

GENERAL CATALOGUE

COPPER TUBES FOR
AIR CONDITIONING AND PLUMBING
SECTOR

Serravalle Copper Tubes
[EN]



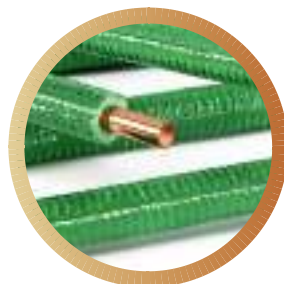
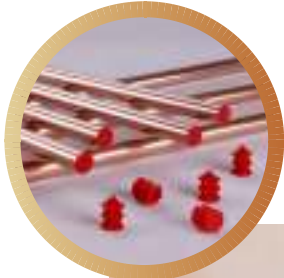


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SMISOL®Clim Platinum

The climate specialist

APPLICATIONS

- Air conditioning.
- Refrigerant gas transportation (R32, R410A, R407,...).

In compliance with applicable regulations.



SHEATH CHARACTERISTICS

- Thermal conductivity: $\lambda \leq 0,038$ W/mK at 40°C.
- Average value of the water vapour diffusion resistance factor " μ " > 15.000.
- Average sheath density: 33 kg/m³.
- Free from ammoniacal residues.
- Excellent resistance to external chemical agents.
- Reaction to fire classification: BLS1d0 (EN 13501-1).
- Devoid of CFCs and HCFCs (Reg. EEC/EU 2037/2000).
- Colouring of the outer reflective "Silver grey" film.
- Superior UV resistance.
- Halogen-free flame retardant.

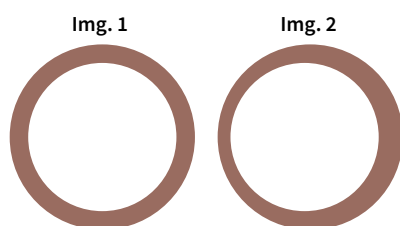
This copper tube is manufactured according to EN 12735-1 and is pre-insulated in closed cell expanded polyethylene, where the cells are of regular size and evenly distributed (compliant to EN 14114). It is distributed in coils. The copper tube diameter is expressed in inches, as required by standard EN 12735-1. The insulation sheath is manufactured in full compliance with European Regulation EEC/EU 2037/2000 that enforces the use of insulating expanded foam sheaths devoid of CFCs and HCFCs, which are harmful to health and the environment. The sheath thickness is designed to satisfy the various requirements of this application area. Given the particular application field, special attention is reserved for the external protective polyethylene film co-extruded directly on the foam insulator, thus creating a sheath with special anti-aging characteristics and high resistance to moisture infiltration in a single cover.

SMISOL®Clim Platinum is also characterised by **extremely low eccentricity values**, a very important feature for flaring operations.

It conforms to the technical characteristics required by the European standard regarding air conditioning and carrying of the new cooling fluids (R32, R410A, R407, ...).

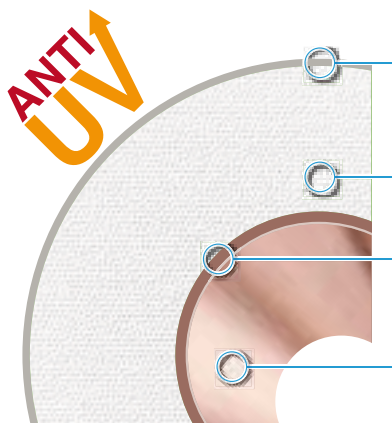
INTERNAL SURFACE

The inner surface of the copper tube is bright, clean and dry, essential characteristics of products such this normally available on the market for industrial use. This particularity allows for the achievement of an integrated system with the terminal elements of the plant. The particular internal cleanliness of SMISOL®Clim Platinum is safeguarded by the closure of each coil ends by means of stoppers directly in the production phase.



ECCENTRICITY

Eccentricity defines the distance between the centre of the outer circumference and that of the inner one. It is a fundamental parameter for the operation of ends endforming and flaring. Zero eccentricity occurs when the two centres coincide perfectly (Img. 1), while in the presence of eccentricity, the greater its value, the more variation is evident in the wall thickness (Img. 2).



High-" μ " protective polyethylene film

Polyethylene foam insulating sheath (reg. EEC/EU 2037/2000)

Copper tube diameter manufactured under continuous laser gauge control

Internal surface cleanliness according to EN 12735-1

TABLE OF STANDARD PRODUCT DIMENSIONS - COILS

dimensions Ed x Th		coil length min. guaranteed	min. sheath thickness	burst pressure	operating pressure ASTM	water content
(mm)	(inches)	(m)	(mm)	(MPa)	(MPa)	(l/m)
6.35 x 0,8	1/4"	50	6	56,54	14,14	0,018
6.35 x 1	1/4"	50	6	70,68	17,67	0,015
9.52 x 0,8	3/8"	50	8	37,71	9,43	0,049
9.52 x 1	3/8"	50	8	47,14	11,79	0,044
12.70 x 0,8	1/2"	50	10	28,27	7,07	0,097
12.70 x 1	1/2"	50	10	35,34	8,83	0,090
15.87 x 1	5/8"	25	10	28,28	7,07	0,151
19.05 x 1	3/4"	25	10	23,56	5,89	0,228
22.22 x 1	7/8"	25	10	20,20	5,05	0,321

Ed = External diameter Th = wall thickness



INSULATOR TUBULAR SECTION

The expanded insulator of the tubular section guarantees better adhesion to the tube and better performance in terms of thermal insulation and moisture formation.



EXTERNAL PROTECTION

Polyethylene closed cell expanded foam with average **water vapour diffusion resistance factor “μ” greater than 15.000**. The insulating sheath is manufactured under full compliance to European Regulation EEC/EU 2037/2000 which enforces the use of expanded foam insulation sheaths devoid of CFCs and HCFCs which are harmful to health and the environment.

Reaction to fire classification: BLs1d0 (EN 13501-1).

The outer polyethylene film has a darker pigment than the traditional white to counter the PE crystallisation process. In addition, normal anti-UV additives tend to degrade the flame retardant treatment necessary for the product. In order to avoid this drawback, the SMISOL®Clim Platinum sheath contains an environmentally friendly halogen-free flame retardant that does not counteract the anti-UV action. Tests conducted according to ASTM G-155 (accelerated ageing) confirm that SMISOL®Clim Platinum is **suitable for areas with high annual solar radiation**. At the end of the exposure test, the sample did not show any sign of degradation (see photo).

ACCELERATED AGEING TEST

The test is scheduled to last 4.000 hours with exposure to a Cl65 Xenon lamp in a weatherometer, in Kly, equivalent to approximately 3 years of continuous exposure in Northern Italy or 2 years in Southern Italy.



Zero hour sample (prior to exposure) and a sample subjected to an accelerated ageing test after 4.000 hours of exposure.



REACTION TO FIRE

European classification EN 130501-1

Main classification		
A1	+ + + + +	non-combustible materials (glass and glass fibre, metals, porcelain, etc.)
A2		
B	+ + + +	non flammable combustible materials
C	+ + +	combustible materials not easily flammable
D	+ +	
E	+	
F	-	easily flammable materials

Ancillary classification			
s	1	++ (the best)	s = smoke: smoke production during combustion
	2	+	
	3	- (the worst)	
d	0	++ (the best)	d = dripping: dripping during combustion
	1	+	
	2	- (the worst)	

NATURAL AGEING TEST

(samples exposed to the external environment)

Other tubes



1st year



2nd year



3rd year



4th year



5th year



6th year

Smisol Clim Platinum



ANTI
UV

APPLICATIONS

- Air conditioning.
- Transportation of refrigerant gases (R32, R410A, R407,...)

In compliance with applicable regulations.



SMISOL®Clim is a result of close customer-manufacturer cooperation, meeting the needs of an increasingly demanding market asking for technological solutions that fully meet the technical specifications required by the air conditioning sector, while maintaining a good quality/price ratio.

This copper tube is manufactured according to EN 12735-1, and is pre-insulated with expanded closed cell polyethylene in accordance with EN 14114. It is distributed in coils of 50 m length. The dimensions are defined in inches and, as expressly indicated by EN 12735-1, in section 6.3.2, they may be agreed between manufacturer and customer.

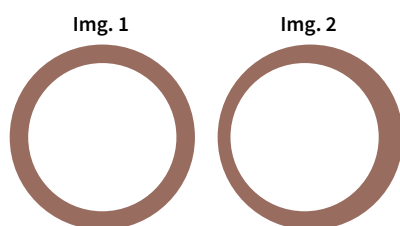
SMISOL®Clim is also characterised by **particularly low eccentricity values**, a very important feature for endforming operations.

SHEATH CHARACTERISTICS

- Thermal conductivity: $\lambda \leq 0,038$ W/mK at 40°C.
- Average value of the water vapour diffusion resistance factor " μ " > 15.000.
- Average sheath density: 33 kg/m³.
- Free from ammoniacal residues.
- Excellent resistance to external chemical agents.
- Reaction to fire classification: BLS1d0 (EN 13501-1).
- Devoid of CFCs and HCFCs (Reg. EEC/EU 2037/2000).

INTERNAL SURFACE

The inner surface of the copper tube is bright, clean and dry, essential characteristics of products such as this normally available on the market for industrial use. This particularity allows for the achievement of an integrated system with the terminal elements of the plant. The particular internal cleanliness of SMISOL®Clim is safeguarded by the closure of each coil ends by means of stoppers directly in the production phase.



ECCENTRICITY

Eccentricity defines the distance between the centre of the outer circumference and that of the inner circumference and it is a fundamental parameter for endforming operations. Zero eccentricity occurs when the two centres coincide perfectly (Img. 1), while in the presence of eccentricity, the greater its value, the more variation is evident in the wall thickness (Img. 2).

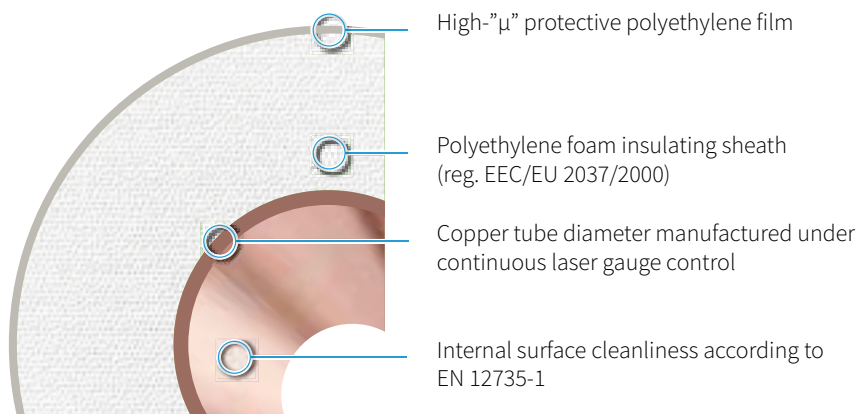


TABLE OF STANDARD PRODUCT DIMENSIONS - COILS (50 m)

external diameter	dimensions Ed x Th	coil length min. guaranteed	min sheath thickness	burst pressure	operating pressure ASTM	water content
(inches)	(mm)	(m)	(mm)	(Mpa)	(Mpa)	(l/m)
1/4"	6.35 x 0,7	50	6	49,47	12,37	0,019
1/4"	6.35 x 0,8	50	6	56,54	14,14	0,018
3/8"	9.52 x 0,7	50	8	33,00	8,25	0,051
3/8"	9.52 x 0,8	50	8	37,71	9,43	0,049
1/2"	12.70 x 0,7	50	10	24,74	6,18	0,100
1/2"	12.70 x 0,8	50	10	28,27	7,07	0,097

Ed = External diameter Th = wall thickness

EXTERNAL PROTECTION

Polyethylene closed cell expanded foam with average **water vapour diffusion resistance factor "μ" greater than 15.000**. The insulating sheath is manufactured under full compliance to European Regulation EEC/EU 2037/2000, which enforces the use of expanded foam insulation sheaths devoid of CFCs and HCFCs, which are harmful to health and the environment. Reaction to fire classification: BLs1d0 (EN 13501-1).

INSULATOR TUBULAR SECTION

The expanded insulator of the tubular section guarantees better adhesion to the tube and better performance in terms of thermal insulation and moisture formation.

MARKING

The update of the standard EN12735-1 in April 2020 introduced the obligation to report on the insulating sheath the reference to the standard EN12735-1 and normal dimensions of the contained copper tubes in millimeters (Ed x Th).



SMISOL®Frio

Fears neither heat nor cold

APPLICATIONS

- Refrigeration.
- Transport of heat transfer fluids for multi-function systems.

In compliance with applicable regulations.



This copper tube is manufactured according to EN 12735-1 (and ASTM B 68/M), and is pre-insulated with an expanded polyethylene foam, characterised by a closed cell structure with regular and evenly distributed cell size (EN 14114). It is distributed in coils, with the tube diameter specified in millimetres. The insulating sheath is manufactured in full compliance with European Regulation EEC/EU 2037/2000 that enforces the use of insulating expanded foam sheaths devoid of CFCs and HCFCs, which are harmful to health and the environment. The sheath thickness is designed to satisfy the various requirements of this application area.

Given the particular application field, special attention is reserved for the **external protective polyethylene film designed to prevent the formation of condensation** on the outer wall of the product.

SHEATH CHARACTERISTICS

- Thermal conductivity: $\lambda \leq 0,038$ W/mK at 40°C.
- Average value of the water vapour diffusion resistance factor " μ " > 15.000.
- Average sheath density: 33 kg/m³.
- Free from ammoniacal residues.
- Excellent resistance to external chemical agents.
- Reaction to fire classification: BLS1d0 (EN 13501-1).
- Devoid of CFCs and HCFCs (Reg. EEC/EU 2037/2000).

INTERNAL SURFACE

The inner surface of the copper tube is bright, clean and dry, essential characteristics of products such this normally available on the market for industrial use. This particularity allows for the achievement of an integrated system with the terminal elements of the plant. The particular internal cleanliness of SMISOL®Frio is safeguarded by the closure of each coil ends by means of stoppers directly in the production phase.

EXTERNAL PROTECTION

Polyethylene closed cell expanded foam with average **water vapour diffusion resistance factor " μ " greater than 15.000**. The insulating sheath is manufactured under full compliance to European Regulation EEC/EU 2037/2000, which enforces the use of expanded foam insulation sheaths devoid of CFCs and HCFCs, which are harmful to health and the environment. Reaction to fire classification: BLS1d0 (EN 13501-1).

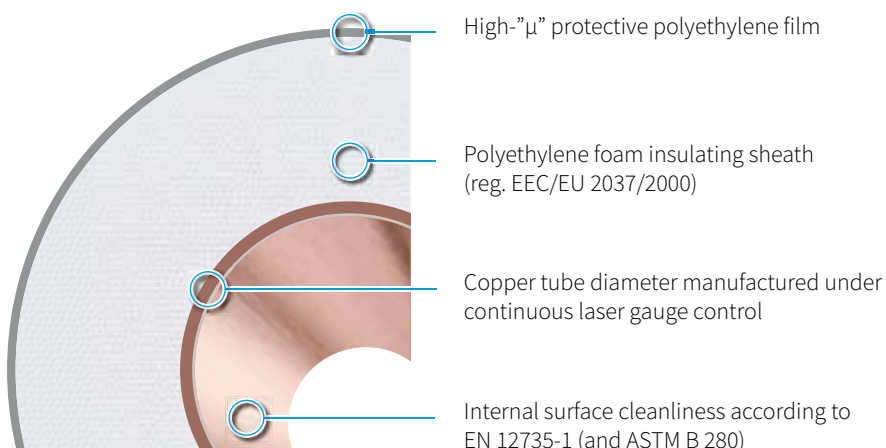


TABLE OF STANDARD PRODUCT DIMENSIONS - COILS

dimensions Ed x Th	coil length min. guaranteed	min. sheath thickness	burst pressure	operating pressure ASTM	water content
(mm)	(m)	(mm)	(MPa)	(MPa)	(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

Ed = External diameter Th = wall thickness

* Sizes 14x1 and 16x1 mm are manufactured according to ASTM B 68/M

INDICATIONS FOR PLANT DESIGN

To avoid condensation on the tubing, please check the environmental conditions in which the product is to be installed: relative humidity, ambient temperature and temperature of the conveyed fluid. In this regard, it is recommended that the plant parameters are verified by means of the Psychrometric diagram.



APPLICATIONS

- Air conditioning and refrigeration systems.
- Transportation of refrigerant gases.
- Transport of medical gases.
- Transport of technical gases.

In compliance with applicable regulations.



SCT offers a complete range of copper tubes for both the plumbing-sanitary sector and industrial applications. SCT tubes are manufactured with the highest possible levels of quality, in full compliance with prevailing technical standards and respecting customer specifications.

To enable a clear distinction between the technical applications addressed by different product categories, we introduced the MediClim® brand, which satisfies the requirements of two highly specialised areas such as **the medical and air conditioning sector**.

MediClim® tube has a **high degree of internal cleanliness** and is specifically designed for the conveyance of industrial and refrigerant gases as well as vacuum distribution. They can be used in high-pressure systems and have excellent workability characteristics.

Special patented processes ensure that the inside of the tubing is cleaned to a very high degree, assuring perfect compatibility with the special requirements of the various intended application fields.

MediClim® is manufactured according to standards EN 12735-1 and EN 13348.

MediClim® is produced in 5 m straight lengths (R290 hard temper) and in 25 m coils (R220 annealed temper). In both delivery formats, the ends are sealed with stoppers to grant the internal cleanliness of each unit piece, which is also marked by a specific numbering identifying the production lot and ensuring its traceability.

The use of the MediClim® range requires a careful assessment of the intended application, as well as the prevailing environmental and functional conditions in which the product will be installed. This assessment must be made by qualified personnel at the project design stage: the correct use and the operational functionality of the finished tubing plant requires appropriate installation in full compliance with applicable regulations and expert craftsmanship.

All MediClim® products in straight lengths are **specifically packaged** for each dimension.

MediClim® production is carried out in accordance with the rules defined by a Quality Management System approved under ISO 9001:2000, aligned to the Pressure Equipment Directive 2014/68/EU.

TECHNICAL SPECIFICATIONS

- Cu DHP (Cu: 99,9% min. P: 0,015 ÷ 0,040%) according to EN 1412
- Dimensions and tolerances, according to EN 12735-1 and EN 13348
- Temper annealed (R220)
Unit break load: R. min. $\geq 220 \text{ MPa (N/mm}^2\text{)}$
Elongation percentage: A_5 min. $> 40\%$
- Temper hard (R290)
Unit break load: R. min. $\geq 290 \text{ MPa (N/mm}^2\text{)}$
Elongation percentage: A_5 min. $> 3\%$

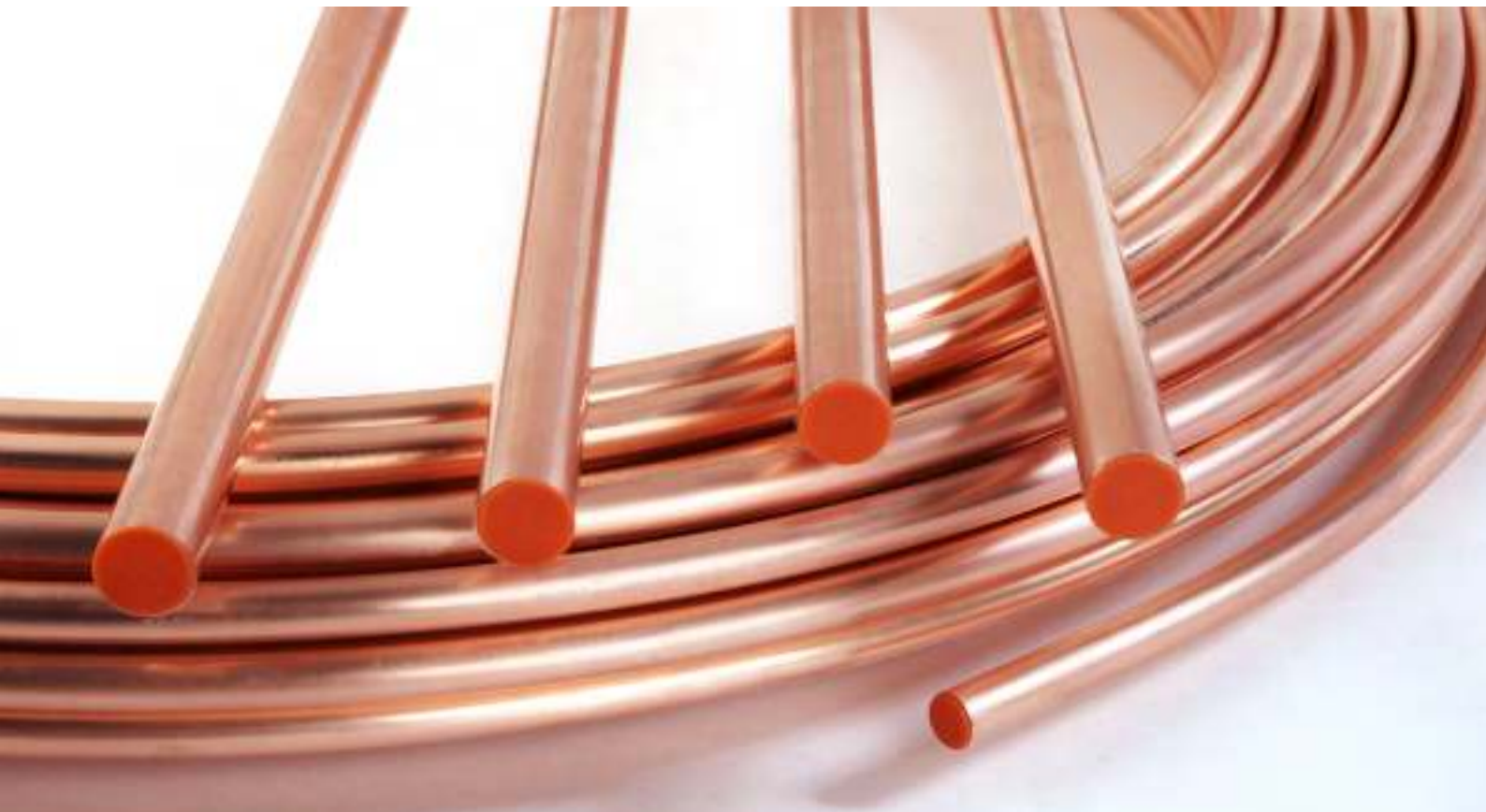


MEDICAL APPLICATIONS

With reference to EN 13348 “..copper tubes for the transport of medical gases...”, MediClim® is the specific solution for a sector in which, given the high level of quality required and the particular uses in hospital facilities, an excellence degree of quality and reliability is mandatory. Indeed, medical gases have a direct impact on human health and, therefore, must be and remain pure even during their transportation to protect the safety of treated patients.

MediClim® is subjected to particularly restrictive chemical, mechanical, dimensional and safety characteristics and is **suitable for vacuum systems and the distribution of medical gases** (Oxygen, nitrous oxide, nitrogen, helium, carbon dioxide, xenon, medical air, air for the supply of surgical instruments, anaesthetic gases and vapours) at pressure levels up to 2.000 kPa.

In this specific area, the applicable joining method for this tubing is welding or brazing, as recommended by standard UNI ISO 7396-1, which specifies that “the joining methods used must be such as to maintain the mechanical characteristics of the joint up to temperature of 600 °C”. During brazing or welding operations, the inside of the tubes must be purged with a protective gas (such as nitrogen) with due care that the cadmium content of brazing filler metals does not exceed 0,025%.





ACR APPLICATIONS

With reference to EN 12735-1, MediClim® fully meets the requirements in the air conditioning and refrigeration (ACR) sectors for refrigerant gas tubing in industry and laboratories. Particularly suitable for large-scale installations, it meets the technical specifications required by European legislation on packaging and transport of refrigerants (R410, R407C, ...).

MediClim® presents **internal surfaces that are bright, clean and dry**, key features for safeguarding the efficient performance of the entire system. The special production process guarantees a value of soluble residues on the inner surface of less than 0,38 mg/dm², in full compliance with EN 12735-1 and a lubricant residue less than 0,20 mg/dm² as indicated by standard EN 13348. Such levels of cleanliness are assured by the specific adopted production techniques and also by the termination-sealing of each tube by appropriate stoppers on completion of the manufacturing cycle.



TABLE OF STANDARD PRODUCT DIMENSIONS - COILS (25 m)

dimensions Ed x Th	burst pressure	operating pressure ASTM	water content
(mm)	(MPa)	(MPa)	(l/m)
6 x 1	74,80	18,70	0,013
8 x 1	56,10	14,03	0,028
10 x 1	44,88	11,22	0,050
12 x 1	37,40	9,35	0,079
14 x 1	32,06	8,01	0,113
16 x 1	28,05	7,01	0,154
18 x 1	24,93	6,23	0,201
22 x 1	20,40	5,10	0,314

Ed = External diameter Th = wall thickness

Standards EN 12735-1 and EN 13348, at paragraph 6.3.2, state that other dimensions not included in the table may be agreed between manufacturer and customer.

TABLE OF STANDARD PRODUCT DIMENSIONS - STRAIGHT LENGTHS (5 m)

dimensions Ed x Th	burst pressure	operating pressure ASTM	water content
(mm)	(MPa)	(MPa)	(l/m)
10 x 1	59,16	14,79	0,050
12 x 1	49,30	12,33	0,079
14 x 1	42,26	10,56	0,113
15 x 1	39,44	9,86	0,133
16 x 1	36,98	9,24	0,154
18 x 1	32,87	8,22	0,201
22 x 1	26,89	6,72	0,314
22 x 1,5	40,34	10,08	0,283
28 x 1	21,13	5,28	0,531
28 x 1,5	31,69	7,92	0,491
35 x 1	16,90	4,23	0,855
35 x 1,5	25,35	6,34	0,804
42 x 1	14,09	3,52	1,256
42 x 1,5	21,13	5,28	1,194
54 x 1,5	16,43	4,11	2,042
54 x 2	21,91	5,48	1,963
64 x 2	18,49	4,62	2,826
76,1 x 2	15,55	3,89	4,081
88,9 x 2	13,31	3,33	5,658
108 x 2,5	13,69	3,42	8,328

Ed = External diameter Th = wall thickness



APPLICATIONS

- Air conditioning and refrigeration systems.
- Transport of refrigerant fluids.
- Transport of technical gasses.

In compliance with applicable regulations.



GELO® is produced in 5 m straight lengths according to EN 12735-1. They are available both in millimeters and inches. They can be used for both civil and industrial refrigeration and conditioning systems.

GELO® copper tubes have a **high degree of internal cleanliness** and are specially designed for the conveyance of industrial and refrigerant gases, as well as vacuum distribution. They can be used in high-pressure systems and have excellent workability features. Special patented processes ensure the internal cleanliness of the pipe, assuring perfect compatibility with the special requirements of the various intended application fields.

This is to produce a tube whose internal surface is free from substances or particles that, transported by gas, can damage delicate and expensive machinery. Therefore, the residue and/or dust level of less than 0,038 g/m² should be maintained and the ends must be sealed in order to preserve its internal cleanliness.

TECHNICAL FEATURES

- Cu DHP (Cu: 99,9% min. P: 0,015 ÷ 0,040%) according to EN 1412
- Dimensions and tolerances, according to EN 12735-1
- Hard temper (R290)
Unit break load: R. min. ≥ 290 MPa (N/mm²)
- Elongation percentage: A₅ min. $> 3\%$

ACR APPLICATIONS

With reference to EN 12735-1, GELO® fully meets the requirements in the air conditioning and refrigeration sector (ACR) for refrigerant gas tubing in industry and laboratories. Particularly suitable for large-scale installations, it is in compliance with the technical specifications required by the European legislation on the packaging and **transport of refrigerant gasses (R32, R410, R407C, ...).**

GELO® has bright, clean and dry internal surfaces, an essential feature that permits the safeguard of the conditions of the entire plant. The special production process guarantees less than 0,38 mg/dm² of soluble residues on the inner surface, in full compliance with EN 12735-1.

Such levels of cleanliness are assured by the specific production techniques adopted, as well as by the **sealing of the ends of each tube by appropriate stoppers** on completion of the manufacturing cycle.

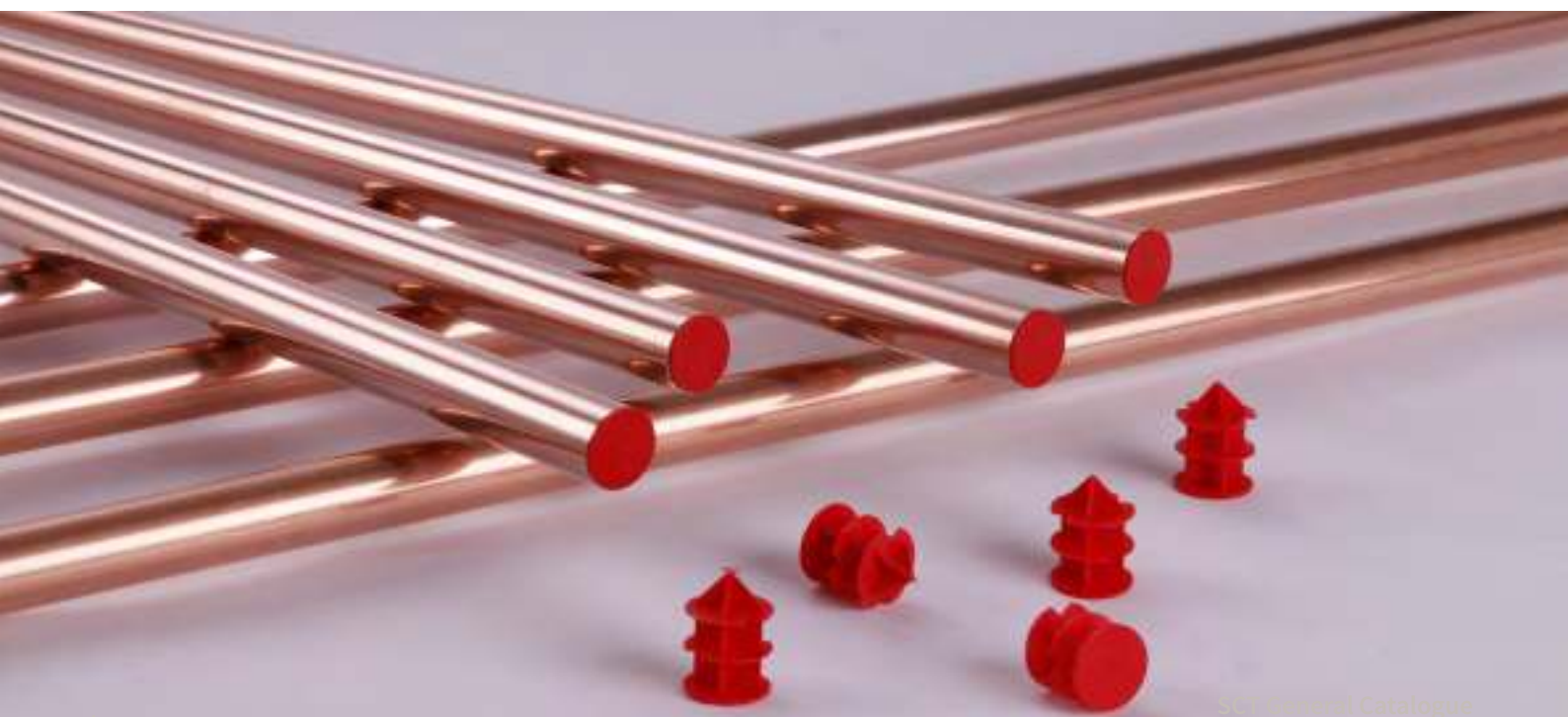


TABLE OF STANDARD PRODUCT DIMENSIONS - STRAIGHT LENGTHS (5 m)

dimensions Ed x Th	burst pressure	operating pressure ASTM
(mm)	(MPa)	(MPa)
10 x 1	59,16	14,79
12 x 1	49,30	12,33
14 x 1	42,26	10,56
15 x 1	39,44	9,86
16 x 1	36,98	9,24
18 x 1	32,87	8,22
22 x 1	26,89	6,72
22 x 1,5	40,34	10,08
28 x 1	21,13	5,28
28 x 1,5	31,69	7,92
35 x 1	16,90	4,23
35 x 1,5	25,35	6,34
42 x 1	14,09	3,52
42 x 1,5	21,13	5,28
54 x 1,5	16,43	4,11
54 x 2	21,91	5,48

dimensions Ed x Th	burst pressure	operating pressure ASTM
(inches) (mm)	(MPa)	(MPa)
5/8" 15,87 x 1	37,28	9,32
3/4" 19,05 x 1	31,06	7,76
7/8" 22,22 x 1	26,62	6,66
1" 25,40 x 1	23,29	5,82
1 1/8" 28,57 x 1	20,71	5,18
1 1/8" 28,57 x 1,25	25,88	6,47
1 1/4" 31,75 x 1,25	23,29	5,82
1 3/8" 34,92 x 1,25	21,18	5,29
1 1/2" 38,10 x 1,25	19,41	4,85
1 5/8" 41,27 x 1,25	17,92	4,48
2 1/8" 53,97 x 1,65	18,09	4,52

Ed = External diameter Th = wall thickness

GELO® is produced in 5 m straight lengths (hard temper R290) in millimetres and inches versions.

In both formats, **the ends are sealed to grant the internal cleanliness of each unit piece, which is also marked by a specific numbering that identifies the production lot and ensures its traceability.**

All GELO® production is carried out in accordance with the rules defined by a Quality Management System approved under ISO 9001 and aligned to the European Pressure Equipment Directive 2014/68/EU.



The use of the GELO® range requires a careful assessment of the designed application, as well as the prevailing environmental and functional conditions in which the product will be installed. This assessment must be made by a qualified personnel at the project design stage: the correct use and the operational functionality of the finished tubing plant require appropriate installation in full compliance with applicable regulations and expert craftsmanship.

All GELO® production is carried out in accordance with the rules defined by a Quality Management System approved under ISO 9001 and aligned to the European Pressure Equipment Directive 2014/68/EU.



TUBE CLOSING

GELO® is supplied in 5 m straight lengths, and each tube is sealed at the ends by polyethylene stoppers.

The sealing is guaranteed by a special cap composed of a cylinder with two rows of permanent o-rings.

This system generates a coupling with the internal diameter of the pipe, thus preventing its accidental removal. In this way, dust and impurities cannot penetrate into the tube so as to ensure its internal cleaning until the moment of the installation.

The high internal cleaning of the tube is essential to us. The refrigerant fluid should not contain external impurities so as to avoid the clogging of the batterie capillaries and ensure the correct heat exchange throughout the life of the equipment.



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PLUMBING

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24	SCUDO® <i>Radiant</i>
26	SMISOL® Gas
28	SMISOL® Tekgas
30	SMISOL® Più
32	SMISOL® One
34	Strato

APPLICATIONS

- Cold drinking water.
- Distribution of liquid and gaseous fuels.
- Heating and hot water (after on-site insulation).

In compliance with applicable regulations.

SCUDO® is composed of refined copper, essentially pure material (Cu DHP 99.9% min.) and is precisely certified as such by SCT. It does not contain additive elements such as dyes, plasticisers and fluidising agents that may be present otherwise in alternative materials derived from petroleum.

SCUDO®, thanks to a patented production process, can offer a quality level that is superior to that specified by regulatory provisions and, therefore, assures much better overall performances compared to that of commonly available commercial tubing products.

INTERNAL PROTECTION

During manufacture, the tubes are subjected to a **patented treatment for passivation and stabilisation of the internal walls**, thus assuring absolute compliance to the potability parameters required by European legislation for transported drinking water (European Directive 98/83).

The enactment of the European Directive 98/83/EC on water intended for human consumption has highlighted the issue of the suitability of materials used for the various components in water systems, aiming at guaranteeing that drinking water does not suffer any alteration of its potability characteristics.

SCUDO complies with D.M. 174/04 (O.J. 166 of 17/07/04), which defines the parameters to be met by materials in contact with drinking water.

THE SMART CHOICE

Manufactured according to EN 1057, it has proven bacteriostatic properties that make it particularly suitable for drinking water systems. The **high melting point** (1083 °C), **pressure resistance** and its **thermal conductivity**, render this material ideal for the installation of traditional heating systems (in the pre-insulated version or in combination with suitable insulating sheaths) and for underfloor or wall heating installations. It is also the most suitable material for domestic gas installations, where **safety criteria, reliability and watertightness** are mandatory.

Furthermore, SCT copper tubes adhere to a universal application system for every category of joint, independently of specific contexts and limiting boundary conditions. Subject to regulation compliance, with the same type of tube materials, different plant systems can be fitted (heating, water and gas), with obvious operating advantages and economy of scale in stock management. It should be further noted that the calibration applied to SCT copper tubing significantly simplifies the new jointing techniques (press fittings and compression couplings). Moreover, in the interests of consumer protection, in accordance with **EU Regulation 305/2011 for construction products (CPR)**, SCUDO® copper tubes are certified with the **CE mark**.

A further guarantee of compliance with prevailing regulation standards is assured with the achievement of **UNI-IGQ Quality certification**.

CE MARKING

Each individual tube shows the EEC marking as prescribed by standard EN 1057 in accordance with EU Regulation 305/2011.

PUNCHED MARKINGS

The markings on SCUDO® copper tubes are repeated at 60 cm intervals and declare all information required by the EU Regulation 305/2011 regarding construction products (CPR).

CALIBRATION

Calibration, both for straight lengths and coils, is an essential aspect for the correct execution of all coupling operations. In particular, it is essential for press fittings.

BACTERIOSTATIC EFFECTS

Copper plumbing plants have a greater capability to reduce pathogenic germs in water compared to installations constructed with plastic materials.



Escherichia coli bacterial colonies in contact with copper before and after 24 hours.



THE NATURAL SOLUTION

Copper is intrinsically non-magnetic and, therefore, does not alter the natural magnetic field. It has proven **bacteriostatic properties**, which make it particularly suitable for all drinking water systems, preventing the proliferation of bacteria such as Legionella.

Thanks to its action on the cell walls of pathogenic microorganisms, SCUDO® copper tube inhibits the formation of bacteria in installations that carry water for human consumption. These pathogens unleash their very dangerous effects when nebulised and inhaled, for example, during the taking of showers and exposure to whirlpool systems or fountains.

In addition to its preventive properties, copper tubes, thanks to their physical and chemical characteristics, ensure the adoption of appropriate decontamination procedures (eg. thermal shock, chlorination, disinfection with chlorine dioxide, ...) without risking any damage to the plant itself. At the end of its long life cycle, copper is completely and easily **recyclable**, thus reducing the amount of waste requiring disposal.

Unlike other materials, copper tubes are well-known for their high **recovery value**, both as cut-off residue and salvaged scrap. When this value is properly quantified, the choice of copper emerges as even more competitive on a cost basis compared to other materials, in particular to plastic products.

It should also be noted that tubes made of plastic materials, given their derivation from a synthesis of petroleum-based processes, have a material composition that requires accurate control of several chemical parameters. It is fundamental, first of all, to know their actual chemical composition and to evaluate the presence of adhesives, additives, stabilisers, dyes or other compounds that can be used during production.



TECHNICAL CHARACTERISTICS

Alloy:	Cu DHP CW024A (Cu: 99,9% min. P: 0,015 ÷ 0,040%) according to EN 1412
Dimensions and tolerances:	according to EN 1057
Melting point:	1083°C
Absolute roughness:	e. = 0,0015 mm (low-pressure losses)
Linear thermal expansion coefficient:	0,0168 mm/m°C
Thermal conductivity:	at 20°C = 364 W/m°C (more than 1.000 times higher than that of plastic materials)
Thermal expansion:	≅ 1,2 mm/m with $\Delta T = 70^\circ\text{C}$
Does not soften at high temperatures Absolute impermeability to gases UV-rays resistant Temper:	R 220 or R 290 in accordance with EN 1057

Tubes in coils are supplied in annealed temper (R220) with the following characteristics:

Ultimate unit tensile stress:	R. min. $\geq 220 \text{ MPa (N/mm}^2\text{)}$
Elongation percentage:	A_5 min. $> 40\%$

Tubes in straight lengths are supplied in hard temper (R290) with the following characteristics:

Ultimate unit tensile stress:	R. min. $\geq 290 \text{ MPa (N/mm}^2\text{)}$
Elongation percentage:	A_5 min. $> 3\%$

Carbon residue (tubes in coils):	$C < 0,06 \text{ mg/dm}^2$ (compared to $C \leq 0,20 \text{ mg/dm}^2$ required by EN 1057)
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TABLE OF STANDARD PRODUCT DIMENSIONS - COILS

dimensions Ed x Th	coil length min. guaranteed	burst pressure	operating pressure ASTM	water content
(mm)	(m)	(MPa)	(MPa)	(l/m)
6 x 1	50	74,80	18,70	0,013
8 x 1	50	56,10	14,03	0,028
10 x 1	50	44,88	11,22	0,050
12 x 1	50	37,40	9,35	0,079
14 x 1	50	32,06	8,01	0,113
15 x 1	50	29,92	7,48	0,133
16 x 1	50	28,05	7,01	0,154
18 x 1	50	24,93	6,23	0,201
22 x 1	25	20,40	5,10	0,314
22 x 1,5	25	30,60	7,65	0,283

TABLE OF STANDARD PRODUCT DIMENSIONS- STRAIGHT LENGTHS (5 m)

dimensions Ed x Th	burst pressure	operating pressure ASTM	water content
(mm)	(MPa)	(MPa)	(l/m)
6 x 1	98,60	24,65	0,013
8 x 1	73,95	18,49	0,028
10 x 1	59,16	14,79	0,050
12 x 1	49,30	12,33	0,079
14 x 1	42,26	10,56	0,113
15 x 1	39,44	9,86	0,133
16 x 1	36,98	9,24	0,154
18 x 1	32,87	8,22	0,201
22 x 1	26,89	6,72	0,314
22 x 1,5	40,34	10,08	0,283
28 x 1	21,13	5,28	0,531
28 x 1,5	31,69	7,92	0,491
35 x 1	16,90	4,23	0,855
35 x 1,2	20,28	5,07	0,834
35 x 1,5	25,35	6,34	0,804
42 x 1	14,09	3,52	1,256
42 x 1,2	16,90	4,23	1,231
42 x 1,5	21,13	5,28	1,194
54 x 1,5	16,43	4,11	2,042
54 x 2	21,91	5,48	1,963
64 x 2	18,49	4,62	2,826
76,1 x 2	15,55	3,89	4,081
88,9 x 2	13,31	3,33	5,658
108 x 2,5	13,69	3,42	8,328

Ed = External diameter Th = wall thickness

Other dimensions compliant to EN 1057 are available on request.

APPLICATIONS

- Floor and wall radiant heating and cooling systems.

In compliance with applicable regulations.



SCUDO®Radiant is the ideal solution designed by SCT to meet the specific needs of low-temperature systems. The need to adapt modern systems to alternative energy sources such as heat pumps, solar panels, fireplace stoves or to combine them with condensing boilers, aiming at achieving maximum energy saving performances involves the use of installation solutions compatible with these specific systems.

SCUDO®Radiant tube was designed according to EN 1057 and is intended for **underfloor and wall systems**. The advanced technical and mechanical characteristics, in particular the **high thermal conductivity**, constitute the key features that render this product specific for this field of application.

SCUDO®Radiant has a thermal conductivity of 390 W/(mK), that is over 1.000 times higher than comparable plastic materials. This fundamental characteristic qualifies it as the primary material in the radiant heating sector; indeed, optimal heat radiation efficiency is achieved by using the material with the best thermal conductivity.

For a given amount of energy consumed to heat a living space, a **lower quantity of tubing is required**. For this reason, in underfloor systems employing SCUDO®Radiant copper tube the inter-tube space is kept around 25 cm, much wider than that typically used in plastic systems. In addition, its **low internal roughness**, associated with a **greater water flow**, allows the use of tubes with a limited outer diameter. This allows to reduce screed thickness with a consequent lower occupation of the building structure and obvious savings in construction costs. These advantages ultimately sustain **lower pressure drops and lower energy consumption** for the circulation pumps, in addition to energy saving in the boiler, since water can circulate at low temperature and, in turn, this causes reduced wear of the system components.

Another important advantage in terms of increased savings and living comfort is obtained thanks to **lower thermal inertia**: the desired ambient temperature is reached more quickly.

TABLE OF STANDARD PRODUCT DIMENSIONS - COILS

dimensions Ed x Th	coil length min. guaranteed	burst pressure	operating pressure ASTM	water content
(mm)	(m)	(MPa)	(MPa)	(l/m)
14 x 0,8	100	25,65	6,41	0,121

Ed = External diameter Th = wall thickness
Also available in 50 m coils.

TECHNICAL CHARACTERISTICS

- Heat and fire resistance: melting point 1083 °C; SCUDO®Radiant can easily resist to rapid temperature fluctuations, without the risk of softening in the event of boiling water or other deformation phenomena that would shorten its durability.
- High burst pressure.
- Longevity: absence of deterioration and cracks from fatigue due to temperature variations and ageing (a particularly felt problem for heating/cooling systems with heat pumps).
- Low and unique thermal expansion coefficient similar to that of screed.
- It inhibits bacterial growth, thus preventing the formation of algae and biofilm inside the tube.
- Absolute impermeability to gases and UV resistance: no problems of osmosis and negative consequences on plant components (boiler, pump impellers and other metal parts).

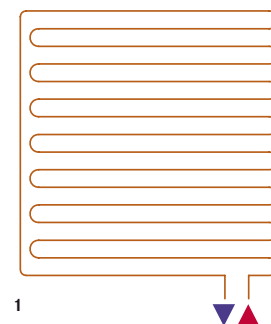
The particular manufacturing process adopted for SCUDO®Radiant allows for a malleable and easily installable product, which **does not suffer the memory effect** and, therefore, does not require thermal insulation panels with positioning “mushrooms” which, additionally, reduce heat exchange and require greater screed thickness. It is compatible with the plasters and mortars normally available in the market and does not require additives to increase fluidisation and thermal conductivity.

SCUDO®Radiant copper tubes are perfectly aligned to modern Bio-architecture principles that focus on health and indoor comfort issues by calling attention to the choice of materials and related environmental sustainability. This **material is completely natural, non-toxic, non-magnetic and 100% recyclable**. At the end of its extended life cycle it retains a very high recovery value, as opposed to other materials that involve considerable disposal costs.

Furthermore, in the interests of consumer protection and in accordance with **EU Regulation 305/2011 for construction products (CPR)**, SCUDO®Radiant copper tubes are certified with the **CE mark**. A supplementary guarantee of compliance with prevailing regulation standards is assured with the achievement of **UNI-IGQ Quality certification**.

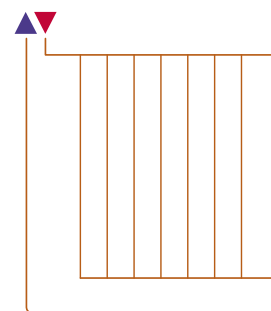


INSTALLATION LAYOUTS



1 _ Zig-zag:

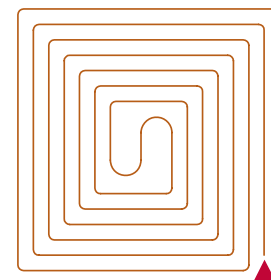
suitable for rooms with irregular floor surfaces. The inter-tube spacing can be easily reduced for areas where more concentrated heat is required.



2

2 _ Grid:

suitable for large surfaces and industrial installations.



3

3 _ Spiral:

ensures that heat is distributed uniformly. It is recommended for regular surfaces.



APPLICATIONS

- Distribution of liquid and gaseous fuels with particular reference to underground laying.

In compliance with applicable regulations.



This copper tube is manufactured according to standard EN 1057.

During production it is sheathed in a PVC full cross-section protective covering (without air channels) according to UNI 10823.

The properties of SMISOL® Gas in terms of melting point, fire and pressure resistance, gas impermeability and the absolute sealing performance of brazed and joints, become indispensable in the case of domestic distribution of gas fuel, where the utmost safety guarantees are mandatory and enforced by technical standards and by legal provisions.

Furthermore, in accordance with **EU Regulation 305/2011 for construction products (CPR)**, SMISOL® Gas copper tubes, in line with EN 1057, are **CE marked**. A supplementary guarantee of compliance with prevailing regulation standards is assured with the achievement of **UNI-IGQ Quality certification**.

EXTERNAL PROTECTION

EXTERNAL PROTECTION

- Sheath material in special stabilised PVC resin.
- Full cross-section (continuous - no air channel) compliant to UNI 10823.
- Minimum sheath thickness: 1,5 mm (under continuous laser gauge control).
- Sheath manufactured from high-quality virgin granules.
- Excellent resistance to external chemical agents.
- Ink marking every meter.
- Electrical insulation resistance: $\geq 100 \text{ M}\Omega\text{m}^2$ (UNI 10823).

Tested and guaranteed stabilised polyvinyl resin sheath. The sheath protects the tube against damage from external agents such as building materials (eg. quick-setting cement) and damage caused by impact during the construction site transportation. It allows for **underground laying tube installation**, as indicated by UNI 10823: "the coating is obtained by extrusion, in a seamless and continuous manner, externally and internally smooth, with uniform nominal thickness, adherent to the external wall of the copper tube over its entire surface to ensure the absence of residual air pockets and prevent the coating from slippage".

It is tested in line in order to ensure the required electrical Insulation resistance that, as per UNI 10823, must be equal to or greater than $100 \text{ M}\Omega\text{m}^2$.

Moreover, it meets the requirements of UNI 7129 regarding the omission of the dielectric joint installation, provided for underground sections not exceeding 3 m length.

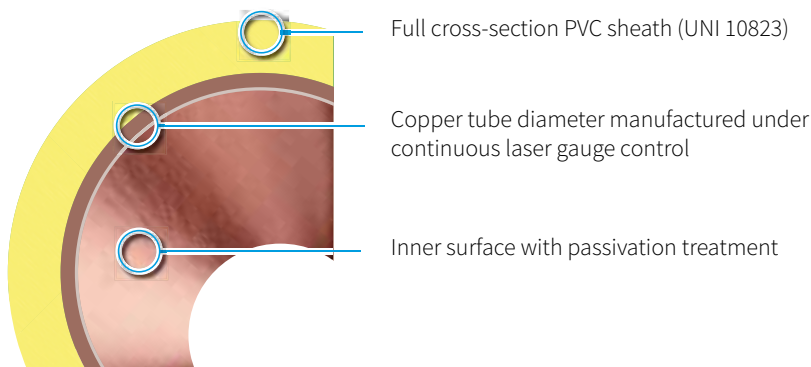


TABLE OF STANDARD PRODUCT DIMENSIONS - COILS

dimensions Ed x Th	coil length min. guaranteed	min. sheath thickness	burst pressure	operating pressure ASTM	water content
(mm)	(m)	(mm)	(MPa)	(MPa)	(l/m)
12 x 1	50	1,5	37,40	9,35	0,079
14 x 1	50	1,5	32,06	8,01	0,113
15 x 1	50	1,5	29,92	7,48	0,133
16 x 1	50	1,5	28,05	7,01	0,154
18 x 1	50	1,5	24,93	6,23	0,201
22 x 1	25	1,5	20,40	5,10	0,314

Ed = External diameter Th = wall thickness

INTERNAL PROTECTION

During production, the tubes are subjected to a **patented passivation treatment and stabilisation of the inner wall.**

SMISOL® Gas copper tube has a carbon residue $C < 0.06 \text{ mg/dm}^2$, much lower than that required by EN 1057, which defines a carbon content limit of $C \leq 0.20 \text{ mg/dm}^2$.



APPLICATIONS

- Distribution of liquid and gaseous fuels with particular reference in systems running inside walls.

In compliance with applicable regulations.



SMISOL®Tekgas is a copper tube manufactured according to standard EN 1057. During production, it is coated with a special low density closed cell polyethylene sheath. Standard supply dimensions comply with the provisions of UNI 7129. Thanks to the characteristics of the sheath, which is continuously coextruded onto the copper tube, and the **presence of spacers** wrapped in helical direction with respect to the tube axis, it is particularly indicated for the transport of liquid and gaseous fuels.

The spacers ensure a sheath internal diameter that is 10 mm greater than the outer diameter of the tube. This geometrical peculiarity enables to use the tube for crossing walls and floors without the addition of further metal sheathing in full compliance with UNI 7129.

Paragraph 4.4.1.5 provides that: “in the crossing between perimetral and exterior walls, solid and drilled bricks, and prefabricated panels, the gas adduction tube shall not have joints, except for the inlet and outlet junctions, and shall be protected by gas-proof through-sheath”. The sheath can be manufactured either in metal or polymer and must have an internal diameter greater than 10 mm compared to the outer diameter of the tube. This tube may also be buried in critical situations where the walls contain cavities (for example drilled bricks). This is possible again thanks to the polymeric sheath that continuously envelops the copper tubing.

The helical shape of the spacers ensures that the tube-sheath separation remains constant even in the 90° bends, avoiding crushings; hence, in the event of leaks, the danger of gas pocket formation is avoided.

The in-line sheathing process ensures superior malleability, greater than that of comparable products on the market. In order to preserve this unique feature, SMISOL®Tekgas coils have a wide diameter which, with the already described features, qualifies this as both a practical and professional product.

Furthermore, in the interests of consumer protection and in accordance with **EU Regulation 305/2011 for construction products (CPR)**, SMISOL®Tekgas copper tubes are certified with the **CE mark**.

A supplementary guarantee of compliance with prevailing regulation standards is assured with the achievement of **UNI-IGQ Quality certification**.

SHEATH CHARACTERISTICS

- Low density closed cell polyethylene liner.
- Helically wound spacers.
- Air gap: 5 mm min.
- Excellent resistance to external chemical agents.
- Ink marking every meter.
- Reaction to fire classification: BLS1d0 (EN 13501-1).

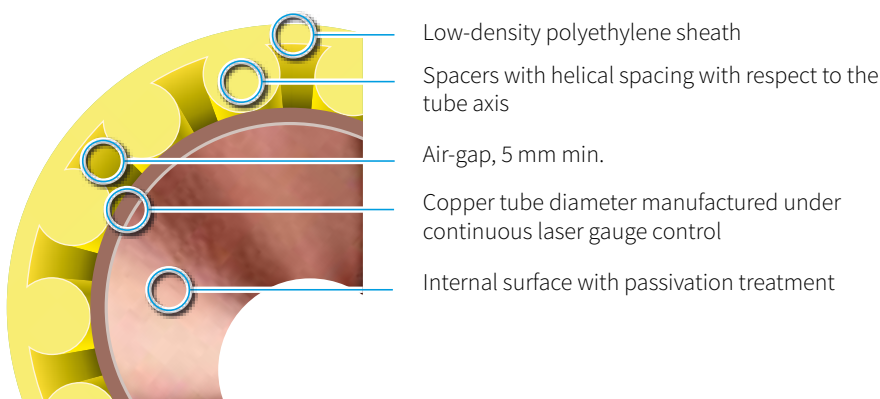


TABLE OF STANDARD PRODUCT DIMENSIONS - COILS

dimensions Ed x Th	coil length min. guaranteed	tube external diameter	burst pressure	operating pressure ASTM	water content
(mm)	(m)	(mm)	(MPa)	(MPa)	(L/m)
12 x 1	50	24	37,40	9,35	0,079
14 x 1	50	26	32,06	8,01	0,113
15 x 1	50	27	29,92	7,48	0,133
16 x 1	50	28	28,05	7,01	0,154
18 x 1	50	30	24,93	6,23	0,201
22 x 1	25	32	20,40	5,10	0,314

Ed = External diameter Th = wall thickness

EXTERNAL PROTECTION

The low density closed cell polyethylene sheath protects against damage from external agents such as building materials (eg. quick-setting cement) and damage caused by impact during the construction site transportation.

It complies with reg. EEC/EU 2037/2000. Reaction to fire classification: BLs1d0 (EN 13501-1).

INTERNAL PROTECTION

During production, the tubes are subjected to a **patented passivation treatment and stabilisation of the inner wall**. SMISOL® Tekgas copper tube has a carbon residue $C < 0.06 \text{ mg/dm}^2$, much lower than that required by EN 1057, which defines a carbon content $C \leq 0.20 \text{ mg/dm}^2$.

BENDING

With reference to tool-assisted bending procedures, it should be noted that the matrix and countermatrix may differ significantly depending on the make and model of the tube-bender in use.

For any further information and clarification, please contact us at the toll free number or e-mail address reported on the cover.



APPLICATIONS

- Cold drinking water.
- Distribution of liquid and gaseous fuels.

In compliance with applicable regulations.



This copper tube is produced according to standard EN 1057. During its production it is sheathed with a special continuous PVC covering with a star-shaped cross-section. It complies with DM. 174/04 (O.J. 166 of 17/07/04), which defines the parameters to be met by materials in contact with drinking water. The original in-line coating process allows for a malleability that is higher than comparable market alternatives, positioning it at the top of its category. It has proven **bacteriostatic properties** which make it particularly suitable for drinking water supply, in order to prevent the proliferation of bacteria such as Legionella. The absolute **impermeability to gases** also makes it suitable for use in the transport of liquid and gaseous fuels.

Furthermore, in accordance with **EU Regulation 305/2011 for construction products (CPR)**, SMISOL®Più copper tubes are **CE marked**.

A supplementary guarantee of compliance with prevailing regulation standards is assured with the achievement of **UNI-IGQ Quality certification**.

SHEATH CHARACTERISTICS

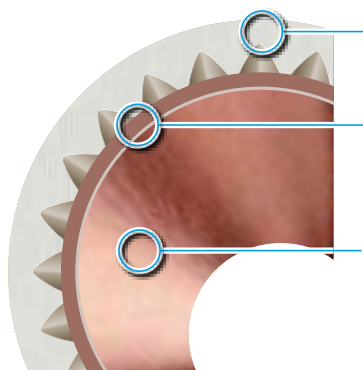
- Sheath material in special stabilised PVC resin.
- Star-shaped cross-section.
- Minimum sheath thickness: 1,5 mm (under continuous laser gauge control).
- Sheath manufactured from high-quality virgin granules.
- Excellent resistance to external chemical agents.
- Ink marking every meter.

EXTERNAL PROTECTION

Tested and guaranteed stabilised polyvinyl resin sheath.

Other specific advantages are given by:

- Reduction or elimination of unsightly and unhygienic water stains of dampness on walls.
- The star-shaped cross-section of the sheath absorbs small thermal expansions (linear thermal expansion coefficient = 0,00168 mm/m°C).
- Protected against impact damage during transport and on-site installation.



Star-shaped PVC sheath

Copper tube diameter manufactured under continuous laser gauge control

Internal surface with passivation treatment

TABLE OF STANDARD PRODUCT DIMENSIONS - COILS

dimensions Ed x Th	coil length min. guaranteed	min. sheath thickness	burst pressure	operating pressure ASTM	water content
(mm)	(m)	(mm)	(MPa)	(MPa)	(l/m)
6 x 1	50	1,5	74,80	18,70	0,013
8 x 1	50	1,5	56,10	14,03	0,028
10 x 1	50	1,5	44,88	11,22	0,050
12 x 1	50	1,5	37,40	9,35	0,079
14 x 1	50	1,5	32,06	8,01	0,113
16 x 1	50	1,5	28,05	7,01	0,154
18 x 1	50	1,5	24,93	6,23	0,201
22 x 1	25	1,5	20,40	5,10	0,314

Ed = External diameter Th = wall thickness

Other dimensions compliant to EN 1057 are available on request.

INTERNAL PROTECTION

During manufacture, the tubes are subjected to a **patented treatment for passivation and stabilisation of the internal walls**, thus assuring absolute compliance to the potability parameters required by European legislation for transported drinking water (European Directive 2020/2184/EU). SMISOL®Più copper tube has a carbon residue $C < 0.06 \text{ mg/dm}^2$, much lower than that required by EN 1057, which defines a carbon content limit of $C \leq 0,20 \text{ mg/dm}^2$.



SHEATH CHARACTERISTICS

- Thermal conductivity: $\lambda \leq 0,038 \text{ W/mK}$ at 40°C .
- Average sheath density: 33 kg/m^3 .
- Min. sheath thickness: 6 mm (9 mm for the 22 x 1 mm diameter) under continuous laser gauge control.
- Free from ammoniacal residues.
- Excellent resistance to external chemical agents.
- Reaction to fire classification: BLs1d0 (EN 13501-1).
- Devoid of CFCs and HCFCs (Reg. EEC/EU 2037/2000).

APPLICATIONS

- Hot and cold drinking water.
- Heating plants.

In compliance with applicable regulations.

This copper tube is produced according to standard EN 1057 and is pre-insulated during production with a polyethylene foam characterised by a closed cell structure of regularly and uniformly distributed cell sizes. The insulating sheath is also externally protected by means of a particular polyethylene film. Insulated according to Italian Law 10/91 and its implementation decree (DPR 412/93) for the **distribution of heat transfer fluid within heated environments**, the insulation material is manufactured in full compliance with European Regulation EEC/EU 2037/2000, which requires the use of foam-based insulation material free of CFC and HCFC gases, which are harmful to health and the environment. The production process ensures the absolute adherence of the insulating sheath to the outside wall of the copper tube, so as to avoid the formation of interspaces that would degrade the thermal insulation performance. The production process of the tube, coated directly in line, guarantees the absolute malleability of the product and its ease of installation.

Furthermore, in the interests of consumer protection and in accordance with **EU Regulation 305/2011 for construction products (CPR)**, SMISOL® One copper tubes, in line with EN 1057, are certified with the **CE mark**.

A supplementary guarantee of compliance with prevailing regulation standards is assured with the achievement of **UNI-IGQ Quality certification**.

EXTERNAL PROTECTION

The insulating sheath is in closed cell PE foam conforming to Reg. CEE/EU 2037/2000 (devoid of CFCs and HCFCs) with a green polyethylene corrugated film outer surface. Reaction to fire classification: BLs1d0 (EN 13501-1).

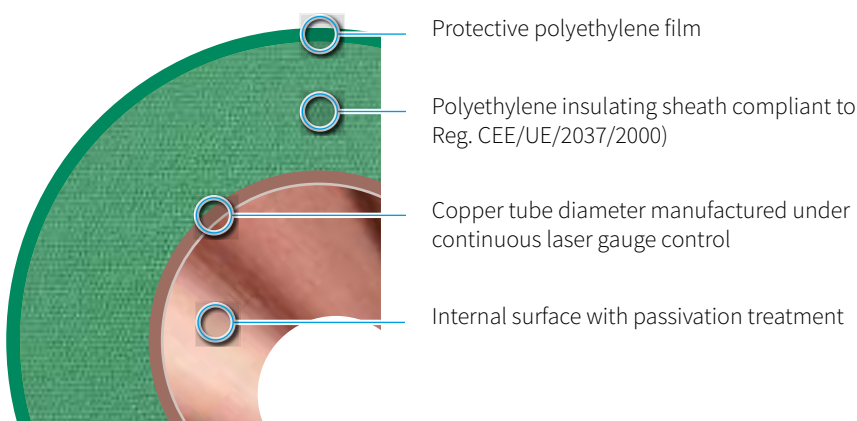


TABLE OF STANDARD PRODUCT DIMENSIONS - COILS

dimensions Ed x Th	coil length min. guaranteed	min. sheath thickness	burst pressure	operating pressure ASTM	water content
(mm)	(m)	(mm)	(MPa)	(MPa)	(l/m)
10 x 1	50	6	44,88	11,22	0,050
12 x 1	50	6	37,40	9,35	0,079
14 x 1	50	6	32,06	8,01	0,113
15 x 1	50	6	29,92	7,48	0,133
16 x 1	50	6	28,05	7,01	0,154
18 x 1	50	6	24,93	6,23	0,201
22 x 1	25	9	20,40	5,10	0,314

Ed = External diameter Th = wall thickness

Other dimensions compliant to EN 1057 are available on request.

INTERNAL PROTECTION

It has proven **bacteriostatic properties**, making it the ideal material for drinking water distribution, in order to prevent the growth of bacteria such as Legionella. SMISOL®One complies with D.M. 174/04 (O.J. 166 of 14/07/04), which defines the parameters to be met by materials in contact with drinking water. During manufacture, the tubes are subjected to **a patented treatment for passivation and stabilisation of the internal walls**, thus assuring absolute compliance with the potability parameters required by European legislation for transported drinking water (European Directive 2020/2184/EU). SMISOL®One copper tube has a carbon residue $C < 0.06 \text{ mg/dm}^2$, much lower than that required by EN 1057 which defines a carbon content limit of $C \leq 0.20 \text{ mg/dm}^2$.



APPLICATIONS

- Drinking water distribution.
- Radiator heating.
- Chilled water distribution.

In compliance with applicable regulations.



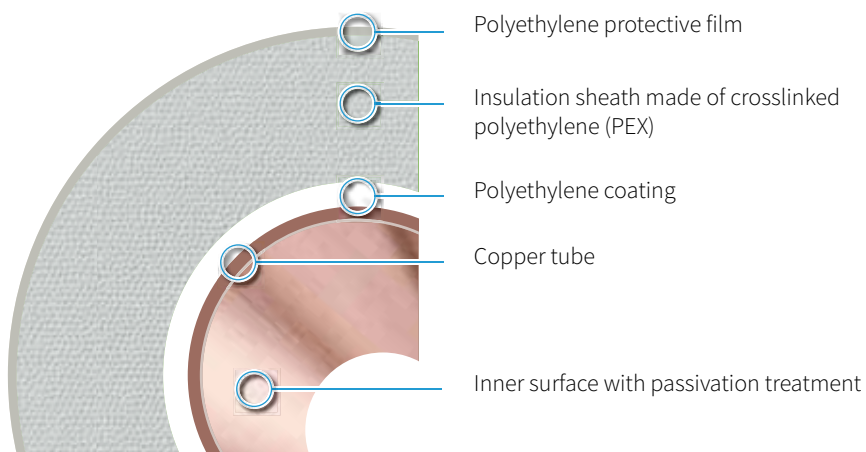
A noble core, safe, performant, proven, hygienic, bacteriostatic - a core in Copper.

Strato represents the evolution of tubing for the supply of drinking water and radiator heating plants.

This product combines the **lightness** and the **ease of installation** of traditional multi-layer solutions with the unique performance of copper tubing in terms of **resistance to pressure and high temperatures, hygiene and antibacterial properties, low-pressure losses and reduced internal roughness.**

Strato is manufactured according to the standard UNI 11342: "...Composite, Seamless Copper and Pe, Tubes For Fluid Distribution". It is obtained through the coextrusion of a specific copper tube with reduced thickness and an indissoluble layer of polyethylene. It is then externally insulated with an insulating sheath made of closed cell expanded polyethylene compliant to Italian Law 10/91, the related Presidential Decree 412/93 and subsequent updates.

The quality of the employed raw materials and the sheath characteristics make the product particularly suitable for the distribution of drinking water (in compliance with D.M. 174/04) and for high-temperature radiator heating plants. Ease of installation and bending, **absence of memory effect**, lightness, **excellent quality/price ratio**, a wide choice of matching fittings, reliability and safety make Strato a truly innovative solution among the latest generation plumbing applications.



ADVANTAGES

- **Resistance to pressure and high temperatures**

Strato is resistant to sudden pressure variations, as its metallic nature assures high mechanical strength.

- **Hygiene and bacteriostatic properties**

It is absolutely hygienic and counteracts bacterial growth. It complies with D.M. 174/04. Drinking water comes into contact only with the copper surface, ensuring the absence of odours and flavors.

- **Absence of welded joints**

The inner copper tube is obtained through a continuous extrusion process, unlike conventional multilayer materials, which involve the longitudinal seaming of the aluminium layer by means of various techniques.

- **Totally waterproof and 100% oxygen barrier**

Its metallic core renders it impermeable to gases: there is no risk of leaks and/or inside to outside contamination and vice versa. In heating systems it avoids the presence of oxygen that can damage boilers, pump impellers or other metallic parts.

- **Flexibility and workability**

Strato can also be bent by hand with small bend radii and takes on the new shape without suffering from any memory effect.

- **Low thermal expansion coefficient**

Unlike plastic tubes, the thermal expansion is extremely limited, thus ensuring dimensional stability also under considerable temperature variations in the transported fluid.

- **Low-pressure drops**

Strato has an extremely low internal roughness (1,5 μm compared to 7 μm in traditional multi-layer material). This means a reduced pressure drop and reduced risk of limescale incrustations.

JOINTING TECHNIQUES

Strato is compatible with all couplings and fittings compliant to EN 1254-8 normally used with multilayer tubing.

The particular advantage of Strato is offering an "open solution" not restricted to any specific connection type.

Various combinations are available, compatible with the most important fitting brands on the market, including full bore solutions. The latter allows for lower tube diameters and thus lower installation budgets, both in terms of tube material costs and reduced masonry work.

Various coupling techniques are available (press fittings, screw fittings and quick-coupling).



INSTALLATION



Cutting to length



Deburring, calibration



Joining

CUTTING TO SIZE

Cutting, calibrating and deburring can be performed with common commercially available tools.

BENDING

Strato can be easily bent by hand or with a normal copper tube bending tool.

JOINTING

You can use various types of mechanical fittings (press fittings, quick coupling, compression) available on the market.



Press-fitting

(Alternatively you can use compression or quick coupling solutions)



TUBE TECHNICAL SPECIFICATIONS

Dimensions and tolerances:	according to UNI 11342
Inner contact material:	copper Cu-DHP (Cu:99,9% min. P: 0,015 ÷ 0,040%)
Internal surface roughness:	1,5 µm
Outer layer:	PE-RT
Max working temperature:	95°C (constant exposure)
Unit break load:	R. min. ≥ 220 Mpa (N/mm ²)
Elongation percentage:	A ₅ min. > 40%

INSULATION TECHNICAL SPECIFICATIONS

Insulating material:	Closed cell crosslinked polyethylene (PEX)
Insulation sheath thickness:	6 mm/9 mm
Insulation thermal conductivity (λ):	0,039 W/mK
Average insulation density:	30 kg/m ³
Water vapour diffusion resistance (μ):	> 9.000
Fire resistance:	Class 1 (M.D. 26/06/84)
Resistance to chemical agents:	very good (ASTM 543-56 T)
Sound absorption:	~60% (DIN 4109 300-2500Hz)

TABLE OF STANDARD PRODUCT DIMENSIONS - COILS

dimensions Ed x Th	coil length min. guaranteed	sheath thickness	operating pressure ASTM	water content	min. curvature radius with bending tool	min. manual bending curvature radius
(mm)	(m)	(mm)	(bar)	(l/m)	(mm)	(mm)
14 x 2	50	6	35	0,079	56	84
16 x 2	50	6	32	0,113	64	96
20 x 2	50	6	25	0,201	80	120
26 x 3	25	9	25	0,314	104	156
32 x 3	25	9	23	0,531	128	192

Ed = External diameter Th = wall thickness

WARNING

The use of each product described in this publication requires careful assessment of the intended use, as well as the environmental and functional conditions in which the product will be installed. This assessment must be made at the project design stage and by qualified personnel. SCT assumes no liability for improper use of its products and reserves the right to make modifications to this document at any time.



SCUDO® copper tubes by SCT are qualified with the CE mark in accordance with European Regulation 305/2011 for construction products (CPR).

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