

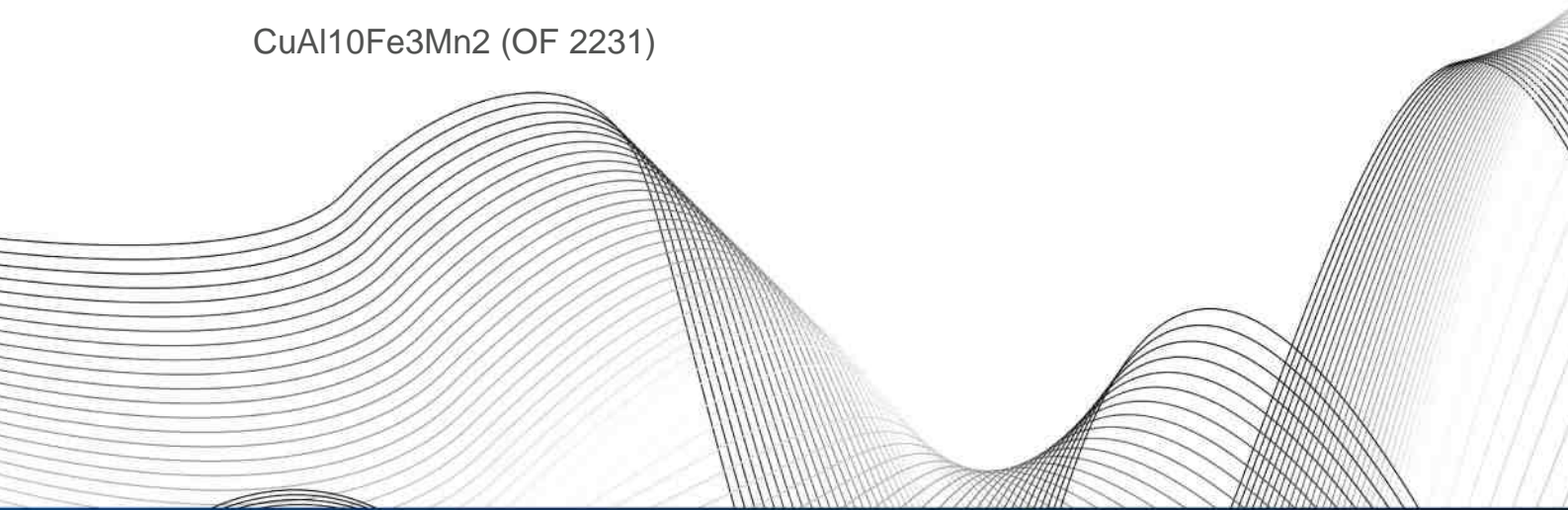


OTTO FUCHS
Dülken GmbH & Co. KG



Copper and Copper Alloys

CuAl10Fe3Mn2 (OF 2231)



	Cu	Zn	Pb	Sn	Fe	Mn	Ni	Al	Si	As	Co	Cr	Others
Min.	Rem.	-	-	-	2.0	1.5	-	9.0	-	-	-	-	-
Max.	-	0.5	0.05	0.1	4.0	3.5	1.0	11.0	0.2	-	-	-	0.2

Applications

CuAl10Fe3Mn2 combines high static and fatigue strength, also at elevated temperatures with good corrosion resistance. Due to its good scaling resistance and resistance against abrasion, erosion and cavitation OF 2231 is highly suitable for wear applications. OF 2231 can be used for maritime applications. Tool parts made of OF 2231 are resistant against sparking. OF 2231 is an alloy for bushings, sliding bearings and cages for ball and roll bearings.

Depending on the parameters of the processing and the dimensions, tailor-made customer solutions can be offered for parts made of OF 2231.

Examples of application:

- Constructions parts for chemical industry and apparatus
- Gears and wormwheels
- Bushings and sliding bearings
- Others sliding parts
- Clamps, screw nuts and screws
- Parts with scaling resistance
- Non-sparking tool parts

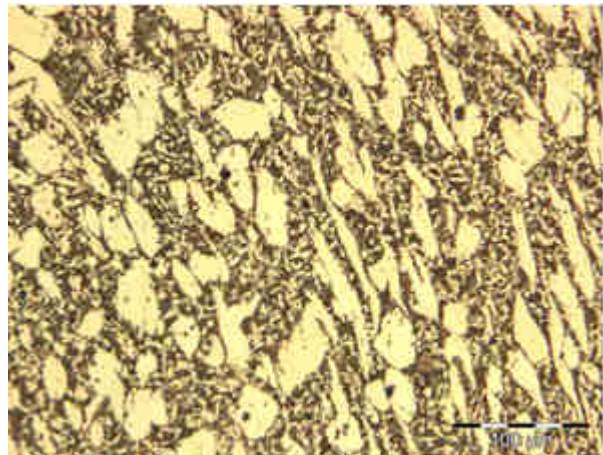
Physical properties

At room temperature

Density	7.6	g/cm ³
Electrical conductivity	7	MS/m
	12.1	% I.A.C.S
Heat conductivity	57	W/(m*K)
Heat capacity	377	J/(kg*K)
Coefficient of thermal expansion	17	10 ⁻⁶ /K
Young's modulus	120	GPa
Melting range	1040-1050	°C

Microstructures

CuAl10Fe3Mn2 provides a heterogeneous microstructure consisting mainly of α -phase and γ_2 -phase. Content and distribution of the phases depend on the parameters of the hot processing 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
12165/12420/ {12449}/ {12163}	M	**	**	**	**
{12163}	R590	(~330)	≥590	≥12	/
{12163}	R690	(~510)	≥690	≥6	/
12165	H120	/	/	/	120-220
12420		(≥200)	(≥560)	(≥12)	≥120
12420	H125	(≥250)	(≥590)	(≥10)	≥125
{12163}	H140	/	/	/	140-180
{12163}	H170	/	/	/	≥170

DIN EN 12163:
Bars, general purpose

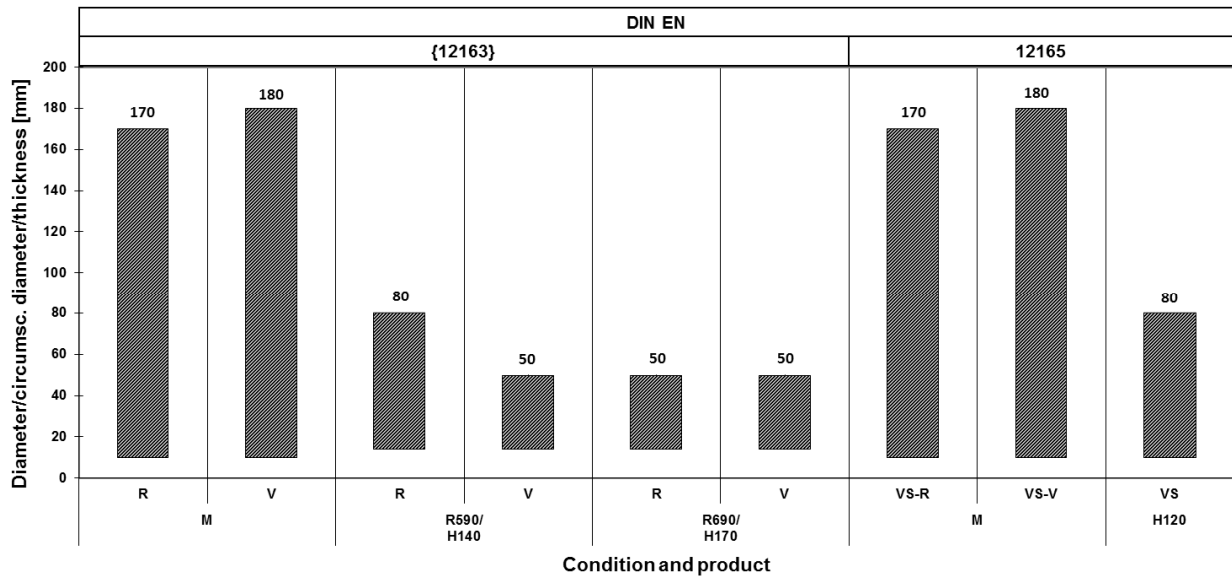
DIN EN 12165:
Pre-material for forgings

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 specification or not applicable
- { } The alloy is not in this standard - delivery on special terms

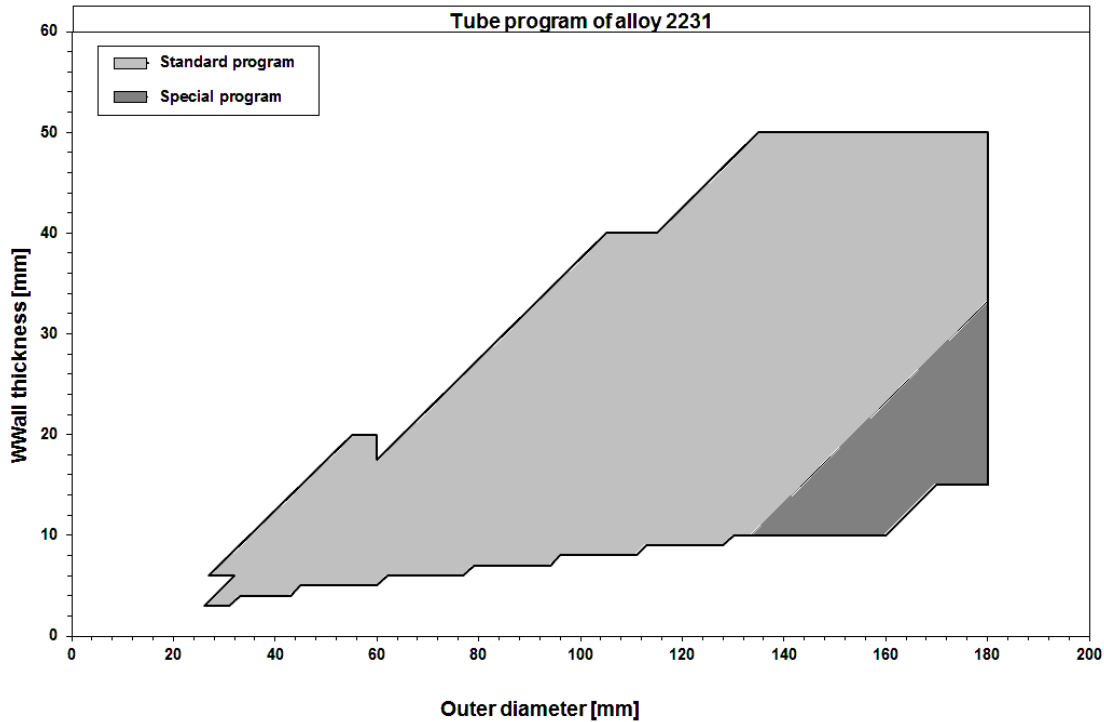
Specified dimensions for bars, pre-material for forging and forgings



R/V Round/polygonal bar
VS-R/V Pre-material for forging round/polygonal

Profiles and rectangular bars can be delivered up to 180 mm in extruded 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.

Depending on the parameters of the processing and the dimensions, tailor-made customer solutions can be offered for round tubes made of OF 2231.

Bushings and gliding bearings

Customer solutions can be offered for bushings and gliding bearings made of OF 2231 with specific strength conditions.

Other consignments

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



Processing		Heat treatment	
Shaping		Soft annealing	350-550°C
Machinability (CuZn39Pb3=100%)	average (50)	Stress relieving	150-250°C
Cold working	poor	Special notes and remarks	
Hot working	good		
Hot working temperature	700-900°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	good		
Shielded welding	good		
Brazing	average		
Soldering	poor		
Surface treatment			
Mechanical polishing	good		
Electrolytic polishing	average		
Galvanisation	poor		
Tin coating	poor		

OTTO FUCHS KG

Derschlager 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
Derschlager 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 Puring 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

