

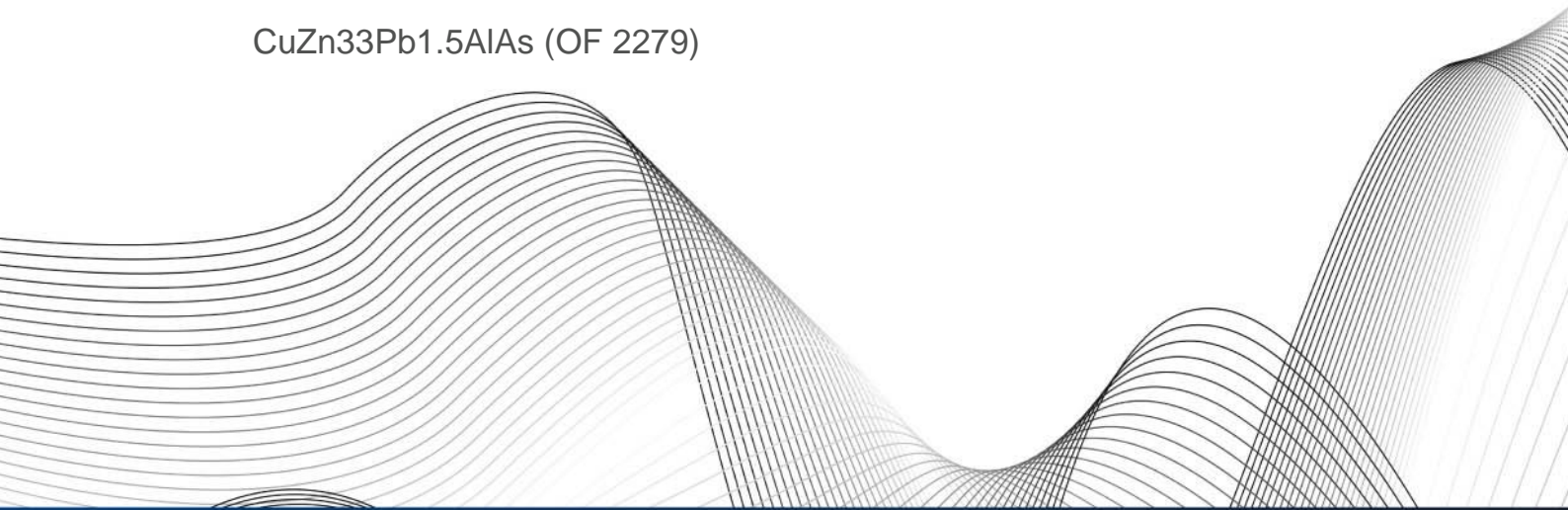


OTTO FUCHS  
Dülken GmbH & Co. KG



Copper and Copper Alloys

CuZn33Pb1.5AlAs (OF 2279)





	Cu	Zn	Pb	Sn	Fe	Mn	Ni	Al	Si	As	Co	Cr	Others
min.	64.0	Rem.	1.2	-	-	-	-	0.8	-	0.02	-	-	-
max.	66.0	-	1.7	0.3	0.3	0.1	0.2	1.0	-	0.15	-	-	0.2

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## Applications

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Due to its content of aluminium CuZn33Pb1.5AlAs provides good corrosion resistance. CuZn33Pb1.5AlAs in tailored heat treated condition is highly suitable for use in media with enhanced risk of dezincification.

OF 2279 is suitable for use in drinking water. The German Federal Office for the Environment enlists CuZn33Pb1.5AlAs for products which are used in drinking water (category B: fittings and connectors, pumps and other devices; category C: components whose surface is in contact with drinking water at less than 10% of the total surface).

Examples of application:

Parts with persistence against dezincification  
Applications for drinking water  
Forgings  
Machined parts

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## Physical properties

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At room temperature

Density	8.4	g/cm <sup>3</sup>
Electrical conductivity	13.4	MS/m
	23	% I.A.C.S
Heat conductivity	113	W/(m*K)
Heat capacity	377	J/(kg*K)
Coefficient of thermal expansion	20	10 <sup>-6</sup> /K
Young's modulus	105	GPa
Melting range	880-920	°C

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## Microstructures

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CuZn33Pb1.5AlAs in heat-treated conditions provides a homogeneous microstructure with a matrix of  $\alpha$ -brass. Pb is insoluble in the brass matrix and forms fine precipitates improving the machinability of the alloy.



## Consignment and measurements

### Strength conditions

Spec./ DIN EN	Condition	Yield strength R <sub>p0.2</sub> [MPa]	Tensile strength R <sub>m</sub> [MPa]	Elongation at break A [%]	Brinell- Hardness HBW 2.5/62.5
12164/12165/ 12167/12168/ Forgings/ Seamless tubes	M	**	**	**	**
12164/12167/ 12168	R280	≤200	≥280	≥30	/
12449	R290	≤250	≥290	≥40	/
12164/12167/ 12168	R320	≥200	≥320	≥20	/
Seamless tubes	R370	≥250	≥370	≥20	/
12164/12167/ 12168	R400	≥250	≥400	≥8	/
Seamless tubes	R440	≥340	≥440	≥10	/
12164/12165/ 12167/12168	H070	/	/	/	70-110
Forgings	H070	(≥90)	(≥280)	(≥30)	≥70
Seamless tubes	H080	/	/	/	75-105
12164/12167/ 12168	H090	/	/	/	90-135
12164/12167/ 12168	H105	/	/	/	≥105
Seamless tubes		/	/	/	100-135
Seamless tubes	H135	/	/	/	≥130

DIN EN 12164:  
Bars for machining

DIN EN 12165:  
Pre-material for forging

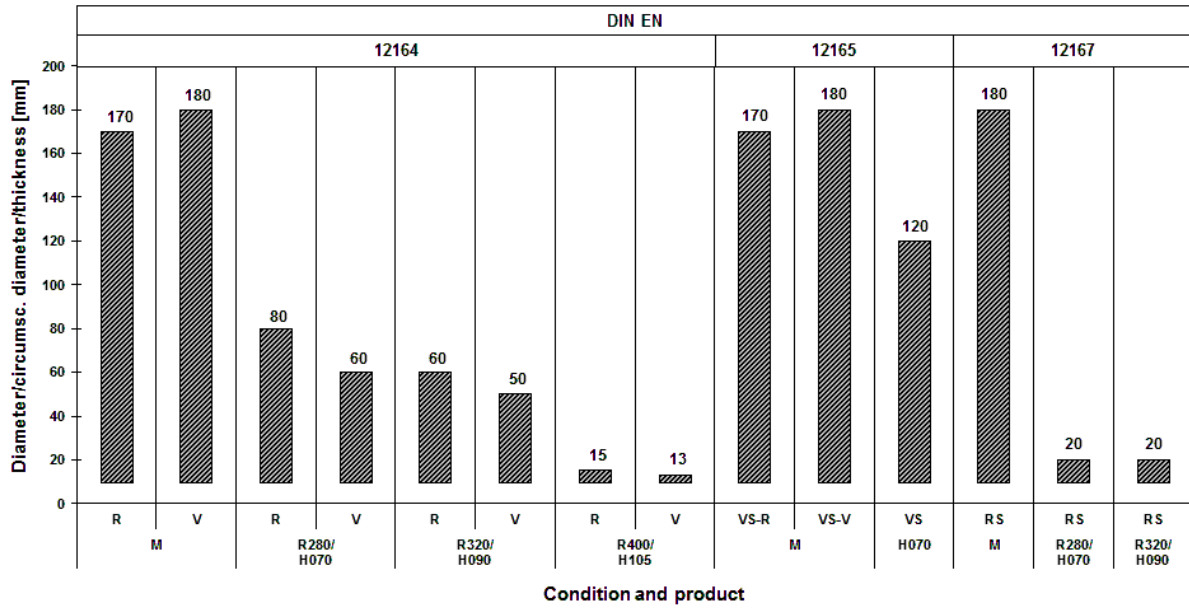
DIN EN 12167:  
Profiles, rectangular bars

DIN EN 12168:  
Hollow bars for machining

- \*\* 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



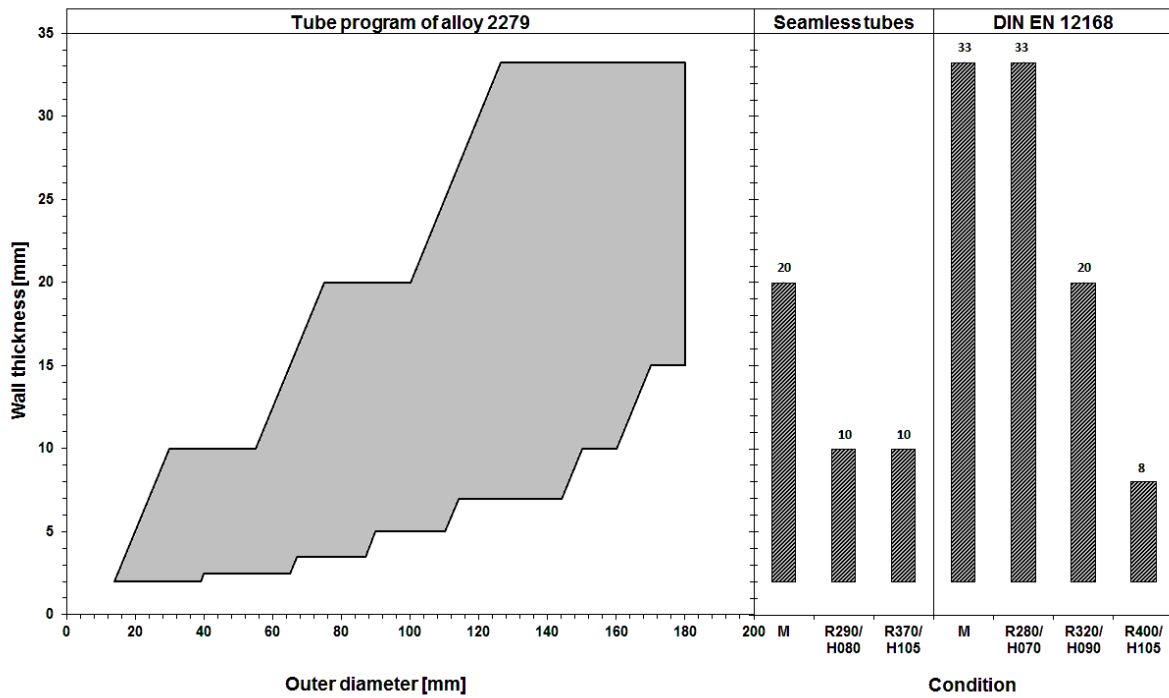
### Specified dimensions for bars, pre-material for forging and forgings



R/V Round/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 dimensions for hollow bars and round tubes



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



## Other consignments

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

Processing		Heat treatment	
Shaping		Soft annealing	450-600°C
Machinability (CuZn39Pb3=100%)	good (80)	Stress relieving	200-300°C
Cold working	average	<b>Special notes and remarks</b>	
Hot working	good		
Hot working temperature	700-830°C	After cold working on parts made of OF 2279 stress relieving at temperatures below 300°C is recommended. Forming operations or heat treatment above 500°C may reduce the resistance against dezincification. Consultation is recommended. Forgings should be heat treated after forging for improvement of resistance against dezincification.	
Connecting			
Resistance welding	average-good		
Shielded welding	average		
Brazing	average	There is a risk of stress corrosion cracking (SCC) in case of concurrent presence of mechanical stress and corrosive media (in particular ammoniac atmosphere).	
Soldering	good		
Surface treatment			
Mechanical polishing	very good		
Electrolytic polishing	poor		
Galvanisation	average		
Tin coating	good		

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