal", integrates the 4MS Composition List of accepted metallic materials to be in contact with drinking water.

It has fair characteristics for machining operations, due to its low content in lead. As for conformability, this alloy shows a fair behavior when cold formed and an excellent behavior when hot formed.

N	MATERIAL DESIGNATION								
	ASBW	International	EN	UNS	JIS	Further Restrictions**			
	B18	CuZn40	CW509L	C28000	C3712	4 MS Common Approach, Part B			

REFEREN	REFERENCE CHEMICAL COMPOSITION IN % (MAIN ELEMENTS) *									
Material	Cu	Pb	Ni	Fe	As	Sn	Al	Bi	Zn	Other elements
B18**	60,0	0,1	0,2	0,1	-	0,1	0,03	-	Rem.	<b>≤</b> 0.2 %

<sup>\*</sup> Deviations from these values may occur within the restrictions of the relevant standard specifications.

### FABRICATION PROPERTIES

### **FORMING**

Machinability (CuZn39Pb3 = 100 %)	40%
Cold Workability	Fair
Hot Workability	Excellent

### **JOINING**

Resistance Welding (Butt Welding)	Good
Inert Gas Shielded Arc Welding	Fair
Gas Welding (Most Commonly Oxyacetylene)	Good
Hard Soldering	Good
Soft Soldering	Excellent
Brazing	Good

### **POLISHING**

Mechanical	Good
Electrolytic	Poor
Electroplating	Excellent

<sup>\*\*</sup> ASBW / B18 complies with the restrictions to the chemical composition of the signed materials in the table, according to the specified in the 4 MS Common Composition List, on customer request.

HEAT TREATMENT					
Melting Range	880 - 900 °C				
Hot Working	630 - 730 °C				
Soft Annealing	420 - 630 °C Duration: 1 - 3 h				
Thermal Stress Relieving	160 – 280 °C Duration: 1 – 3 h				

PRODUCT STANDARDS	
Rod	EN 12164 EN 12165
Section	EN 12167

# CORROSION RESISTANCE

Machining brass is quite resistant to organic substances and to neutral or alkaline compounds. In comparison, homogeneous  $\alpha$ -brass has a much more satisfactory corrosion resistance due to its microstructure. As for the stress corrosion cracking and dezincification, specially under conditions as warm, acidic waters and ammoniacal atmospheres, they should be taken into consideration, even more when the material is not under a stress relieved condition.

Physical properties*								
Material Density [g/cm³]	Electrical C	onductivity [% IACS]	Thermal Conductivity [W/(m.K)]	Thermal Expansion Coefficient (0 - 300 °C) [10⁴/K]	Modulus of Elasticity [GPa]			
8,43	16,76	28	124	20,5	106			

<sup>\*</sup> Refence values at room temperature

# **Mechanical properties**

Round r	Round rods/polygonal rods acc. to EN 12164											
	Diameter		Width across flats		Tensile strength Yiel		Yield strength		Elongation		Hardness	
Temper					Rm	Rp0.2		A100	A11.3	Α	Н	IB
. emper	from [mm]	to [mm]	from [mm]	to [mm]	MPa min.	MPa min.	MPa max.	[%] min.	[%] min.	[%] min.	min.	max.
M	all all		as manufactured – without specified mechanical properties						max.			
R360	6	80	5	60	360	-	300	-	15	20	-	-
H070	6	80	5	60	-	-	-	-	-	-	70	100
R410	2	40	2	35	410	230	-	8	10	12	-	-
H100	2	40	2	35	_	-	-	-	-	-	100	145
R500	2	14	2	10	500	350	-	3	5	8	-	-
H120	2	14	2	10	_	_	_	_	_	_	120	_

Rectang	Rectangular rods acc. to EN 12167									
	Thic	/noss	Tensile strength	Yield strength			Elongation	ı	Hardness	
Temper	Thickness		Rm	Rm Rp		A100	A11.3	Α	Н	В
remper	from	to	MPa	MPa	MPa	[%]	[%]	[%]		
	[mm]	[mm]	min.	min.	max.	min.	min.	min.	min.	max.
М	all		as manufactured - without specified mechanical properties							
R360	3	20	360	-	300	10	15	20	-	-
H090	3	20	-	-	-	-	-	-	70	100
R410	3	10	410	220	-	8	10	12	-	-
H100	3	10	-	-	-	-	-	-	100	145
R500	3	10	500	350	-	2	5	8	-	-
H120	3	10	-	-	-	-	-	-	120	-

Rods acc. to EN 12165						
Temper	Diam	eter	Hardness HB			
remper	from [mm]	to [mm]	min.	max.		
M	al	I	As manufactured			
H070	8	120	70	100		

FINISHING ANI	D PACKAGING
Bar ends	Marked according to customer's specification
Bar surface	Standard machining rods: bright, stripped surface
	Standard stamping rods: Dark and uniform surface
Packaging	Size range up to 10 mm:
5 5	The rods are packed loose in a wooden box and protected with oiled paper (net weight of approx. 500 kg). Each box is strapped with 4 steel straps to ensure material integrity during shipping.
	Size range > 10 mm:
	ASBW machining rods are supplied by standard in bundles either of approximately 1.000 kg or 500 kg. Different bundle weights are also possible upon costumer's request. Each bundle is steel strapped three times on cardboard and both ends are protected with litter, to ensure the material integrity during the transportation
Identification	Adhesive label on bundle strap: - customer - number of customer's order
	- EN Standard of the material
	- ASBW material code and LOT number ensuring production tracking
	- rod length
	- ASBW's PO number
	- ASBW's Quality Approval Seal

The technical information within this datasheet is provided by ASBW without any surcharge. The end use of this content is up to the user discretion and risk. For further detailing on technical aspects such as material condition, machining, mechanical data, temper selection through contact to our technical personal.



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