

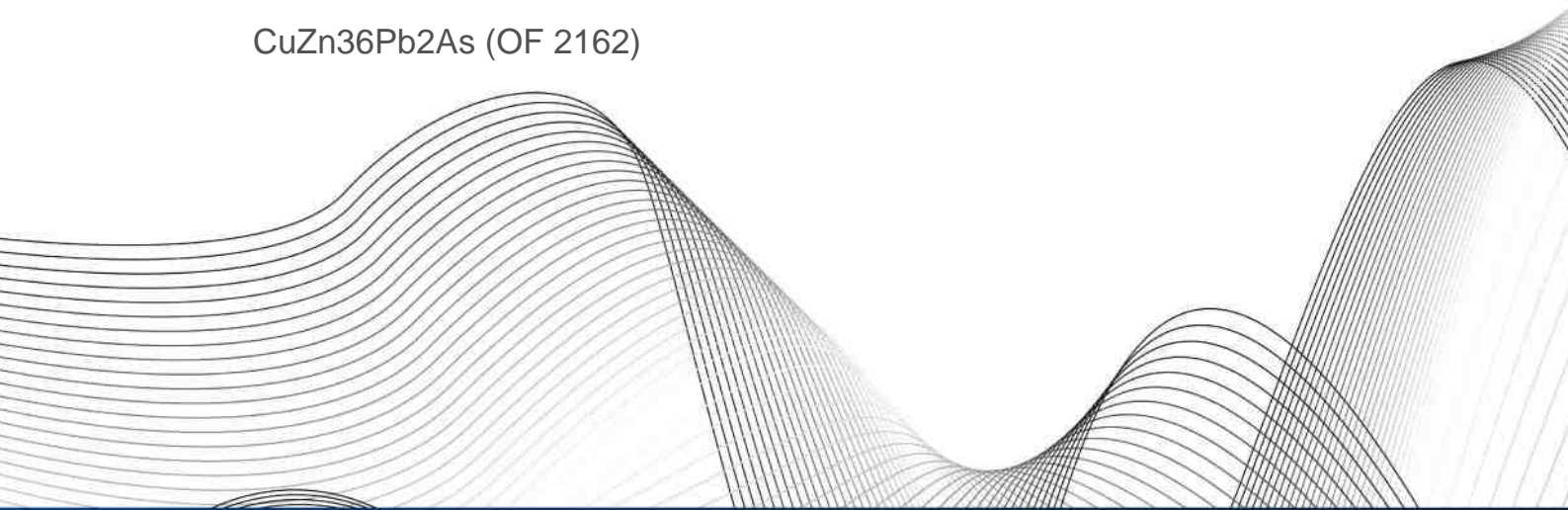


OTTO FUCHS
Dülken GmbH & Co. KG



Copper and Copper Alloys

CuZn36Pb2As (OF 2162)



	Cu	Zn	Pb	Sn	Fe	Mn	Ni	Al	Si	As	Co	Cr	Others
min.	61.0	Rem.	1.7	-	-	-	-	-	-	0.02	-	-	-
max.	63.0	-	2.2	0.1	0.1	0.1	0.2	0.05	-	0.1	-	-	0.2

Applications

CuZn36Pb2As after special heat treatment is a very good material for use in applications which demand a strong resistance against dezincification.

Examples of application:

Parts with strong resistance against dezincification
Heating installations

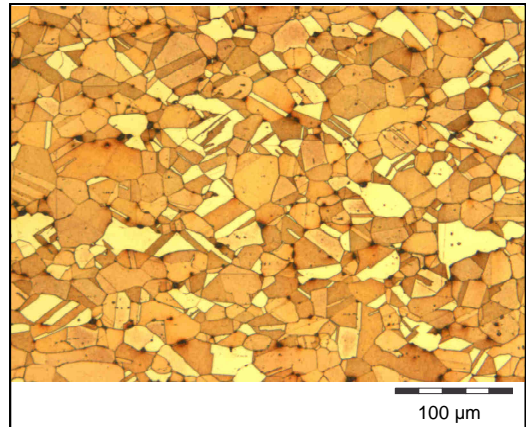
Physical properties

At room temperature

Density	8.4	g/cm ³
Electrical conductivity	~15	MS/m
	25.9	% I.A.C.S
Heat conductivity	110	W/(m*K)
Heat capacity	377	J/(kg*K)
Coefficient of thermal expansion	19	10 ⁻⁶ /K
Young's modulus	105	GPa
Melting range	885-910	°C

Microstructures

CuZn36Pb2As after heat treatment provides homogeneous microstructures consisting of α -phase and possibly some remnants β -phase. Pb is insoluble in this alloy and forms fine precipitates.





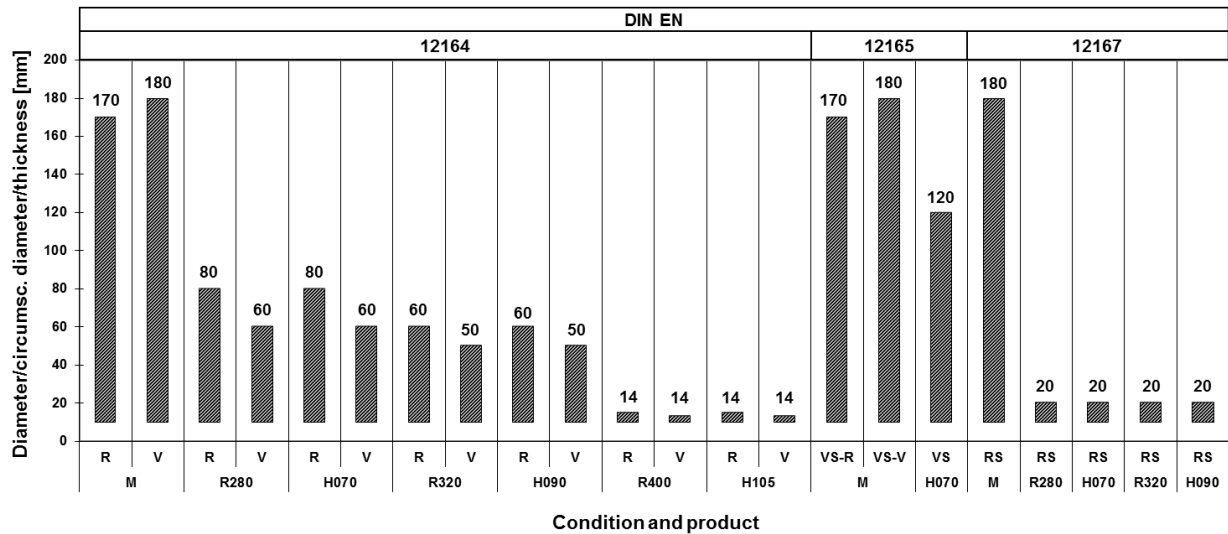
Consignment and measurements

Strength conditions

Spec./ DIN EN	Condition	Yield strength R _{p0.2} [MPa]	Tensile strength R _m [MPa]	Elongation at break A [%]	Brinell- Hardness HBW 2.5/62.5	
12164	M	**	**	**	**	DIN EN 12164: Bars for machining
12165						DIN EN 12165: Pre-material for forging
12167						DIN EN 12167: Profiles, rectangular bars
12168						
12420						
12449						
12164	R280	≤200	≥280	≥30	/	DIN EN 12168: Hollow bars for machining
12167		≤200	≥280	≥30	/	
12168		≤200	≥280	≥30	/	
12449	R290	≤250	≥290	≥40	/	DIN EN 12420: Forgings
12164	R320	≥200	≥320	≥20	/	DIN EN 12449: Seamless tubes
12167		≥200	≥320	≥20	/	
12168		≥200	≥320	≥20	/	
12449	R370	≥250	≥370	≥20	/	
12164	R400	≥250	≥400	8	/	
12167		≥250	≥400	≥8	/	
12168		≥250	≥400	≥8	/	
12449	R440	≥340	≥440	≥10	/	
12164	H070	/	/	/	70-110	
12165		/	/	/	70-150	
12167		/	/	/	70-110	
12168		/	/	/	70-100	
12420	H070	(≥90)	(≥280)	(≥30)	≥70	
12449	H080	/	/	/	75-105	
12164	H090	/	/	/	90-135	
12167		/	/	/	90-135	
12168		/	/	/	90-135	
12164	H105	/	/	/	≥105	
12167		/	/	/	≥105	
12168		/	/	/	≥105	
12449		/	/	/	100-135	
12449	H135	/	/	/	≥130	

- ** Condition M = without specified mechanical properties-as manufactured
 () The numbers are not requirements of the standard - they are for information only
 / No requirements in standard or not applicable

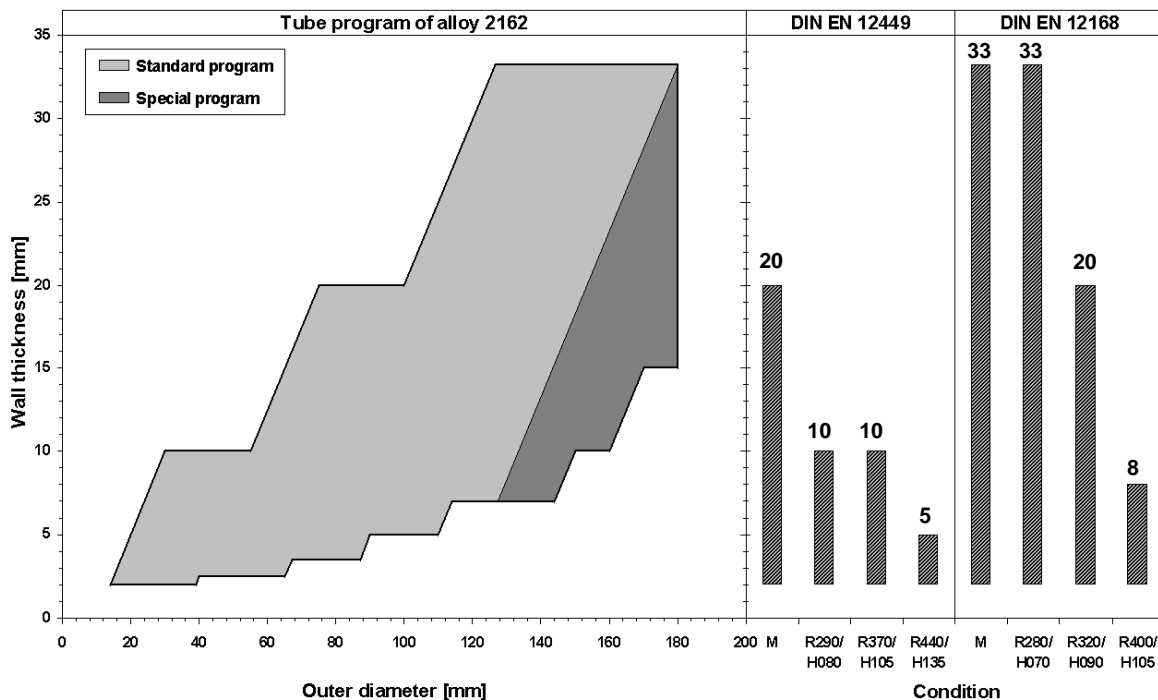
Specified conditions of rods, pre-material for forging and forgings



R/V Rod/polygonal bar
VS-R/V Pre-material for forging round/polygonal
RS Rectangular bar

Profiles and rectangular bars can be delivered up to 180 mm in extruded and up to 130 mm in cold drawn condition. Pre-material for forging and forgings is dependent upon each individual case.

Specified conditions of hollow bars and round tubes



Further dimensions for hollow bars and round tubes are available on request.

Other consignments

Rods in other strength and hardness conditions, and tubes are available on request.



Processing		Heat treatment	
Shaping		Soft annealing	450-600°C
Machinability (CuZn39Pb3=100%)	good (83)	Stress relieving	200-380°C
Cold working	good		
Hot working	good		
Hot working temperature	700-830°C		
Connecting			
Resistance welding	average		
Shielded welding	poor		
Brazing	average		
Soldering	very good		
Surface treatment			
Mechanical polishing	very good		
Electrolytic polishing	poor		
Galvanisation	very good		
Tin coating	very good		

Special notes and remarks

Forming operations or heat treatment above 550°C may reduce the resistance against dezincification. Consultation is recommended. Pre-material forgings should be heat treated at 450 - 550°C after forging for improvement of resistance against dezincification.

There is a risk of stress corrosion cracking (SCC) in case of concurrent presence of mechanical stress and corrosive media (in particular ammoniac atmosphere).

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