Material Datasheet: CuZn36Pb2As (CW602N)

MACHINING / HOT STAMPING BRASS RODS

Reviewed in 07/2018

CuZn37Pb2As

Dezincification resistant standard alloy for machining

CuZn37Pb2As alloy combines remarkably both machining and cold working properties, being commonly used for bending. For this reason, it suits all the applications where these two characteristics are required simultaneously. Furthermore, it also has excellent hot working properties, which makes it ideal for parts that need posterior machining operations.

MATERIAL DESIGNATION

ASBW	International	EN	UNS	JIS	Further Restrictions
B10	CuZn37Pb2As	CW602N	C35330	-	4 MS Common Approach, Part B

REFERENCE CHEMICAL COMPOSITION IN % (MAIN ELEMENTS) *

Material	Cu	Pb	Ni	Fe	As	Sn	Al	Bi	Zn	Other elements
B10**	62,0	2,0	0,1	0,1	0,1	0,1	0,05	-	Rem.	≤ 0.2 %

*** Deviations from these values may occur within the restrictions of the relevant standard specifications.**
Elements not listed must be < 0.02 %
**** ASBW / B10 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.**

FABRICATION PROPERTIES*

FORMING

Machinability (CuZn39Pb3 = 100 %)	80 %
Cold Workability	Good
Hot Workability	Good

JOINING

Resistance Welding (Butt Welding)	Fair
Inert Gas Shielded Arc Welding	Not Recommended
Gas Welding (Most Commonly Oxyacetylene)	Not Recommended
Hard Soldering	Fair
Soft Soldering	Excellent
Brazing	Fair

POLISHING

Mechanical	Good
Electrolytic	Fair
Electroplating	Excellent

***Dezincification resistance is achieved through a β-phase-free microstructure. Therefore, a 550 °C/4h heat treatment of the parts is recommended after stamping or any other operation that require an exposure of the brass rods to high temperatures.**

HEAT TREATMENT

Melting Range	880 – 800 °C
Hot Working	700 – 800 °C
Soft Annealing	450 – 550 °C Duration: 1 – 3 h
Thermal Stress Relieving	230 – 330 °C Duration: 1 – 3 h

PRODUCT STANDARDS

Rod	EN 12164 EN 12165
Section	EN 12167

CORROSION RESISTANCE

Machining brass has a poor resistance to organic substances and also neutral or alkaline compounds.
In comparison, homogeneous α-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 Conductivity		Thermal Conductivity [W/(m.K)]	Thermal Expansion Coefficient (0 – 300 °C) [10⁻⁶/K]	Modulus of Elasticity [GPa]
	[MS/m]	[% IACS]			
8,47	14,74	24	116	20,4	113

* Refence values at room temperature

Mechanical properties

Round rods/polygonal rods

acc. to EN 12164

Temper	Diameter		Width across flats		Tensile strength Rm	Yield strength Rp0.2		Elongation			Hardness HB	
	from [mm]	to [mm]	from [mm]	to [mm]	MPa min.	MPa min.	MPa max.	A100 [%] min.	A11.3 [%] min.	A [%] min.	min.	max.
M	all		all		as manufactured – without specified mechanical properties							
R280	6	80	5	60	280	–	200	–	25	30	–	–
H070	6	80	5	60	–	–	–	–	–	–	70	110
R320	6	60	5	50	320	200	–	–	15	20	–	–
H090	6	60	5	50	–	–	–	–	–	–	90	135
R400	4	15	2	13	400	250	–	–	5	8	–	–
H105	4	15	2	13	–	–	–	–	–	–	105	–

Rectangular rods

acc. to EN 12167

Temper	Thickness		Tensile strength Rm	Yield strength Rp0.2		Elongation			Hardness HB	
	from [mm]	to [mm]	MPa min.	MPa min.	MPa max.	A100 [%] min.	A11.3 [%] min.	A [%] min.	min.	max.
M	all		as manufactured – without specified mechanical properties							
R360	6	40	360	–	320	–	15	20	–	–
H090	6	40	–	–	–	–	–	–	90	125
R430	3	20	430	220	–	6	8	10	–	–
H110	3	20	–	–	–	–	–	–	110	160
R500	3	10	500	350	–	2	5	8	–	–
H135	3	10	–	–	–	–	–	–	135	–

FINISHING AND 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:** **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** **- rod length** **- ASBW's PO number** **- ASBW's Quality Approval Seal**

ASBW - Metais & Metais, S.A

Main office and factory: Rua de Sousanil, 476, 4525-100 Canedo VFR, Santa Maria da Feira - Portugal
Phone: +351 227 637 040
Email: asbw@asbw.pt
NIPC: 513 345 183
Social Capital: € 50.000