

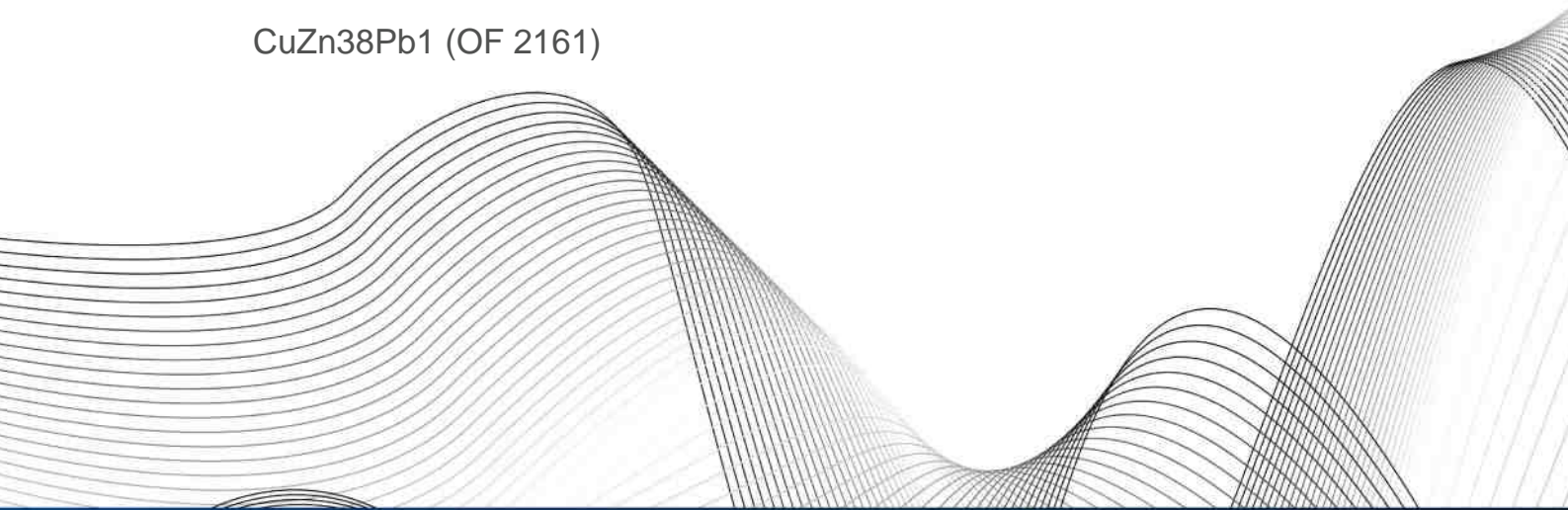


OTTO FUCHS
Dülken GmbH & Co. KG



Copper and Copper Alloys

CuZn38Pb1 (OF 2161)





	Cu	Zn	Pb	Sn	Fe	Mn	Ni	Al	Si	As	Co	Cr	Others
min.	60.0	Rem.	0.8	-	-	-	-	-	-	-	-	-	-
max.	61.0	-	1.6	0.2	0.2	-	0.3	0.05	-	-	-	-	0.2

Applications

CuZn38Pb1 is highly suitable for hot formed parts, e.g. profiles. For cold formed parts made by flanging, riveting or punching CuZn38Pb1 can also be used. OF 2161 is made for applications which demand both good cold workability and machinability.

Examples of application:

Extruded profiles
Tubes
Linings
Condenser plates

Physical properties

At room temperature

Density	8.4	g/cm ³
Electrical conductivity	13.9	MS/m
	24	% I.A.C.S
Heat conductivity	109	W/(m*K)
Heat capacity	377	J/(kg*K)
Coefficient of thermal expansion	20.4	10 ⁻⁶ /K
Young's modulus	102	GPa
Melting range	895-910	°C

Microstructures

The microstructures of CuZn38Pb1 provide a mixture of α - and β -phase. 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 _{p0.2} [MPa]	Tensile strength R _m [MPa]	Elongation at break A [%]	Brinell- Hardness HB 2.5/62.5
12164/12165/ 12167/12168/ 12449	M	**	**	**	**
12449	R340	≤250	≥340	≥35	/
12164/12167/ 12168	R360	≤300	≥360	≥20	/
12164	R410	≥230	≥410	≥12	/
12167		≥220	≥410	≥12	/
12168		≥250	≥410	≥12	/
12449		≥250	≥410	≥15	/
12449	R470	≥350	≥470	≥10	/
12164/12167/ 12167/12168	R500	≥350	≥500	≥8	/
12164/12167/ 12168	H070	/	/	/	70-100
12165		/	/	/	70-170
12449	H080	/	/	/	75-105
12164/12167/ 12168	H100	/	/	/	100-145
12449	H105	/	/	/	100-135
12164/12167/ 12168	H120	/	/	/	≥120
12449	H135	/	/	/	≥130

DIN EN 12164:
Bars for machining

DIN EN 12165:
Pre-material for forging

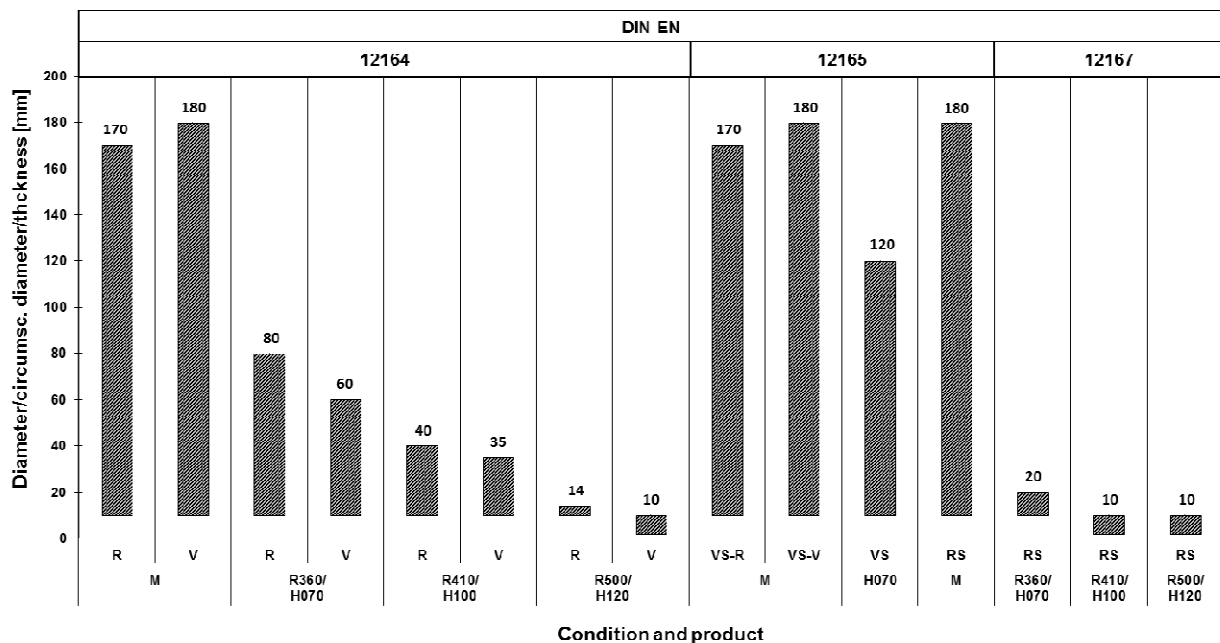
DIN EN 12167:
Profiles, rectangular bars

DIN EN 12168:
Hollow bars for machining

DIN EN 12449:
Seamless tubes

** Condition M = without specified mechanical properties - as manufactured
/ No requirements in standard or not applicable

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

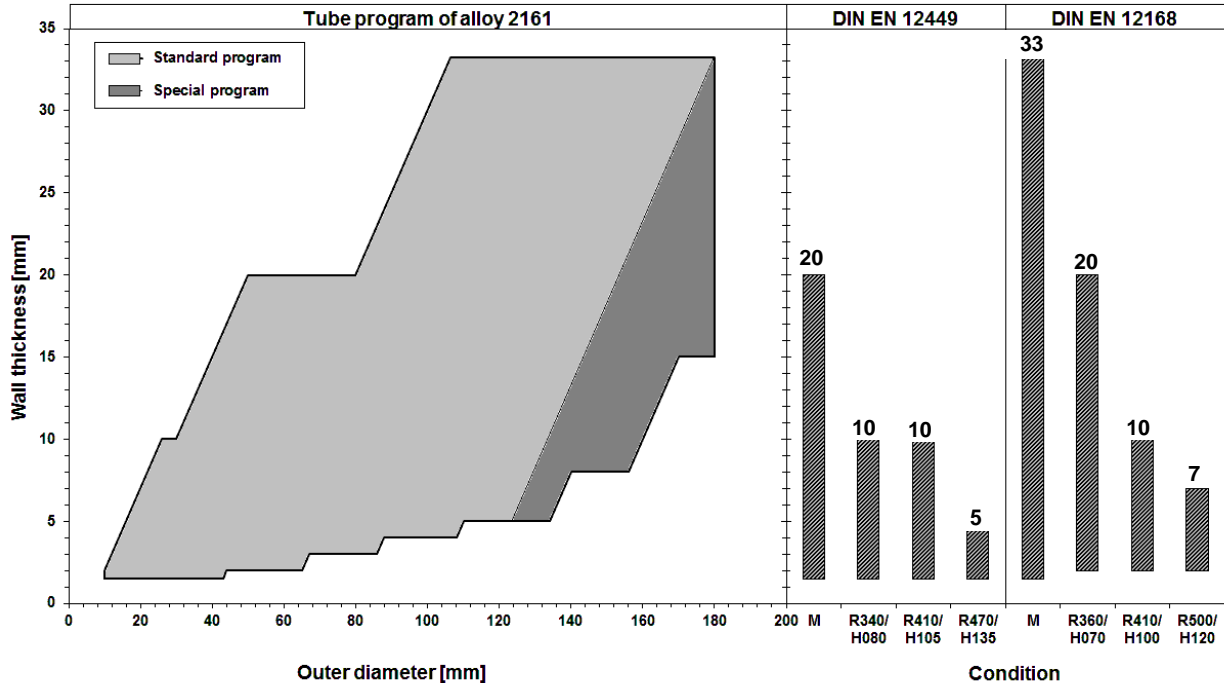


R/V Rod/Polyhedral bars
VS-R/V Pre-material for forging round/polygonal
RS Rectangular bar



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	450-650°C
Machinability (CuZn39Pb3=100%)	good (70)	Stress relieving	200-300°C
Cold working	average	Special notes and remarks	
Hot working	very good		
Hot working temperature	650-820°C	There is a risk of stress corrosion cracking (SCC) in case of concurrent presence of mechanical stress and corrosive media (in particular ammoniac atmosphere).	
Connecting			
Resistance welding	mediocre		
Shielded welding	poor		
Brazing	average		
Soldering	very good		
Surface treatment			
Mechanical polishing	very good		
Electrolytic polishing	poor		
Galvanisation	very good		
Tin coating	-		

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