



SMISOL® Frio

PERFORMANCE IN
HEAT AND COLD

FIELDS OF APPLICATION

- Refrigeration systems.
- Transport of heat-transfer fluids for multifunction systems.

In compliance with and within the limits set by the applicable regulations

SMISOL® Frio is a pre-insulated copper tube designed for refrigeration applications and for the transport of heat-transfer fluids, where high performance is required in terms of thermal insulation and condensation control.



The copper tube is manufactured in compliance with EN 12735, the reference standard for seamless tubes intended for refrigeration and air-conditioning systems.

The insulation is made of closed-cell expanded polyethylene, with a uniform structure and regular dimensions, compliant with the requirements of EN 14114.

The product is supplied in coils, with tube diameters expressed in millimetres, in line with the application customs of the refrigeration sector.

The insulation thickness is sized to meet the different operating requirements typical of this application area, ensuring adequate thermal protection even under severe conditions. Particular attention is paid to the outer protective polyethylene film, designed to limit condensation forming on the external surface of the pipe.

The insulating sleeve is manufactured in compliance with Reg. (EU) 2024/590, which prohibits the use of CFCs and HCFCs, substances harmful to health and the environment.

INSULATING COATING CHARACTERISTICS

- Thermal conductivity: $\lambda \leq 0.038 \text{ W/(m}\cdot\text{K)}$ at 40 °C.
- Water-vapour diffusion resistance factor: $\mu > 40,000$.
- Average insulation density: $\sim 33 \text{ kg/m}^3$.
- Free from ammonia residues.
- High resistance to external chemical agents.
- Reaction to fire: class BL-s1,d0 according to EN 13501-1.
- Free from CFCs and HCFCs, in compliance with Reg. (EU) 2024/590.

INTERNAL SURFACE OF THE TUBE

The internal surface of the copper tube is bright, clean and dry, an essential condition to ensure compatibility with the system's terminal components and to preserve the efficiency and reliability of the system over time.

The internal cleanliness of SMISOL® Frio is maintained by sealing the ends of each coil during production.

EXTERNAL PROTECTION

The outer coating in closed-cell expanded polyethylene ensures a high water-vapour diffusion resistance factor ($\mu > 40,000$), contributing significantly to the prevention of condensation. The insulating sleeve complies with European environmental requirements, is free from CFCs and HCFCs and has a reaction to fire of class BL-s1,d0 according to the EN 13501-1 standard.

DESIGN GUIDELINES

To prevent condensation forming on the external surface of the pipe, it is necessary to carefully assess the environmental conditions of installation, in particular:

- relative humidity of the environment;
- ambient temperature;
- temperature of the fluid inside the pipe.

It is recommended to verify the operating conditions using the psychrometric chart, in order to correctly select the product and the insulation thickness according to the actual operating conditions.

TABLE: STANDARD PRODUCTION SIZES - COILED TUBE

Size OD x WT (mm)	Min. Guaranteed Coil Length (m)	Min. Coating Thickness (mm)	Burst Pressure (MPa)	ASTM Working Pressure (MPa)	Water Content (l/m)
6 x 1	50	6	74,80	18,70	0,013
8 x 1	50	8	56,10	14,03	0,028
10 x 1	50	8	44,88	11,22	0,050
12 x 1	50	10	37,40	9,35	0,079
14 x 1*	50	10	32,06	8,01	0,113
16 x 1*	50	10	28,05	7,01	0,154
18 x 1	50	10	24,93	6,23	0,201
22 x 1	25	10	20,40	5,10	0,314

* Sizes 14x1 and 16x1 mm are produced according to the ASTM B 68/M standard.

OD = Outer Diameter WT = Wall Thickness