

Data Sheet

GENERAL DESCRIPTION
– SUBJECT TO CHANGES OR DEVIATIONS

Oxygen-free Copper Cu-OF – Luvata Alloy OF-OK®

Alloy description

Luvata OF-OK® oxygen-free copper is high purity copper that is immune against hydrogen embrittlement. It is used in applications where high electrical and thermal conductivity are the essential requirements. It can be joined with all welding and brazing methods and it is suitable for manufacturing processes requiring extreme deformability.

Typical applications:

- Magnet windings
- Semiconductor components
- Electric motors
- Wave guide tubes
- Induction furnaces
- Electrical components
- Switchgear applications
- Generator material in rotor and stator windings
- Other applications where high electrical and thermal conductivity is needed

Products / shapes:

Profile tubes, round tubes, round rods, wire and strip coils, rectangular bars and solid profiles. Corresponding EN-norms for different products are as follows:

- EN 13600 – Copper and copper alloys.
Seamless copper tubes for electrical purposes.
- EN 13601 – Copper and copper alloys.
Copper rod, bar and wire for general electrical purposes.
- EN 13605 – Copper and copper alloys.
Copper profiles and profiled wire for electrical purposes.

Chemical composition and corresponding standards:

Luvata Pori Oy alloy	Composition * %	EN – CEN/TS 13388:2008	ASTM / USA
OF-OK	Cu + Ag min. 99,99 %	Cu-OF / CW008A	CDA C10200

* Other elements max %: O 0,0005, Bi 0,0005, Pb 0,005

Physical properties:

Density kg/dm ³	Coefficient of linear expansion 1/K	Specific heat J/(kg x K)	Melting temperature °C
8,94	0,0000177	385	1083

Mechanical properties – typical values:

	Soft temper	Half-hard temper	Hard temper
Hardness HV	35 – 65 HV	70 – 95 HV	85 – 115 HV
Tensile strength	200 – 220 N/mm ²	250 – 350 N/mm ²	260 – 400 N/mm ²
0,2% yield strength	35 – 65 N/mm ²	180 – 280 N/mm ²	220 – 380 N/mm ²
Elongation	min. 40 %	min. 12 %	min. 5 %

Electrical and thermal properties – typical values:

Electrical conductivity	vol	% IACS *	min 100,6
	mass	%IACS	min 100,0
	MS/m		min 58,3
Electrical resistivity	vol	Ω mm ² /m	max 0,0171
	mass	Ω g/m ²	max 0,1532
Thermal conductivity (20 °C)	W / Km		390

* % IACS = International Annealed Copper Standard. The % IACS values are calculated as percentages of the standard value for annealed high conductivity copper as laid down by the International Electrotechnical Commission.

Joining and machining:

Machinability rating (free cutting brass = 100)	Soldering	Brazing	TIG	MIG	EBW
20	Excellent	Excellent	Good	Good	Good

