

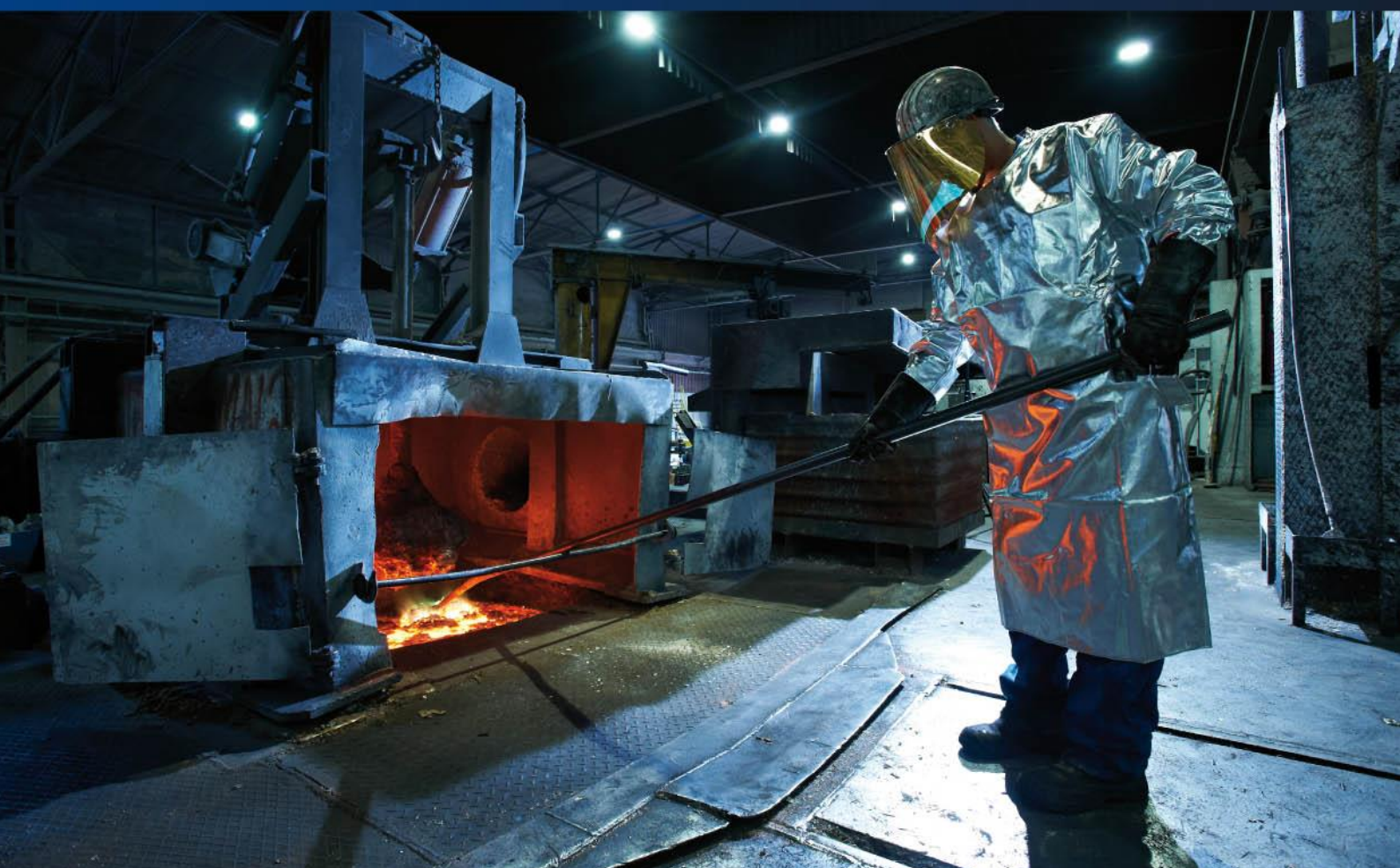
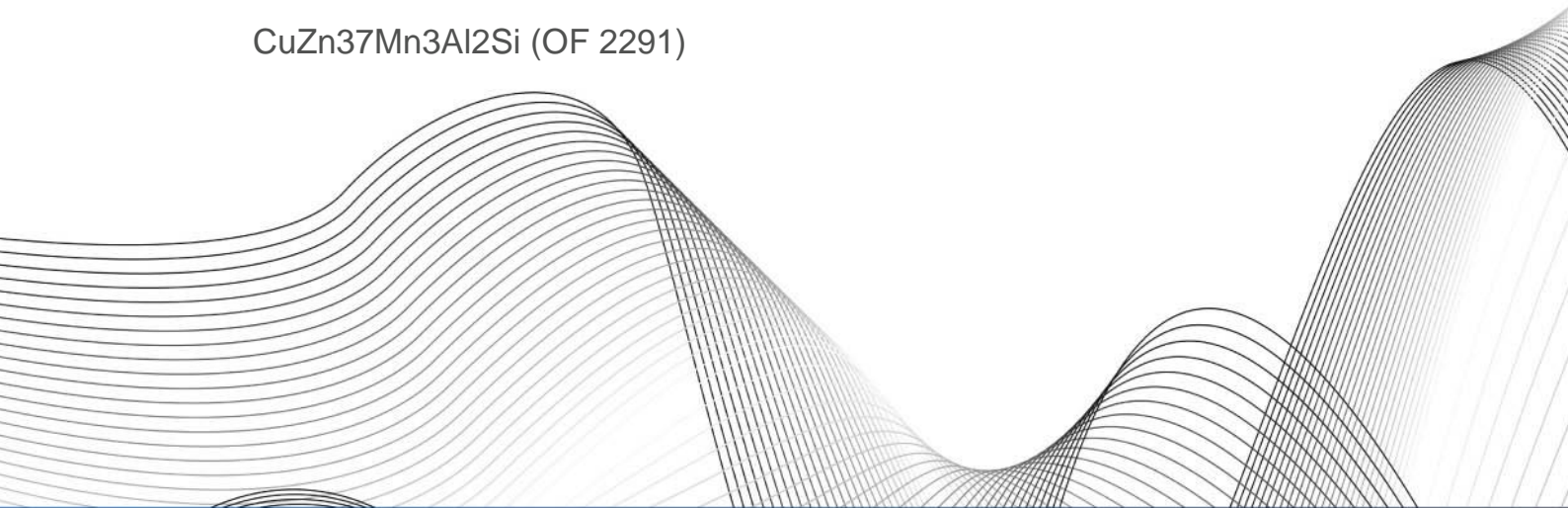


OTTO FUCHS
Dülken GmbH & Co. KG



Copper and Copper Alloys

CuZn37Mn3Al2Si (OF 2291)





	Cu	Zn	Pb	Sn	Fe	Mn	Ni	Al	Si	As	Co	Cr	Others
min.	58	Rem.	-	0.1	0.35	1.8	-	1.4	0.6	-	-	-	-
max.	59	-	0.1	0.4	0.65	2.2	0.2	1.7	0.9	-	-	-	0.3

Applications

CuZn37Mn3Al2PbSi is a special alloy providing reasonable strength as well as a high degree of toughness and good friction properties. CuZn37Mn3Al2PbSi is also highly suitable for use under atmospheric corrosion. The content of Pb in OF 2291 is confined to a maximum of 0,1 mass-%.

Examples of application:

Gliding parts
Synchronisers
Further applications in tribological systems

Physical properties

At room temperature

Density	8.0	g/cm ³
Electrical conductivity	7-8	MS/m
	12-14	% I.A.C.S
Heat conductivity	60-70	W/(m*K)
Heat capacity	377	J/(kg*K)
Coefficient of thermal expansion	20	10 ⁻⁶ /K
Young's modulus	95	GPa
Melting range	875-910	°C

Microstructures

The microstructures of CuZn37Mn3Al2Si consist of a brass matrix with mainly β -phase. Depending on the history of forming or heat treatment different amounts of α -phase may be present. Within the brass matrix about 4 % of Mn-Fe-silicides are embedded for improvement of wear resistance.



Consignment and measurements

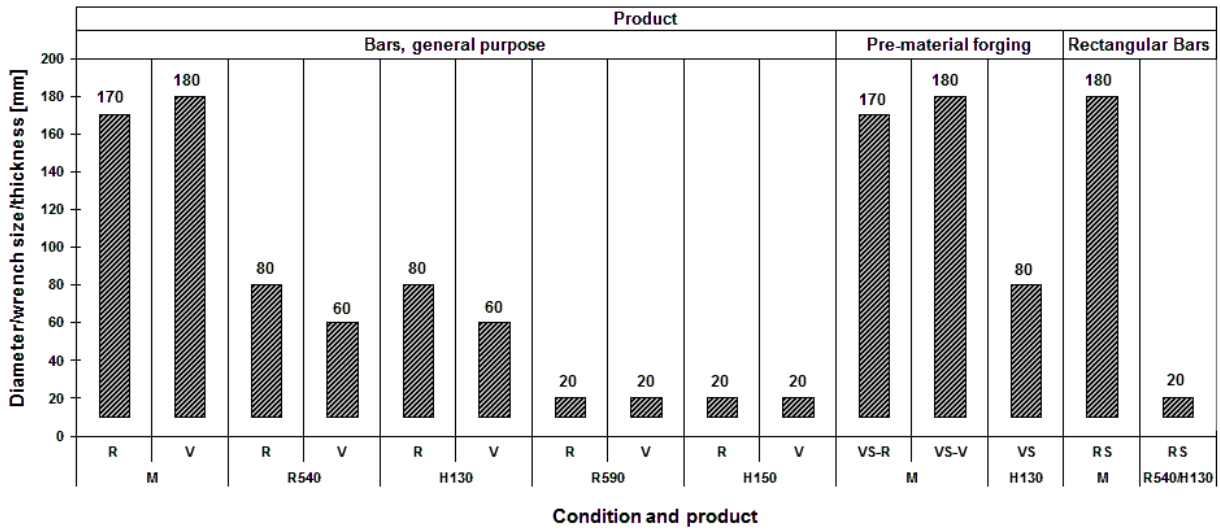
Strength conditions

Product	Condition	Yield strength $R_{p0.2}$ [MPa]	Tensile strength R_m [MPa]	Elongation at break A [%]	Brinell- Hardness HB 2.5/62.5
Bars for machining Pre-material forging Profiles, rectangular bars Hollow bars for machining Forgings Seamless tubes	M	**	**	**	**
Bars for machining Profiles, rectangular bars Hollow bars for machining	R540	≥280	≥540	≥15	/
Seamless tubes		≥250	≥540	≥10	/
Bars for machining	R590	≥370	≥590	≥10	/
Hollow bars for machining		≥320	≥590	≥8	/
Seamless tubes		≥320	≥590	≥8	/
Seamless tubes	R640	≥350	≥640	/	/
Forgings	H125	(≥180)	(≥470)	(≥16)	≥125
Bars for machining	H130	/	/	/	130-170
Pre-material forging		/	/	/	130-220
Profiles, rectangular bars Hollow bars for machining		/	/	/	130-170
Forgings	H140	(≥230)	(≥510)	(≥12)	≥140
Seamless tubes	H145	/	/	/	140-180
Bars for machining	H150	/	/	/	150-220
Hollow bars for machining		/	/	/	150-190
Seamless tubes	H155	/	/	/	150-190
Seamless tubes	H165	/	/	/	≥160
Forgings, esp. synchronisers	H150	/	/	/	150-190

- ** 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



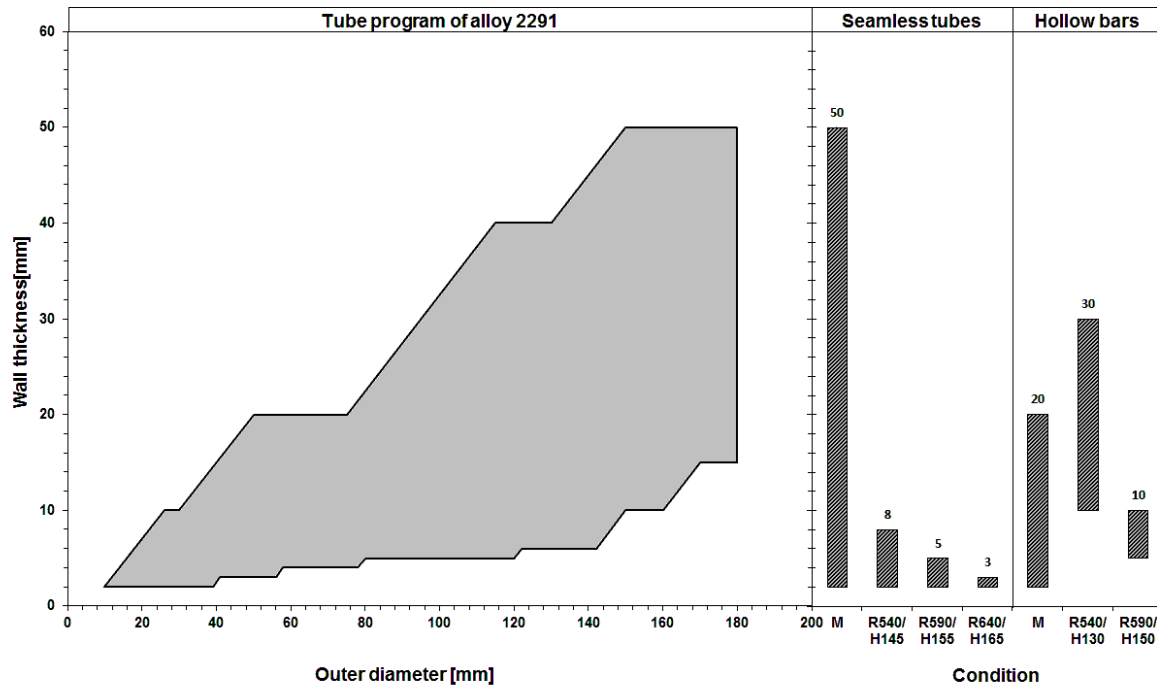
Specified dimensions for bars, pre-material for forging and forgings



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 condition. Pre-material for forging is dependent upon each individual case.

Specified dimensions for hollow bars and round tubes



Further dimensions for hollow bars and round tubes are dependent upon each individual case.

Other consignments

Rods and tubes in other strength or hardness conditions and dimensions are dependent upon each individual case.



Processing		Heat treatment	
Shaping		Soft annealing	500-650°C
Machinability	average (-)	Stress relieving	350-450°C
(CuZn39Pb3=100%)			
Cold working	poor		
Hot working	very good		
Hot working temperature	650-750°C		
Connecting		Special notes and remarks	
Resistance welding	average	There is a risk of stress corrosion cracking (SCC) in case of concurrent presence of mechanical stress and corrosive media (in particular an ammoniac atmosphere).	
Shielded welding	average		
Brazing	average		
Soldering	poor		
Surface treatment			
Mechanical polishing	very good		
Electrolytic polishing	poor		
Galvanisation	average		
Tin coating	poor		

OTTO FUCHS KG

Derschlagener Straße 26
D-58540 Meinerzhagen

Telefon +49 2354 73-0
Telefax +49 2354 73 - 201

info@otto-fuchs.com
www.otto-fuchs.com

OTTO FUCHS Oberflächentechnik GmbH

Poststrasse 57-59
D-71229 Leonberg

Telefon +49 7152 94 02 - 0
Telefax +49 7152 94 02 - 88

info@otto-fuchs-oberflaechentechnik.com
www.otto-fuchs-oberflaechentechnik.com

**OTTO FUCHS Hungary Sales department
c/o OTTO FUCHS KG**

Derschlagener Straße 26
D-58540 Meinerzhagen, Germany

Telefon +49 2354 73 316
Telefax +49 2354 73 241

info@otto-fuchs.com
www.otto-fuchs.com

OTTO FUCHS Technology (Shenyang) Co., Ltd.

No. 26 Purong Road
Shenbei New District
Shenyang, P. R. China, 110164

info@otto-fuchs.cn
www.otto-fuchs.cn

Schüco International KG

Karolinenstraße 1-15
D-33609 Bielefeld

Telefon +49 521 783 - 0
Telefax +49 521 783- 451

info@schueco.de
www.schueco.de

Weber Metals Inc.

16706 Garfield Avenue
Paramount CA 90723/USA

Telefon +1-562 602-0260
Telefax +1-562 602-0468

wmi@webermetals.com
www.webermetals.com

Foxtec-Ikhwezi (Pty) Ltd.

1 De Wet Road, West Bank
East London, 5218 East London, Südafrika

Telefon +27 (043) 7033500
Telefax +27 (043) 7033515

info@foxtec.org
www.foxtecikhwezi.co.za



OTTO FUCHS
Dülken GmbH & Co. KG



Heiligenstraße 70
41751 Viersen

Telefon +49 2162 956-6
Telefax +49 2162 956-762

duelken@otto-fuchs.com
www.otto-fuchs-duelken.com

