

Copper Hollow Conductors

When high magnetic fields are required, the magnetic windings are made of internally cooled hollow copper sections. Copper hollow conductors are commonly used in large generators in the power generation industry.

Other applications for hollow conductors include:

- ◆ Particle accelerators
- ◆ Plasma research devices
- ◆ Electrodynamics vibration test systems
- ◆ long implantation units for the microcircuit industry
- ◆ High gradient separators
- ◆ Induction furnaces
- ◆ MRI medical applications
- ◆ Generators

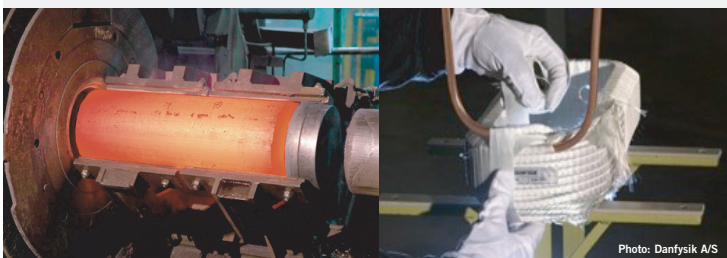


Photo: Danfysik A/S

About Luvata

Luvata is a world-leader in metal fabrication, component manufacturing and related engineering and design services. We are committed to partnering with our customers to help them increase their competitiveness. Our products and services enable our customers to improve operational efficiency, improve products and reduce tied-up capital. This focus on our customers' results, backed by our unfailing reliability, makes us a partner on which our customers base their future development.



Specifications

Luvata supplies hollow conductors in a wide range of sizes. Our offering starts from 4 x 4 mm (< 0,1 kg/m) and continues up to above 100 mm in width (>20 kg/m), and can be produced in a variety of shapes. Delivery forms are straight lengths, loose and pancake coils and spools. Long continuous lengths result in a reduced number of joints and therefore benefit the final user with lower cost and risk of leakage.

At Luvata we have developed the tools to produce hundreds of different hollow conductors and new shapes and sizes are regularly produced to meet our customer specific requirements. We have a wealth of experience and expertise in producing unusual and unique hollow shapes.

Raw Materials

The ideal material for hollow conductors is Luvata's high conductivity, oxygen-free copper OF-OK™. If higher softening temperatures or creep strengths are required, we recommend the use of silver bearing copper grades CuAg0,03% based or CuAg0,1% based on OF-OK™ copper. These copper grades offer high electrical and thermal conductivity and their freedom oxygen from oxygen ensures excellent brazeability and weldability, making them superior to oxygen-bearing copper grades.

Manufacture

The finished product is obtained by drawing the conductor through a die, which is specific for each section and which always uses a mandrel in the bore. This method ensures fine tolerances and a smooth surface finish both in the bore and on the outside. We test our conductors by eddy current and with whatever supplementary test process we have agreed with the customer.

Working Together

The key to producing high quality hollow conductors is good communication between the supplier and the customer. We take an equal amount of care and pride in a request of most common conductors as to an order with complex technical requirements. Whatever your request, we will ensure that we work closely with you every step of the way.

Supply Forms

Jointless long lengths up to 1300 kg on recyclable wooden reels.
Loose coils or pancake coils for small sizes: The maximum weight is 150 to 250 kg when using our standard spools.
Straight lengths: The maximum length is 12 metres.

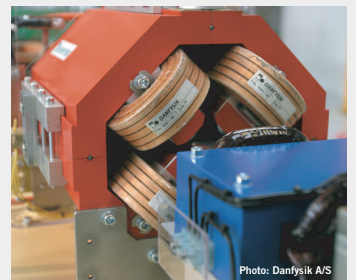


Photo: Danfysik A/S

Alloys

Luvata Alloy Designation Luvata Designation Iso Designation	Composition %	Electrical Conductivity		Electrical Resistivity n Ω m ²	Thermal Conductivity W/C m	Corresponding Alloys				
		%IACS (mass)	m Ω mm ²			Germany Din	U.K. B.S.	France NF	U.S.A ASTM	EN
OF-OK™ certified grade copper Cu-OFE	Cu min 99.99 O max 0.0005	min 101	min 58.6	max 17.02	399		6017:1981 Cu-OFE	A53-100 Cu-c2	C 10100 OFE	CW 009A
OF-OK™ Copper Cu-OF	Cu min 99.95 O max 0.0005	min 100	min 58.6	max 17.24	399	1787 OF-Cu	6017:1981 Cu-OF	A53-100 Cu-c1	C 10200 OF	CW 008A
Silver Bearing Copper HK 015, CuAg 0.1 (OF)	Cu + Ag min 99.98 Ag norm. 0.10 O max 0.0010	min 99.5	min 57.7	max 17.33	395	17666 (CuAg0.1)	6017:1981 Cu-Ag-OF-4		C 10700 OFS	CW 013A

Supply Forms

Jointless long lengths	Up to 1300 kg / 2300 m depending on dimension, on recyclable wooden reel.
Straight lengths	Max. approx. 250 kg
Loose coils or pancake coils	Max. 50 to 150 kg depending on size
Spools for small sizes only	Plywood spools with 500 mm and 800 mm drum diameter

Product Forms

