

COPPER TUBES
TALOS[®]

BUILDING PLUMBING INSTALLATIONS



HALCOR



HALCOR

HALCOR is a large-scale modern industrial company with over sixty years of experience in metal processing. It holds a significant position in European and global markets and has four modern plants; three in Greece and one in Bulgaria.

The company is dedicated to achieving high quality. It has ISO 9001:2008 certification, uses state-of-the-art technology and employs highly skilled personnel. Substantial, continual investment in research and know-how allows the company to create innovative new products, which support its aim of being a market leader.

At the same time, HALCOR is committed to sustained development and environmental protection. As such, its production processes are regulated by an ISO 14001:2004 certified Environmental Management System.

Aiming at the total satisfaction of all of its customers' needs, the company focuses on responding reliably and rapidly to demand. It provides exceptional support for its products, which are distributed to more than fifty countries worldwide. HALCOR combines size, strength and technology to achieve its overall vision of putting metals at man's disposal.

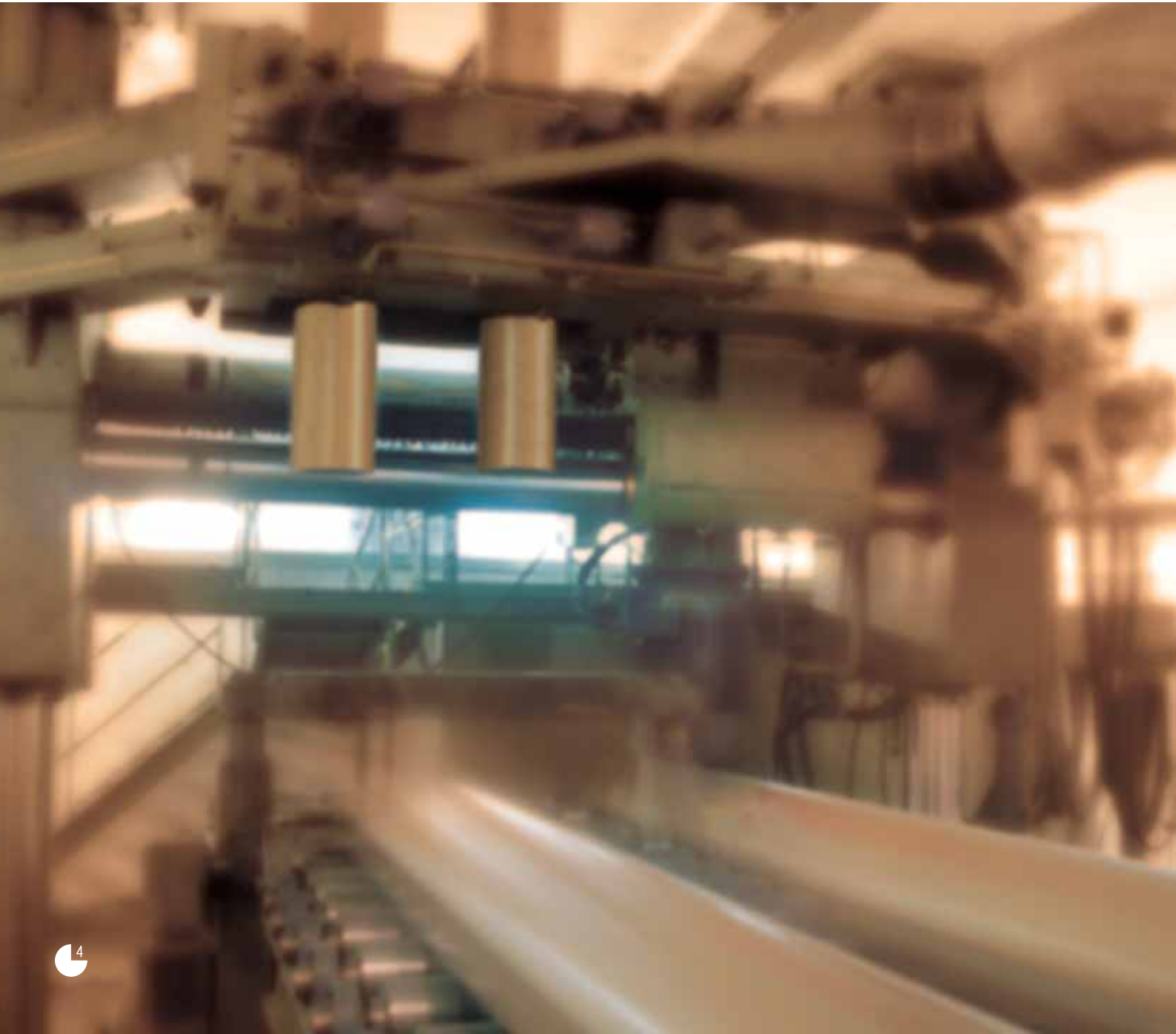


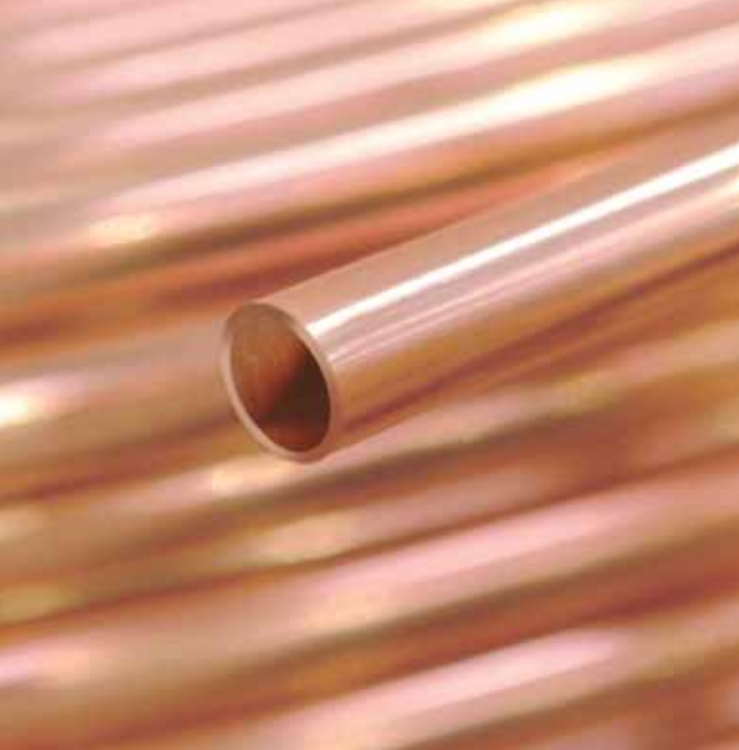


Versatility with the dependability of copper

TALOS® copper tubes, with their high quality of manufacture provide:

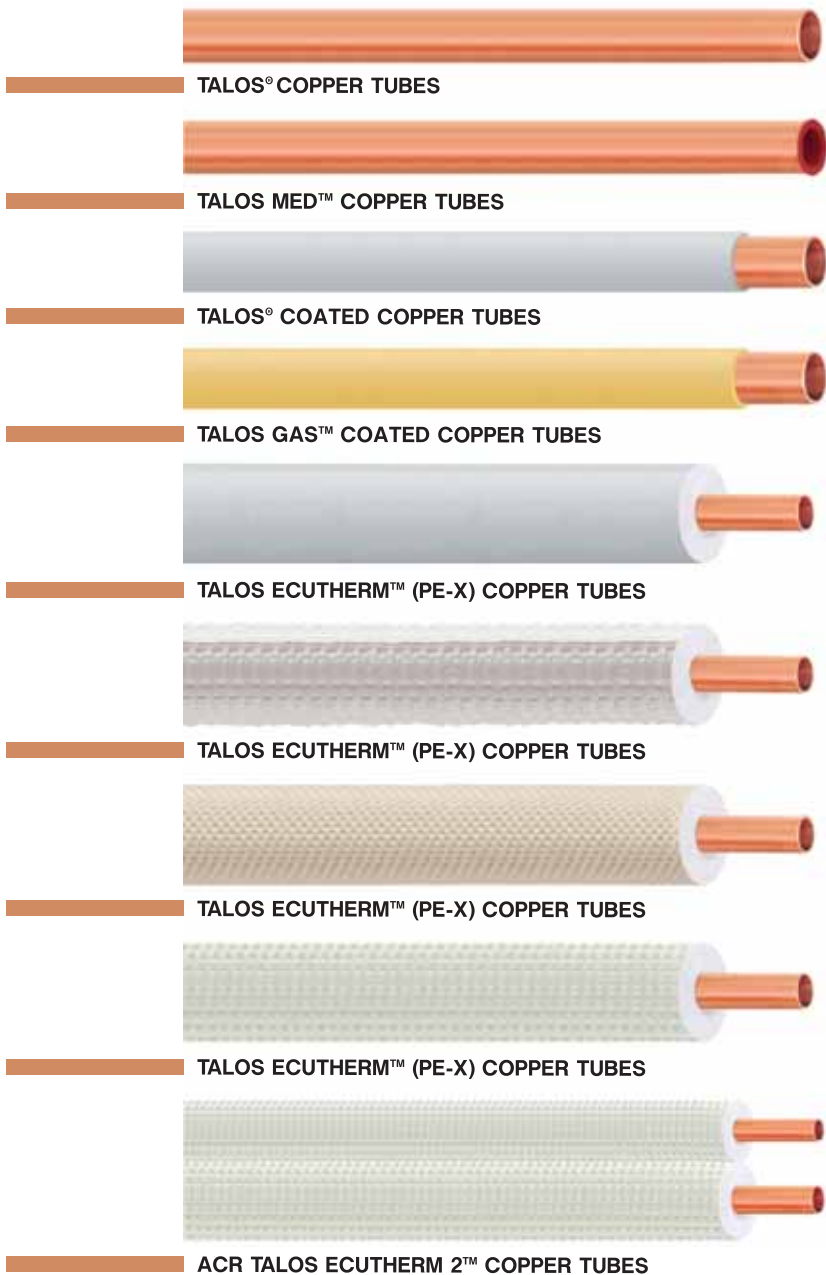
- Unlimited lifetime.
- Resistance to pressure, temperature and fire.
- Low thermal expansion and enhanced shape stability.
- Complete impermeability.
- Potable water hygiene.
- Style and space saving.
- Cost-effectiveness.





TALOS® copper tubes are widely used in a variety type of construction plumbing installations, such as potable water and hot water supply, central heating, natural gas, air conditioning, fire extinguishing networks, medical gas networks, etc.

They are manufactured according to harmonised European standards such as EN 1057 and EN 13349 for coated pipes for sanitary applications, EN 12735 for air conditioning systems, EN 13348 for medical applications, etc.



**WATER SUPPLY
HEATING
NATURAL GAS
COOLING**



TALOS® PLAIN COPPER TUBES ADVANTAGES

- TALOS® copper tubes are easy and cost-effective to install, and provide safe and secure operation.
- TALOS® copper tubes are resistant to high working pressures and temperatures.
- TALOS® copper tubes are completely air- and water- tight and retain their natural and mechanical properties unchanged over time.
- They are stable and self-supporting.

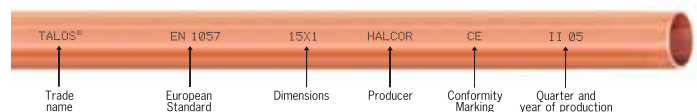
TALOS HALF HARD COPPER TUBES SPECIAL ADVANTAGES

- Easy cold bending.
- Reduction of necessary fittings.
- Easier shaping of networks.
- Faster installation and working performance.
- Overall lower installation costs.

MATERIAL

Copper phosphorus deoxidised (DHP-Cu) with min. copper content 99.9% and P=0.015% - 0.040%.

MARKINGS



MECHANICAL PROPERTIES

Temper	EN 1057 Classification	Tensile strength N/mm ² (min. tensile strength)	Minimum elongation A5%
Soft	R-220	220	40
Half hard	R-250	250	30
Hard	R-290	290	3

SPECIFICATIONS

EN 1057

QUALITY MARKS

DVGW, BSI, AFNOR, NSAI, AENOR, RAL.

I. STRAIGHT HALF HARD

Diameter x thickness d x s (mm)	Internal diameter d internal (mm)	Nominal copper weight (kg/m)	External surface area (m ² /m)	Full volume (l/m)	Packing		Maximum allowed working pressure (bar)
					Straight lengths	Pieces per bundle	
10x0,70	8,6	0,182	0,031	0,058	3m	900	90
10x1,00	8,0	0,252	0,031	0,050	4m	250	133
12x0,70	10,6	0,221	0,038	0,088	3m	800	74
12x1,00	10,0	0,308	0,038	0,079	4m	400	109
15x0,70	13,6	0,280	0,047	0,145	3m	600	59
15x0,80	13,4	0,318	0,047	0,141	3m	600	68
15x1,00	13,0	0,391	0,047	0,133	4m	600	86
15x1,20	12,6	0,463	0,047	0,125	4m	125	104
18x0,80	16,4	0,384	0,057	0,211	3m	450	56
18x1,00	16,0	0,475	0,057	0,201	4m	450	71
18x1,20	15,6	0,563	0,057	0,191	4m	100	86
22x0,80	20,4	0,474	0,069	0,327	3m	300	45
22x0,90	20,2	0,531	0,069	0,320	3m	300	51
22x1,00	20,0	0,587	0,069	0,314	4m	300	57
22x1,50	19,0	0,860	0,069	0,284	4m	80	88

II. STRAIGHT HARD

28x0,80	26,4	0,609	0,088	0,547	3m	200	43
28x0,90	26,2	0,682	0,088	0,539	3m	200	48
28x1,00	26,0	0,755	0,088	0,531	4m	200	54
28x1,50	25,0	1,111	0,088	0,491	4m	60	82
35x1,00	33,0	0,950	0,110	0,855	3m	100	43
35x1,50	32,0	1,405	0,110	0,804	4m	50	65
35x2,00	31,0	1,844	0,110	0,755	4m	50	88
42x1,00	40,0	1,146	0,132	1,257	3m	90	35
42x1,20	39,6	1,368	0,132	1,232	3m & 4m	90	43
42x1,50	39,0	1,700	0,132	1,195	4m	40	54
54x1,00	52,0	1,484	0,170	2,124	3m	60	27
54x1,20	51,6	1,771	0,170	2,091	3m & 4m	60	33
54x1,50	51,0	2,202	0,170	2,043	4m	60	41
54x2,00	50,0	2,908	0,170	1,963	4m	30	56
64x2,00	60,0	3,467	0,201	2,827	3m	25	47
76,1x2,00	72,1	4,144	0,239	4,083	3m	20	39
88,9x2,00	84,9	4,859	0,279	5,661	4m	15	33
108x2,50	103,0	7,375	0,339	8,332	4m	10	34

III. SOFT COILS

11x0,75	9,5	0,215	0,035	0,071	Plain in coils (m) long	50	Plain coils per pallet	96	67
15x1,00	13,0	0,391	0,047	0,133		50		30	66
18x1,00	16,0	0,475	0,057	0,201		25		40	54
22x1,00	20,0	0,587	0,069	0,314		25		40	44
18x1,50	15,0	0,692	0,057	0,177		25		40	84
22x1,50	19,0	0,860	0,069	0,284		25		30	67

Non-standard dimensions are manufactured upon request.



COPPER TUBES

TALOS®

FIRE EXTINGUISHING NETWORKS

Maximum fire protection and safety

TALOS® copper tubes are the fastest and most cost-effective choice, for the construction of permanent fire extinguishing water supply networks and automatic sprinkler systems.

TALOS® copper tubes for fire extinguishing networks, provide substantial advantages:

- Smooth surface with minimal pressure loss due to friction, resulting in the need for smaller cross-sections, for specific water supply requirements.
- Various options in coupling methods.
- Easy to transport, install and support, even in limited spaces.
- High thermal conductivity that ensures prevention of extreme temperature peaks.
- Completely air- and water-tight and practically maintenance-free.
- Excellent corrosion resistance, compared to other metals.
- Extreme temperature resistance (copper melting point 1083 °C).
- Fully recyclable.
- Tested and reliable for all types of plumbing applications.

TALOS® copper tubes are the ideal material for the construction of fire extinguishing installations in different areas, such as: Hospitals, Factories, Warehouses, Schools, Museums, Restaurants, Hotels, Sports facilities, Offices, Shops, Car Parks, Houses.

TALOS® copper tubes are covered by a 30-year manufacturer's guarantee for good performance.



MATERIAL

Copper phosphorus deoxidised (minimum copper content 99.9%, phosphorus concentration P=0.015% - 0.04%, classified as CW024A, or Cu-DHP, according to the European alloy coding system).

MECHANICAL PROPERTIES

Temper	EN 1057 Classification	Tensile strength N/mm ² (min. tensile strength)	Minimum elongation A5%
Soft	R-220	220	40
Half hard	R-250	250	30
Hard	R-290	290	3

SPECIFICATIONS

EN 1057

TALOS® copper tubes comply fully with the EN 1057 standard for water supply and permanent fire extinguishing networks.

QUALITY MARKS

RAL/DVGW, BSI, AFNOR, AENOR, NSAI.

STANDARD DIMENSIONS

Diameter x thickness d x s (mm)	Internal diameter d internal (mm)	Nominal copper weight (kg/m)	External surface area (m ² /m)	Full volume (l/m)	Packing	
					Type	Pieces per bundle
15x1,00	13,0	0,391	0,047	0,133	Straight lengths of 4m	600
18x1,00	16,0	0,475	0,057	0,201		450
22x1,00	20,0	0,587	0,069	0,314		300
28x1,00	26,0	0,755	0,088	0,531		200
35x1,50	32,0	1,405	0,110	0,804		50
42x1,50	39,0	1,699	0,132	1,195		40
54x1,50	51,0	2,202	0,170	2,043		60
54x2,00	50,0	2,908	0,170	1,963		30
64x2,00	60,0	3,467	0,201	2,827		25
76,1x2,00	72,1	4,144	0,239	4,083		20
88,9x2,00	84,9	4,859	0,279	5,661		15
108x2,50	103,0	7,375	0,339	8,332		10



MEDICAL GAS DISTRIBUTION NETWORKS

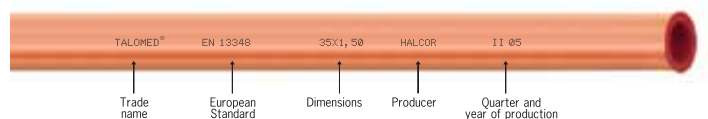
Cleanliness and resistance

In the sensitive healthcare areas and installations, it is imperative to use materials that safeguard cleanliness, neat appearance and durability. TALOS MED™ copper tubes, thanks to the natural strength of copper they can withstand high working pressures with unlimited durability, hence they are the ideal choice for the construction of the distribution networks of the medical gases. TALOS MED™ copper tubes are manufactured according to the requirements of standard EN 13348. They are supplied with end caps to prevent contamination by foreign matter intrusion during storage or transportation.

MATERIAL

Copper phosphorus deoxidised (DHP-Cu) with min. copper content 99.9% and P= 0.015% - 0.040%.

MARKINGS



MECHANICAL PROPERTIES

Temper	EN 13348 Classification	Tensile strength N/mm ² (min. tensile strength)	Minimum elongation A5%
Soft	R-220	220	40
Hard	R-290	290	3

SPECIFICATIONS

EN 13348



STANDARD DIMENSIONS

Diameter x thickness d x s (mm)	Internal diameter d internal (mm)	Nominal copper weight (kg/m)	External surface area (m ² /m)	Full volume (l/m)	Packing
6x1.00	4.0	0.140	0.019	0.013	Straight lengths of 5m
8x1.00	6.0	0.196	0.025	0.028	
10x1.00	8.0	0.252	0.031	0.050	
12x1.00	10.0	0.308	0.038	0.079	
15x1.00	13.0	0.391	0.047	0.133	
18x1.00	16.0	0.475	0.057	0.201	
22x1.00	20.0	0.587	0.069	0.314	
28x1.00	26.0	0.755	0.088	0.531	
35x1.50	32.0	1.405	0.110	0.804	
42x1.50	39.0	1.700	0.132	1.195	
54x2.00	50.0	2.908	0.170	1.963	
64x2.00	60.0	3.467	0.201	2.827	
76,1x2.00	72.1	4.144	0.239	4.083	
88,9x2.00	84.9	4.857	0.279	5.661	
108x2.50	103.0	7.375	0.339	8.332	

Different sizes and lengths are available upon request.

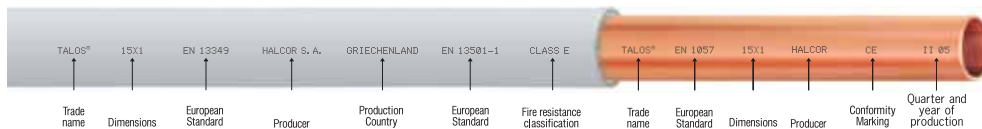


**WATER SUPPLY
HEATING
COOLING**

MATERIAL

Copper phosphorus deoxidised (DHP-Cu) with min. copper content 99.9% and P=0.015% - 0.040%.

MARKINGS



MECHANICAL PROPERTIES

Temper	EN 1057 Classification	Tensile strength N/mm ² (min. tensile strength)	Minimum elongation A5%
Soft	R-220	220	40
Hard	R-290	290	3

SPECIFICATIONS

EN 13349, EN 1057.

They are classified as Class E according to EN 13501-1 fire resistance classification system.

QUALITY MARKS FOR COPPER TUBES

AFNOR.

Copper tube: RAL, BSI, AENOR, NSAI, DVGW.

STANDARD DIMENSIONS

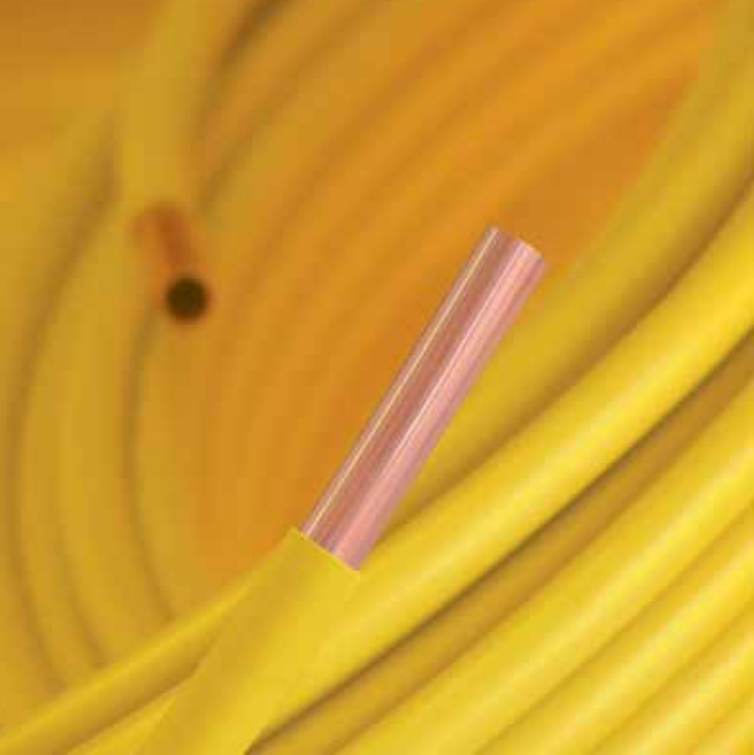
I. SOFT COILS

Copper tube ext. diam. x thickness d x s (mm)	Overall ext. diameter D (mm)	Tube full volume (l/m)	Nominal copper weight (kg/m)	Thermal capacity* (Kcal/h)	Min. bending radius manually (mm)	Min. bending radius with bending tool (mm)	Packing in coils (m) long
12 x 1,00	16	0,079	0,308	6.700	100	-	25 or 50
15 x 1,00	19	0,133	0,391	11.000	120	-	
16 x 1,00	20	0,154	0,420	13.300	130	-	
18 x 1,00	22	0,201	0,475	17.200	145	-	25
22 x 1,00	26	0,314	0,587	27.200	175	-	25 or 50
15 x 0,80	19	0,141	0,318	12.100	125	-	
16 x 0,80	20	0,163	0,340	14.000	135	-	
18 x 0,80	22	0,211	0,385	18.200	150	-	25

II. STRAIGHT HARD

15 x 1,00	19	0,133	0,391	11.000	-	55	Straight lengths of 4m
16 x 1,00	20	0,154	0,420	13.300	-	60	
18 x 1,00	22	0,201	0,475	17.200	-	70	
22 x 1,00	26	0,314	0,587	27.200	-	80	

* For a temperature drop of 20 °C and a flow rate of 1.2 m/sec.



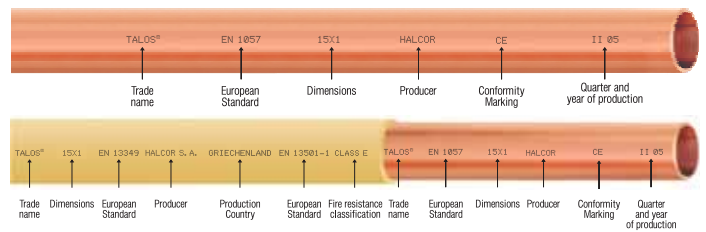
INTERIOR NATURAL GAS NETWORKS



MATERIAL

Copper phosphorus deoxidised (DHP-Cu) with min. copper content 99.9% and P=0.015% - 0.040%.

MARKINGS



MECHANICAL PROPERTIES

Temper	EN 1057 Classification	Tensile strength N/mm ² (min. tensile strength)	Minimum elongation A5%
Soft	R-220	220	40
Half hard	R-250	250	30
Hard	R-290	290	3

SPECIFICATIONS

EN 1057, EN 13349, EN 13501-1.

QUALITY MARKS

AFNOR.
Copper tube: RAL, BSI, DVGW, AENOR, NSAI.

STANDARD DIMENSIONS

I. STRAIGHT

Diameter x thickness d x s (mm)	Internal diameter d internal (mm)	Nominal copper weight (kg/m)	External surface area (m ² /m)	Full volume (l/m)	Min. bending radius with bending tool (mm)	Packing	
						Type	Pieces per bundle
10x1,00	8,0	0,252	0,031	0,050	40	Straight lengths of 4m	250
12x1,00	10,0	0,308	0,038	0,079	45		400
15x1,00	13,0	0,391	0,047	0,133	55		600
15x1,20	12,6	0,463	0,047	0,125	—		125
18x1,00	16,0	0,475	0,057	0,201	70		450
18x1,20	15,6	0,564	0,057	0,191	—		100
22x1,00	20,0	0,587	0,069	0,314	—		300
22x1,5	19,0	0,860	0,069	0,284	—		80
28x1,50	25,0	1,111	0,088	0,491	—		60
35x1,50	32,0	1,405	0,110	0,804	—		50
35x2,00	31,0	1,845	0,110	0,755	—		50
42x1,50	39,0	1,699	0,132	1,195	—		40
42x2,00	38,00	2,236	0,132	1,134	—		40
54x2,00	50,0	2,908	0,170	1,963	—		30
64x2,00	60,0	3,467	0,201	2,827	—		25
76,1x2,00	72,1	4,144	0,239	4,083	—		20
88,9x2,00	84,9	4,859	0,279	5,661	—		15
108x2,50	103,0	7,375	0,339	8,332	—	10	

II. COATED IN COILS

Copper tube ext. diam. x thickness d x s (mm)	Overall ext. diameter D (mm)	Tube full volume (l/m)	Nominal copper weight (kg/m)	Thermal capacity (Kcal/h)	Min. bending radius manually (mm)	Min. bending radius with bending tool (mm)	Packing in coils (m) long
15 x 1,00	19	0,133	0,391	—	120	—	25 or 50
15 x 1,20	19	0,125	0,463	—	120	—	50
18 x 1,00	22	0,201	0,475	—	145	—	25 or 50
18 x 1,20	22	0,191	0,564	—	145	—	25
22 x 1,00	26	0,314	0,587	—	175	—	25

FUSION JOINING: MATERIALS USED FOR COPPER TUBES AND FITTINGS

Filler Alloy code (acc. to EN 1044)	AG 106	AG 203	AG 104	CP 105	CP 203
Filler Alloy code (acc. to DIN 8513)	L-Ag34Sn	L-Ag44	L-Ag45Sn	L-Ag2P	L-CuP6
Melting Range [°C]	630 - 730	675 - 735	640 - 680	645 - 825	710 - 890
Working Temperature [°C]	710	730	670	740	760
Flux (acc. to EN 1045)	FH 10	FH 10	FH 10	without(*)	without(*)
Flux (acc. to DIN 8511-1)	F-SH 1	F-SH 1	F-SH 1	without(*)	without(*)

Cu tubes in Natural Gas installations should be joined to the fittings or components, using filler alloys with high melting points. The acceptable alloys have been standardised (see for example standard EN 1254-1 & EN 1254-5).

(*) If the fittings are made of alloy and not pure copper, then a 10 FH flux is required.



WATER SUPPLY
HEATING
AIR CONDITIONING
REFRIGERATION
SOLAR SYSTEMS
INDUSTRIAL NETWORKS

Advanced technology that saves energy and protects the environment

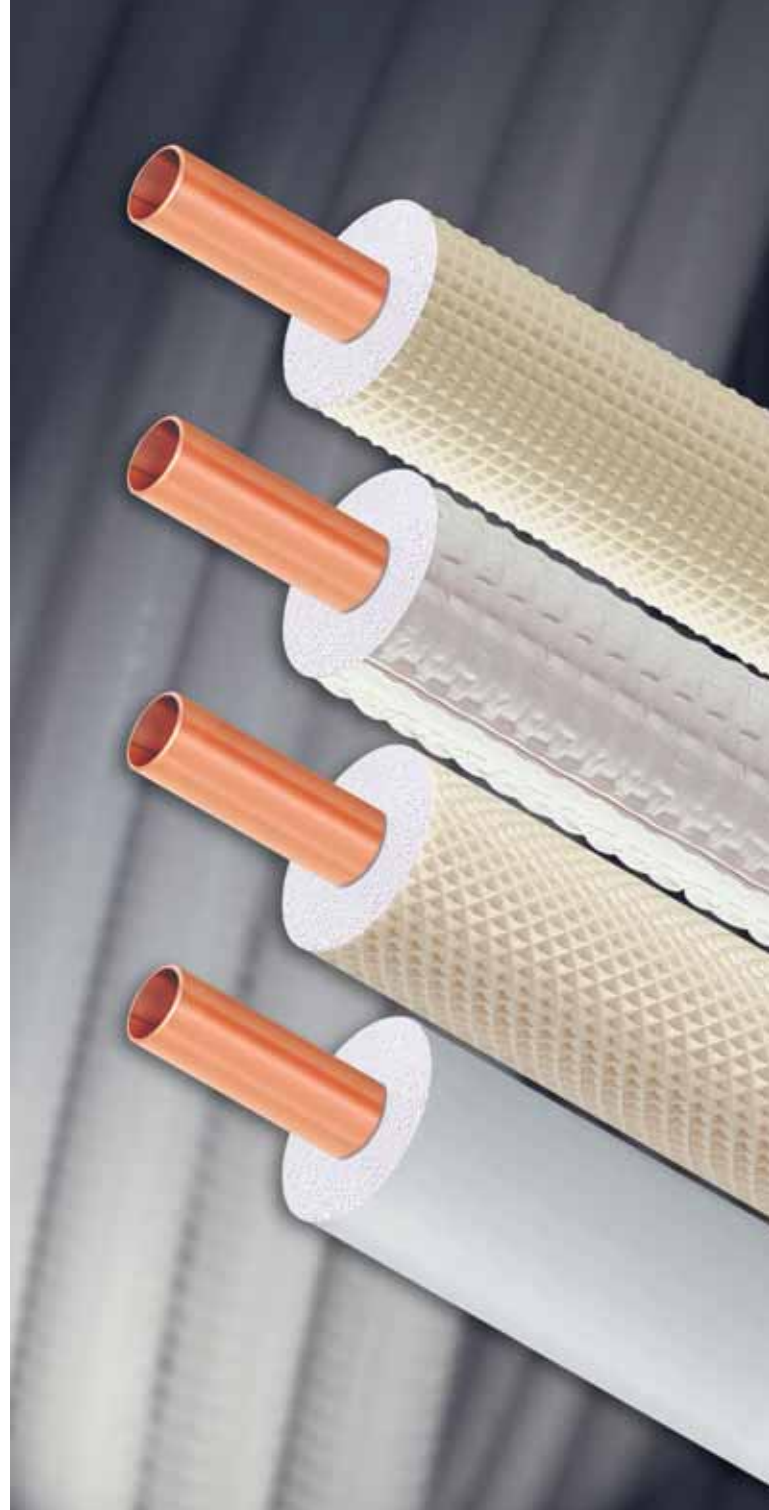
- Significant and continuous energy savings.
- Safe network operation.
- Reduction of installation time.
- High resistance to mechanical stress.
- Ease of formability.
- External or embedded installations.
- Resistance to extreme atmospheric conditions.
- 30-year guarantee, covering the quality of manufacture of the copper tube.

TALOS ECUTHERM[™] pre-insulated copper tubes are advanced technology products, of high added value and significantly superior in effectiveness, compared to conventional insulation methods. The unique advantages offered by the TALOS ECUTHERM[™] copper tubes, such as copper resistance and durability, coupled with high performance pre-insulation (Engineering Foams), result in significant energy savings. With a significantly competitive market price and low installation cost, TALOS ECUTHERM[™] copper tubes are easily, the ideal choice for every modern application.

High performance technological product

The insulating material used in the manufacture of TALOS ECUTHERM[™] (PE-X) copper tubes is an extruded high quality cross-linked polyethylene (PEF) suitably expanded to form a foamy substance with closed microcells. The raw material used in the production of this insulating material, is low density PEF free of HCFC and fibrous substances. A layer of thin polyethylene coating is adhered to the foamy crosslinked substrate, providing a skin of improved operational features and esthetic appearance.

The closed microcells of the insulating material, combined with the protective outer polyethylene skin, form an integral barrier to aggressive environments, rendering the tube suitable for a variety of applications, such as heating, cooling, air-conditioning and a multitude of plumbing installations.



The TALOS ECUTHERM[™] (PE-X) copper tubes are produced in compliance to the requirements of standards in force in most of the European Union countries, as regards insulation properties, chemical characteristics & resistance to fire. They have low λ coefficient, determining its heat conductance properties and very good μ coefficient which determines its resistance of steam and water penetration.

The TALOS ECUTHERM[™] (PE-X) tubes conform to the harmonised European specification EN 14313 concerning insulating materials made from PEF and destined for structural (plumbing) installations as well as for industrial applications. The TALOS ECUTHERM[™] (PE-X) copper tubes are available in coils of 25 & 50 meter lengths and insulator thicknesses of 6, 9 and 13mm, suiting a variety of insulation needs.

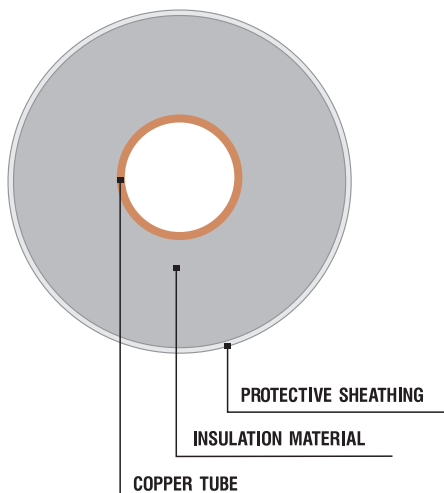


Reliability that only TALOS® copper tubes can provide

TALOS® copper tubes are manufactured according to (a) the Harmonised European Standard EN 1057 for use in plumbing installations and (b) the Harmonised European Standard EN 12735-1 for use in air conditioning and refrigeration installations. TALOS® copper tubes meet the current requirements, imposed by the new green refrigerants (R 410-A, etc.), adopted by major refrigeration and air conditioning unit manufacturers, both in Greece and abroad.

TALOS® copper tubes have been awarded most major international quality marks and are exported to more than 50 countries, throughout the world. TALOS® copper tubes, with their high quality of manufacture, provide:

- **Unlimited lifetime.**
- **Resistance to pressure, temperature and fire.**
- **Complete network impermeability.**
- **Hygienic, safe, and bacteria-free potable water.**
- **Quality and reliability of installation.**
- **Versatile applications.**
- **Comprehensive range sizes.**
- **Style and space saving.**
- **Low thermal expansion.**



COPPER TUBE MATERIAL

Copper phosphorus deoxidised (DHP-Cu), having minimum copper content 99.9% and P=0.015% - 0.040%

MECHANICAL PROPERTIES

Temper	EN 1057 Classification	Tensile strength N/mm ²	Minimum elongation A5%
Soft	R-220	>220	>40

SPECIFICATIONS

WATER PIPES: EN 1057

REFRIGERATION PIPES: EN 12735-1

QUALITY MARKS

WATER PIPES: RAL/DVGW, BSI, AFNOR, AENOR, NSF, CSTB (Avis Technique), NSAI.

REFRIGERATION PIPES: AENOR, TÜV, GL.

INSULATION TECHNICAL PROPERTIES

MATERIAL PEF	PE-X
DENSITY ACCORDING TO DIN 53420 ASTM D 1667	30-33 Kg/m ³
THERMAL CONDUCTIVITY COEFFICIENT (λ) ACCORDING TO ASTM C 335	0,035 W/m-K
VAPOUR-WATER DIFFUSION RESISTANCE COEFFICIENT (μ) ACCORDING TO DIN 52615	> 9.000
WORKING TEMPERATURE	-80 °C to +110 °C
FIRE RESISTANCE	EN 13501-1 CLASS E, DIN 4102 B2, BS 476, NF P 92 501-M1
RESISTANCE TO CHEMICAL AGENTS ACC. TO ASTM 543-56 T	Very good
SOUND ABSORPTION ACC. TO DIN 4109 300-2500Hz	≈ 60%

Values are listed, as obtained under standard laboratory conditions and may be amended, without prior notice.

STANDARD DIMENSIONS ACCORDING TO EN 1057

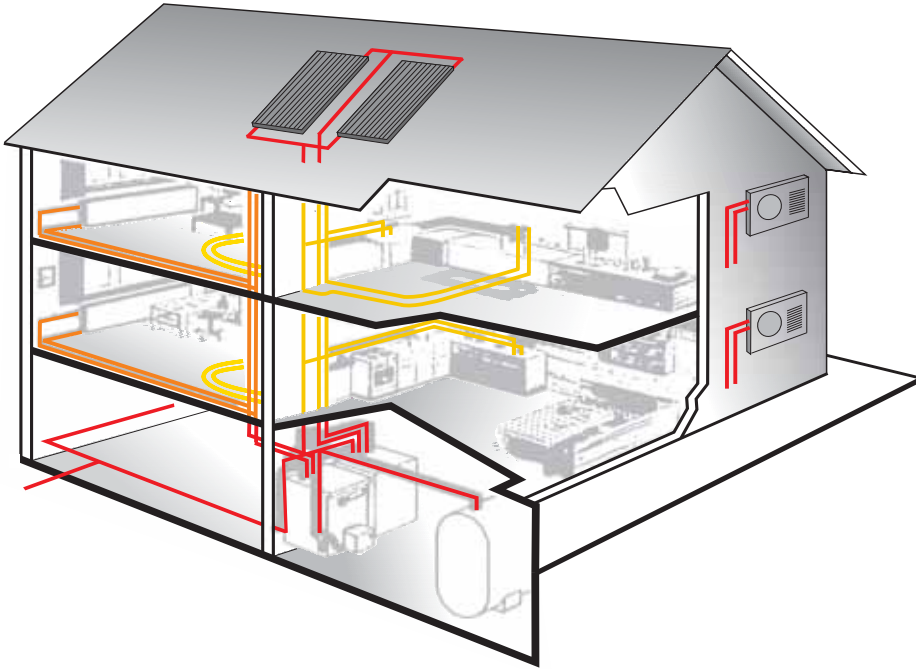
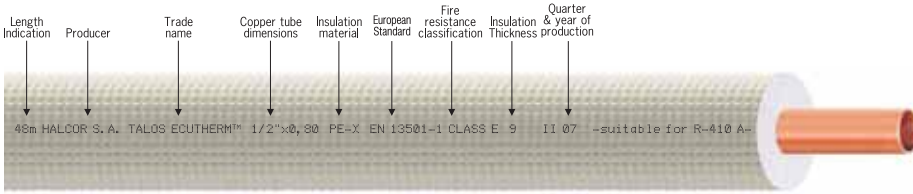
Copper tube external diameter	mm	6	8	10	12	15	16	18	22
Copper tube wall thickness	mm	0,80	0,80	0,80	1,00	1,00	1,00	1,00	1,00
Overall external diameter with 9mm thick insulation	mm	24	26	28	30	33	34	36	40
Maximum permitted working pressure	bar	142	102	80	84	66	61	54	44

STANDARD DIMENSIONS ACCORDING TO EN 12735-1

Copper tube external diameter	inch	3/16	1/4	5/16	3/8	1/2	5/8	3/4	7/8
	mm	4,76	6,35	7,94	9,52	12,70	15,87	19,05	22,23
Copper tube wall thickness	mm	0,80	0,80	0,80	0,80	0,80	1,00	1,00	1,00
Overall external diameter with 9mm thick insulation	mm	22,76	24,35	25,94	27,52	30,70	33,87	37,05	40,23
Maximum permitted working pressure	bar	186	133	103	84	62	62	51	43

TALOS ECUTHERM™ copper tubes, are also available in straight lengths of 5m, with half hard copper tube, upon request.

MARKING



TALOS ECUTHERM™ 1/2" AND 5/8" INDICATIVE CALCULATION OF INSULATION THICKNESS

Air conditioning and refrigeration units, operate in temperatures lower than ambient temperature; therefore, this difference must be compensated by the appropriate insulation thickness, to prevent vapour condensation.

The thickness of the insulation (with reference to Mollier's diagram), is calculated taking into consideration the temperature of the fluid (or gas) inside the pipes, ambient temperature and the relative humidity of the air.

SURFACE TEMPERATURE CALCULATION FORMULA

$$t_2 = \frac{0,2 \cdot \lambda \cdot (t_i - t_e)}{(d+2s) \cdot L \cdot \frac{(d+2s)}{d}} + t_e$$

TEMPERATURE INSIDE THE TUBE (°C)	INSULATION THICKNESS (mm)											
	AMBIENT TEMPERATURE (°C) AND RELATIVE HUMIDITY (%)											
	25 °C			30 °C			35 °C			40 °C		
	50%	60%	70%	50%	60%	70%	50%	60%	70%	50%	60%	70%
+15		6	6	6	6	6	6	6	9	6	6	9
+10	6	6	6	6	6	9	6	6	9	6	6	9
+5	6	6	9	6	6	9	6	9	9	6	9	9
0	6	6	9	6	6	9	6	9	9	6	9	13
-5	6	6	9	6	9	9	6	9	13	6	9	13
-10	6	9	9	6	9	13	6	9	13	9	9	13
-20	6	9	13	9	9	13	9	9	13	9	13	13

1/2 inch - 12,7 mm

5/8 inch - 15,88 mm



COPPER TUBES
ACR
TALOS
ECUTHERM 2™

REFRIGERATION
 AIR CONDITIONING

Clear advantage in refrigeration and air conditioning

ACR TALOS ECUTHERM 2™ pre-insulated copper tubes, manufactured by HALCOR are an innovation that ensures significant advantages for refrigeration and air conditioning specialists.

- **Simplified installation process and reduction of installation time.**
- **Reduction of overall network installation cost.**
- **Reliable operation of installations and significant energy savings.**
- **Competitively purchase price.**
- **Stylish and space saving.**
- **30-year guarantee, covering the quality of manufacture of the copper tube.**

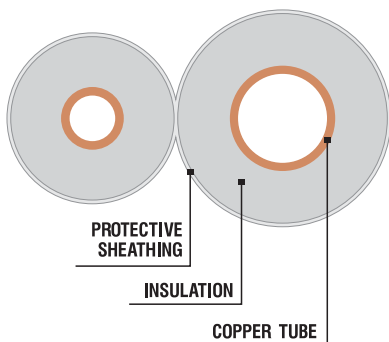
Pair combinations for any application

ACR TALOS ECUTHERM 2™ copper tubes are manufactured in pairs, firmly connected along their entire length, and in eight standard size combinations which cover sufficiently the usual connectivity requirements of any refrigeration or air conditioning unit.

ACR TALOS ECUTHERM 2™ copper tube pairs, form a single unit which is installed easily and fast, ensuring professional results.

Certified quality

ACR TALOS ECUTHERM 2™ pre-insulated copper tubes, have been certified by the German quality assurance organisation RWTUV, with regard to trials and manufacturing tests. The quality and reliability of such products, is ensured through the implementation of a Quality Assurance System, according to standard ISO 9001: 2000, certified by TÜV Hellas.



PAIR DIAMETERS

1/4 + 3/8
1/4 + 1/2
1/4 + 5/8
1/4 + 3/4
3/8 + 1/2
3/8 + 5/8
3/8 + 3/4
1/2 + 3/4

Appropriate also for the new green refrigeration units

According to the new Harmonised European Standard EN 12735-1, as well as current market requirements, laid down by the use of new green refrigerants, including R 410-A, already adopted by all major manufacturers of refrigeration and air conditioning units, both in Greece and abroad, the following standardisation is applied to ACR TALOS ECUTHERM 2 copper tubes:

- For an external diameter of 1/4" to 1/2", the wall thickness is standardised at 0.80 mm.
- For an external diameter of 5/8" to 3/4", the wall thickness is standardised at 1.00 mm.

COPPER TUBE MATERIAL

Copper phosphorus deoxidised (DHP-Cu), having minimum copper content 99.9% and P=0.015% - 0.040%.

MECHANICAL PROPERTIES

Temper	EN 12735-1 Classification	Tensile strength N/mm ²	Minimum elongation A5%
Soft	R-220	>220	>40

QUALITY MARKS

REFRIGERATION PIPES: AENOR, TÜV, GL.

INSULATION TECHNICAL PROPERTIES

MATERIAL PEF	PE-X
DENSITY ACCORDING TO DIN 53420 ASTM D 1667	30-33 Kg/m ³
THERMAL CONDUCTIVITY COEFFICIENT (λ) ACCORDING TO ASTM C 335	0,035 W/m·K
VAPOUR-WATER DIFFUSION RESISTANCE COEFFICIENT (μ) ACCORDING TO DIN 52615	> 9.000
WORKING TEMPERATURE	-80 °C to +110 °C
FIRE RESISTANCE	EN 13501-1 CLASS E, DIN 4102 B2, BS 476, NF P 92 501-M1
RESISTANCE TO CHEMICAL AGENTS ACC. TO ASTM 543-56 T	Very good
SOUND ABSORPTION ACC. TO DIN 4109 300-2500Hz	≈ 60%

Values are listed, as obtained under standard laboratory conditions and may be amended, without prior notice.

STANDARD PAIR DIMENSIONS (COILS 15m, 25m, 30m LONG)

Copper tube external diameter	inch	1/4 - 3/8	1/4 - 1/2	1/4 - 5/8	1/4 - 3/4	3/8 - 1/2	3/8 - 5/8	3/8 - 3/4	1/2 - 3/4
	mm	6,35-9,52	6,35-12,7	6,35-15,88	6,35 - 19,05	9,52-12,7	9,52-15,88	9,52-19,05	12,7-19,05
Copper tube wall thickness	mm	0,80-0,80	0,80-0,80	0,80-1,00	0,80 - 1,00	0,80-0,80	0,80-1,00	0,80-1,00	0,80-1,00
Overall external diameter with 9mm thick insulation	mm	24,4 - 27,5	24,4 - 30,7	24,4 - 33,9	24,4 - 37,10	27,5 - 30,7	27,5 - 33,9	27,5 - 37,1	30,7 - 37,1
Maximum permitted working pressure	bar	133 - 84	133 - 62	133 - 62	133 - 51	84 - 62	84 - 62	84 - 51	62 - 51

Other sizes and special packaging in pallets or cardboard boxes are available upon request.

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