CuAg0.04(OF) / CuAg0.1(OF)

CuAg OF is a variant of Cu-OFE developed for service at elevated temperatures.

The addition of silver increases the resistance to recrystallization up to 450°C and improves creep properties up to 250 °C. We offer two varieties of copper silver alloys: one with 0.04 % and one with 0.1 % silver. The resistance to recrystallization and creep increases with increasing silver content.

Our silver alloys are made from the high grade cathodes Cu-CATH-1 (CR001A) ensuring their very low impurity content. The oxygen-free quality is maintained throughout the casting process without the addition of deoxidising elements. With a maximum impurity content of 65 ppm, CuAg OF meets the enhanced requirements for electronic applications. The quality is free of oxygen and so insensitive to hydrogen embrittlement. The quality is also free of phosphorous and so provides an excellent and reliable electrical conductivity.

CHEMICAL COMPOSITION

Aurubis Typical Analysis *																		
Element [ppm]	Ag	As	Bi	Cd	Co	Cr	Fe	Mn	Ni	O_2	P	Pb	S	Sb	Se	Sn	Te	Zn
CuAg0.04OF	400	<1	<0.5	<0.1	<1	<1	<2	<1	<1	<3	<1	<1	<5	<1	<0.5	<1	<0.5	<1
CuAg0.1OF	1000	<1	<0.5	<0.1	<1	<1	<2	<1	<1	<3	<1	<1	<5	<1	<0.5	<1	<0.5	<1

* In accordance to EN standard

	Alloy symbol	Alloy number	Cu	Ag	Bi	O	Other elements	
			[%]				total	excluding
EN 13601:2002	CuAg0,04 OF	CW017A	Balance	0.03 – 0.05	<0.0005	[1]	0.0065	Ag, O
	CuAg0.1 OF	CW019A	Balance	0.08 – 0.12	<0.0005	[1]	0.0065	Ag, O

[1] *The material conforms to the hydrogen embrittlement requirement of EN 1976*

Correspondence to other standards

	DIN	NF	BS	ASTM	JIS
CuAg0.04 OF CW017A	-	-	-	C10400 C10500	-
CuAg0.1 OF CW0019A	-	-	-	C10700	-

PHYSICAL PROPERTIES

Density		Electrical conductivity [2]		Thermal conductivity	Expansion [4]	Specific heat	Elastic modulus
[g/cm³]		[MS/m]	[%IACS] [3]	[W/m·K]	[ppm/K]	[J/kg K]	[GPa]
Conditions	20°C	20°C / annealed	20°C / annealed	20°C	20 to 100°C	20°C	20°C annealed
8.94		>58	>100	385	16.8	386	110

[2] *Resistivity ρ is the inverse value of conductivity, e.g. ρ = 1/58.6 =0.01724 m/MS or Ω·mm²/m.*
[3] *International Annealed Copper Standard: 100% IACS = 0.01724 μ Ω x m at 20°C*
[4] *Linear coefficient of thermal expansion (CTE), as a mean value between the given temperatures.*

CuAg0.04(OF) / CuAg0.1(OF)

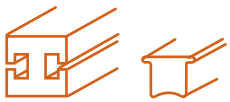
MECHANICAL PROPERTIES

Flat, round, square, hexagonal according to EN13601

Metallurgical State D	Dimensions mm									Hardness				Ultimate Tensile Strength	Yield Strength	Elongation	
	Round, square, hexagonal			Rectangular						HB		HV		Rm [MPa]	Rp0,2 [MPa]	A100 mm [%]	A [%]
	Thickness			Width													
	From	up to	To	From	up to	To	From	up to	To	Min	Max	Min	Max	Min		Min	Min
D	2	-	80	0.5	-	40	1	-	200	Cold drawn product without any specific mechanical properties							
H035 [a]	2	-	80	0.5	-	40	1	-	200	35	65	35	65	-	-	-	-
R200 [a]	2		80	1		40	5		200					200	max.120	25	35
H065	2	-	80	0.5	-	40	1	-	200	65	90	70	95	-	-	-	-
R250	2		10	1	-	10	5	-	200	-	-	-	-	250	min.200	8	12
R250	2	10	30	-	-	-	-	-	-	-	-	-	-	250	min.180	-	15
R230	-	30	80	-	10	40	-	10	200	-	-	-	-	230	min.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	min.260	5	8
R280	-	20	40	-	10	20	-	10	120	-	-	-	-	280	min.240	-	10
R260	-	40	80	-	20	40	-	20	160	-	-	-	-	260	min.220	-	12
H100	2	-	10	0.5	-	5	1	-	120	100	-	110	-	-	-	-	-
R350	2	-	10	1	-	5	5	-	120	-	-	-	-	350	min.320	3	5

[a] *Annealed*

Profiles according to EN13605



Metallurgical State	Dimensions mm		Hardness				Ultimate Tensile Strength	Yield Strength	Elongation	
	Thickness	Width	HB		HV		Rm [MPa]	Rp0,2 [MPa]	A100 mm [%]	A [%]
	Max.	Max.	Min	Max	Min	Max	Min		Min	Min
D	50	180	Same as drawn							
H035 [b]	50	180	35	65	35	70	-	-	-	-
R200 [b]	50	180	-	-	-	-	200	Max.120	25	35
H065	10	150	65	95	70	100	-	-	-	-
R240	10	150	-	-	-	-	240	Min.160	-	15
H080	5	100	80	115	85	120	-	-	-	-
R280	5	100	-	-	-	-	280	Min.240	-	8

[b] *Annealed*