

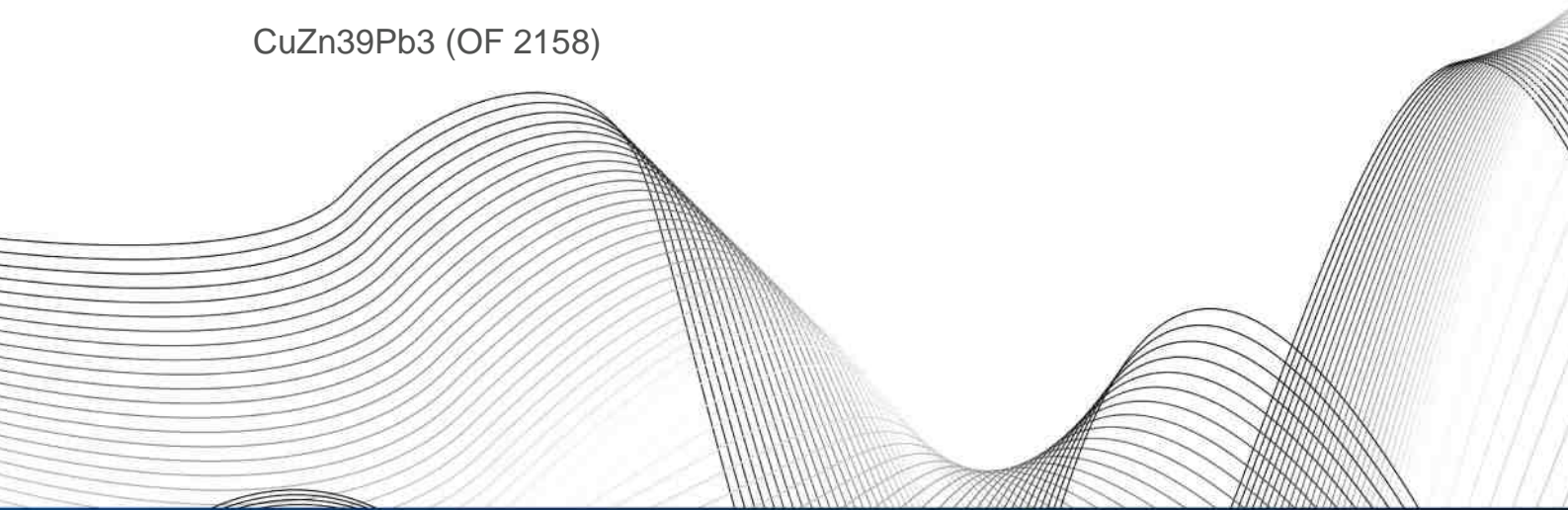


OTTO FUCHS
Dülken GmbH & Co. KG



Copper and Copper Alloys

CuZn39Pb3 (OF 2158)





	Cu	Zn	Pb	Sn	Fe	Mn	Ni	Al	Si	As	Co	Cr	Others
min.	57.0	Rem.	2.5	-	-	-	-	-	-	-	-	-	-
max.	59.0	-	3.5	0.3	0.3	0.1*	0.2	0.05	-	-	-	-	0.2 incl.*

Applications

CuZn39Pb3 is highly suitable for hot formed and machined parts.

For use in drinking water Otto Fuchs offers the alloy OF 2358 which provides a reduced content of manganese in comparison with OF 2158.

Examples of application:

Machined parts for construction, electrics and architecture
Major alloy for die-forged parts
Cages for rolling bearings

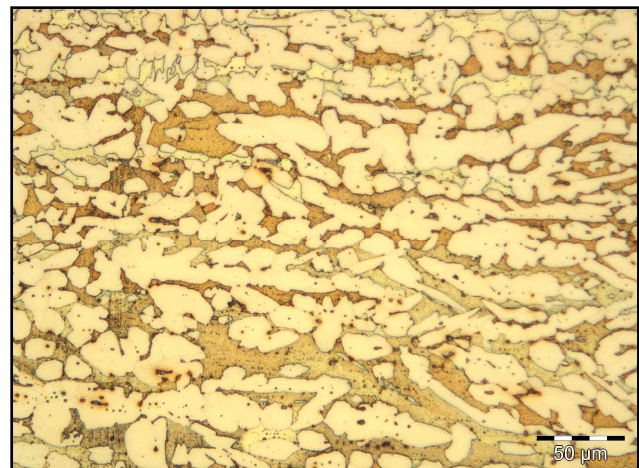
Physical properties

At room temperature

Density	8.4	g/cm ³
Electrical conductivity	14.6	MS/m
	25.2	% I.A.C.S
Heat conductivity	113	W/(m*K)
Heat capacity	377	J/(kg*K)
Coefficient of thermal expansion	21.4	10 ⁻⁶ /K
Young's modulus	96	GPa
Melting range	880-895	°C

Microstructures

The microstructures consist of a mixture of α - and β -phase depending on the history of deformation, cooling and heat treatment. Pb is insoluble, it forms fine precipitates in the brass matrix.





Consignment and measurements

Strength conditions

Spec./ DIN EN	Condition	Yield strength R _{p0.2} [MPa]	Tensile strength R _m [MPa]	Elongation A [%]	Brinell- Hardness HBW 2.5/62.5
12164/12165/ 12167/12420/ 12168/12449	M	**	**	**	**
12164/12167/ 12168	R360	≤320	≥360	≥20	/
12449		≤250	≥360	≥25	/
12164/12167/ 12168	R430	≥220	≥430	≥10	/
12449		≥250	≥430	≥12	/
12164	R500	≥350	≥500	≥5	/
12167		≥350	≥500	≥8	/
12168		≥350	≥500	≥8	/
12449		≥370	≥500	≥8	/
12420	H075	(≥110)	(≥340)	(≥20)	≥75
12165	H080	/	/	/	80-170
12420		(≥120)	(≥360)	(≥20)	≥80
12449	H085	/	/	/	80-115
12164/12167/ 12168	H090	/	/	/	90-125
12164/12167/ 12168	H110	/	/	/	110-160
12449	H115	/	/	/	110-145
12164/12167/ 12168	H135	/	/	/	≥135
12449	H140	/	/	/	≥135

DIN EN 12164:
Bars for machining

DIN EN 12165:
Pre-material for forging

DIN EN 12167:
Profiles, rectangular bars

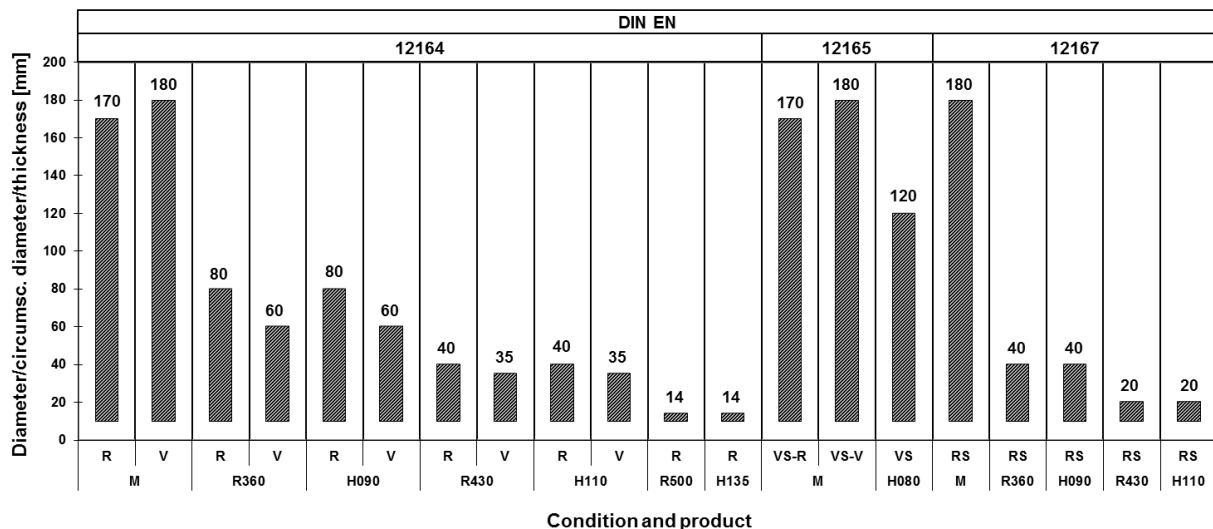
DIN EN 12168:
Hollow bars for machining

DIN EN 12420:
Forgings

DIN EN 12449:
Seamless tubes

- ** 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 rods, pre-material for forging and forgings



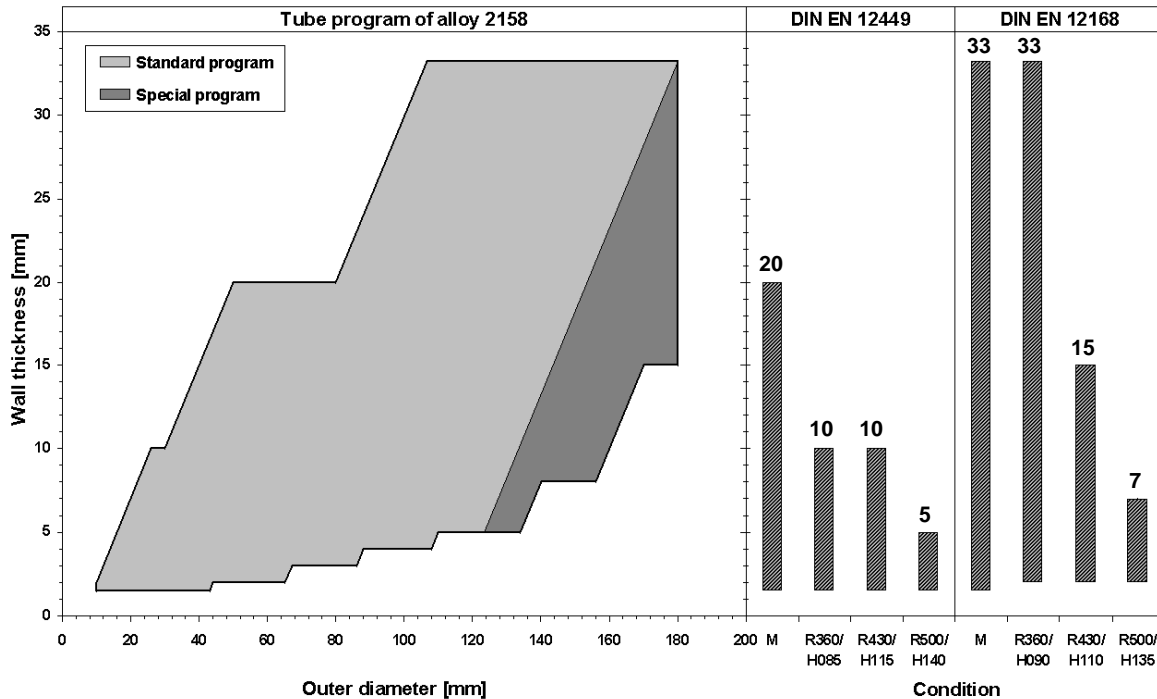
R/V Round rods/Polyhedral rods
VS-R/V Pre-material for forging round/polygonal
RS Rectangular bar

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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.

Others consignments

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

Processing		Heat treatment	
Shaping		Soft annealing	450-600°C
Machinability (CuZn39Pb3=100%)	very good (100)	Stress relieving	200-380°C
Cold working	poor	Special notes and remarks	
Hot working	very good		
Hot working temperature	650-800°C		
Connecting		There is a risk of stress corrosion cracking (SCC) in case of concurrent presence of mechanical stress and corrosive media (in particular ammoniac atmosphere).	
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		

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