Data Sheet

GENERAL DESCRIPTION
– SUBJECT TO CHANGES OR DEVIATIONS

Oxygen-free Electronic Grade Copper Cu-OFE – Luvata Alloy OFE-OK®

Alloy description

Luvata OFE-OK® oxygen-free copper is min 99,995% pure copper for most demanding applications. It is used in special applications where risk of evaporation of low melting elements is not allowed and extreme material integrity and homogeneity are required. It can be joined with all welding and brazing methods and it is suitable for manufacturing processes requiring extreme material deformability. Luvata OFE-OK can be supplied with guaranteed Residual Resistance Ratio (RRR) value up to min 400.

Typical applications:

- Vacuum components
- Laser mirrors
- Cryogenic applications
- Other applications where ultra-high purity is needed

Products / shapes:

Profile tubes, round tubes, round rods and wire. Corresponding EN- and ASTM norms for different products are as follows:

- EN13604 – Copper and copper alloys.
  Products of high conductivity copper for electronic tubes, semiconductor devices and vacuum applications.
- ASTM F68 – Standard specification for Oxygen-Free Copper in Wrought Forms for Electron Devices.

Chemical composition and corresponding standards:

Luvata Pori Oy alloy	Composition * %	EN – CEN/TS 13388:2008	ASTM / USA	GOST / Russia ГОСТ 859:2001
OFE-OK	Cu 99,995 %	Cu-OFE / CW009A	CDA C10100	М00В (М00Б)

* Other elements as EN 13604 and ASTM B170 max %: Ag 0.0025 , As 0.0005, Bi 0.0001, Cd 0.0001, Fe 0.001, Mn 0.00005, Ni 0.001, O 0.0005, P 0.0003, Pb 0.0005, S 0.0015, Sb 0.0004, Se 0.0002, Sn 0.0002, Te 0.0002, Zn 0.0001

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 102,1
	mass	%IACS	min 101,5
	MS/m		min 59,2
Electrical resistivity	vol	Ω mm^2/m	max 0,0169
	mass	Ω g/m^2	max 0,1510
Thermal conductivity (20 °C)	W / Km		391

* % 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	Excellent

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