

Material Data Sheet

Technical Sales

Copper

Material designation:	EN-Material No.	DIN-Material-No.
	CW009A [Cu-OFE]	

Scope

This data sheet applies to flat and long products made of oxygen free copper CW009A.

Application

The material CW009A has low strength values and shows a very good weldability. Pure copper has good corrosion resistance in natural atmosphere and is practically immune to stress corrosion cracking. Due to its high degree of purity, CW009A has a very high electrical conductivity and is not susceptible to hydrogen embrittlement. In addition, pure copper has very good formability. This material is used when high electrical is required (electrical engineering).

Chemical composition in %

Cu	Ag	Bi	Fe	Mn	Ni	P	Pb	S
≥99,99	≤0,0025	≤0,0002	≤0,001	≤0,0005	≤0,001	≤0,0003	≤0,0005	≤0,0015

The oxygen content shall be such that the material conforms to the hydrogen embrittlement requirements of EN 1976

Other elements^{b)}: total: max. 0,03 %

^{b)} Further impurities are permitted up to: 0.0005 % As, 0.0001 % Cd, 0.0004 % Sb, 0.0002 % Se, 0.0002 % Te and 0.0001 % Zn.

Mechanical properties at room temperature (rod, bar and wire) acc. to EN 13601

Temper	Dimensions			Hardness		Tensile strength	Proof strength	Elongation	
	round, square, hexagonal [mm]	rectangular		Brinell	Vickers	R_m	$R_{p0,2}$	$A_{100\text{ mm}}$	A
		Thickness [mm]	Width [mm]	HBW	HV	[N/mm ²]	[N/mm ²]	[%]	[%]
D	2-160	0,5-40	1-200	as manufactured					
H035	2-160	0,5-40	1-250	35-65	35-65	-	-	-	-
R200	2-160	1-40	5-250	-	-	≥200	≤120	≥25	≥35
H065	2-80	0,5-40	1-200	65-60	70-95	-	-	-	-
R250	2-10	1-10	5-200	-	-	≥250	≥200	≥8	≥12
R250	>10-140	-	-	-	-	≥250	≥180	-	≥15
R230	>30-80	>10-40	>10-200	-	-	≥230	≥160	-	≥18
H085	2-40	0,5-20	1-120	85-110	90-115	-	-	-	-
H075	>40-80	>20-40	>20-160	75-100	80-105	-	-	-	-
R300	2-20	1-10	5-120	-	-	≥300	≥260	≥5	≥8
R280	>20-60	>10-20	>10-160	-	-	≥280	≥240	-	≥10
R260	>40-60	>20-40	>20-160	-	-	≥260	≥220	-	≥12
H100	2-10	0,5-5	1-120	≥100	≥110	-	-	-	-
R350	2-10	1-5	5-120	-	-	≥350	≥320	≥3	≥5

Mechanical properties at room temperature (tubes) acc. to EN 13600

Temper	Wall thickness	Proof strength	Tensile strength	Elongation	Hardness	
	t [mm]	$R_{p0,2}$ [N/mm ²]	R_m [N/mm ²]	A [%]	HBW	HV
D	-	cold drawn, without defined mechanical properties				
R200	≤40	≤120	200-250	≥35	-	-
H035	≤40	-	-	-	35-60	35-65
R250	≤20	≥150	250-300	≥15	-	-
H065	≤20	-	-	-	60-90	65-95
R290	≤10	≥250	290-360	≥5	-	-
H090	≤10	-	-	-	85-105	90-110
R360	≤5	≥320	≥360	(≥3) ^{a)}	-	-
H100	≤5	-	-	-	≥105	≥110

^{a)} The number in brackets is not a requirement of the standard, but is provided for information purpose only

Reference data for some physical properties (for guidance only)

Density at 20 °C [kg/dm³]	Electrical conductivity [MS/m]	Thermal Conductivity [W/m·K]	Specific heat capacity [J/Kg·K]	Young's modulus [MPa]	Shear modulus [MPa]
8,94	58,0-59,1	393	390	118000	-

Guidelines on the temperatures for hot forming and heat treatment

Soft annealing temperature	Stress-relieving annealing Temperature	Hot forming temperature
250-650 °C	150-200 °C	750-950 °C

Processing/Welding

The material has a very good cold formability. Furthermore, CW009A is suitable for welding and brazing. The machinability of this materials is rated as moderate to difficult. Machinability improves with increasing mechanical strength.

Remark

The material is compliant to RoHS and REACH.

Editor

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Reference

DIN EN 13600 : 2022-08	DIN Media GmbH, D-10772 Berlin
DIN EN 13601 : 2021-07	
Kupfer-Datenblätter	Deutsches Kupferinstitut Berufsverband e.V. D-40239 Düsseldorf

Important note

Information given in this data sheet about the condition or usability of materials respectively products are no warranty for their properties, but act as a description.

The information, we give on for advice, comply to the experiences of the manufacturer as well as our own. We cannot give warranty for the results of processing and application of the products.