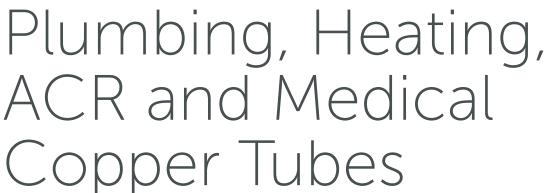
wieland





Copper

Copper is a reddish shiny metal that was known by the Romans as "aes cyprium" (ores from Cyprus). However, copper was known long before the Romans gave it that name. As a natural resource, it is valuable in every form, whether as a vital trace element in the human body or as a mineral in the earth's crust.

Over the centuries, man discovered the many advantages of copper and its alloys, especially the excellent forming properties, strength, and thermal and electrical conductivity. This makes copper one of the most important materials in a wide range of applications - today and tomorrow.

Copper is a unique material for ecologically-sustainable developments and is infinitely and 100 percent recyclable. More than half of today's copper demand is already covered by recycling.

Copper tubes

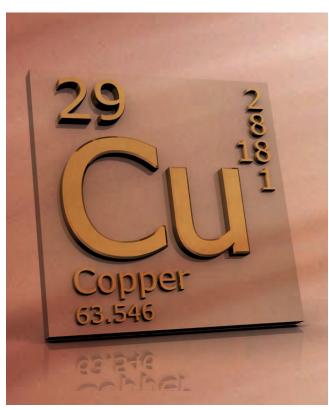
- resistant to ageing and retain their properties e.g. pressure resistance and elasticity
- gas- and diffusion-tight
- subject to minimal thermal expansion
- exhibit good mechanical resistance easy to install
- can be connected by a variety of techniques, which have been proven over generations
- not affected by temperature fluctuations
- available in all common sizes
- suitable for a wide range of applications

The requirements for copper tubes are clearly defined in European standards.

For example:

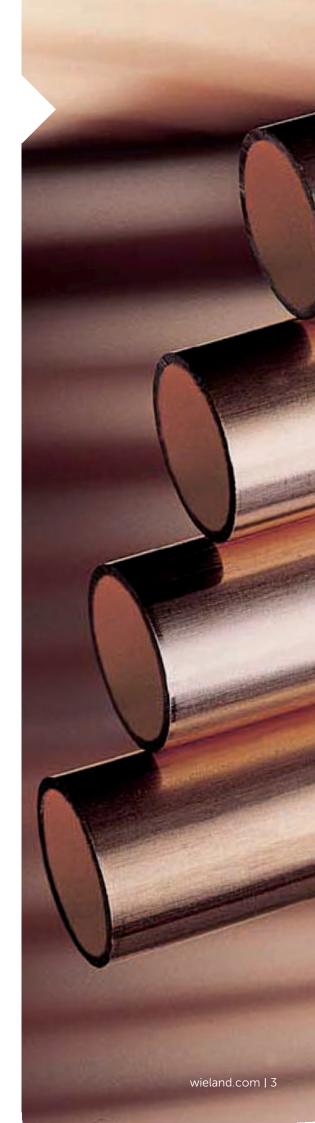
- EN 1057 for installation tubes
- EN 12735 for refrigeration tubes
- EN 13348 for medical gas tubes





Contents

Copper and Copper tubes	2
SANCO	4
WICU	6
WICU Flex	8
cuprotherm	9
cupromed/cuprofrio	16
cuprofrio.plus	19
cuprogeo	22
Wieland K65	23
Application of different tubes	28
Marking of copper tubes	29
The Wieland Group	30



SANCO®

SANCO plumbing tubes

Thanks to the patented production process, SANCO copper tubes are superior to the requirements defined in applicable standards and regulations. The universal plumbing tube is subjected to continuous quality control and is constantly available in the full range of dimensions from 6 to 159 mm. SANCO tubes are seamless drawn plumbing tubes consisting of pure deoxidised copper (Cu-DHP) of a quality standard that comfortably satisfies all contemporary requirements.



- Domestic hot and cold water supply
- Heating systems
- Gas and oil services for heating/cooking
- Industrial compressed air
- Sprinkler and Fire-fighting systems

Product range:

- EN 1057 from stock Ø 6 to 159
- ASTM B88 on demand 1/4" to 11"
- Soft, half-hard and hard temper
- Straight length and soft coils
- Tube bundled and marked
- Wide range of certifications available, such as Kitemark, Afnor, KIWA, DVGW and many others



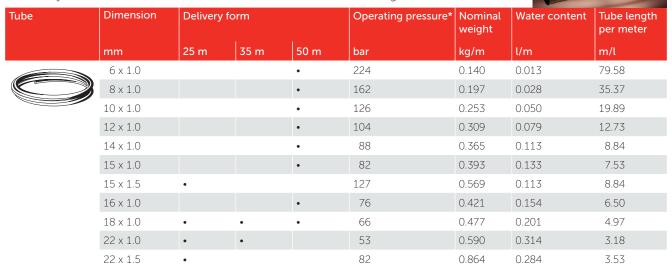
Technical properties:

- The patented production process means that the specifications of SANCO tubes are far superior to the requirements defined in applicable standards and regulations.
- Universal use in a range of finely differentiated dimensions
- Optimal availability and compatibility with a wide range of fittings.
- Maximum operating temperature: 250 °C (check maximum operating pressure if temperature exceeds 100 °C)
- Fire resistance: EN 13501-1 A1 (non-flammable)

SANCO - Coils

- Temper: soft annealed

- Delivery forms available ex stock. Further dimensions available e.g. ASTM 1/4" to 7/8"





SANCO - Straight lengths

- Temper: hard or half-hard
- Dimensions ex stock, many further sizes available e.g. UK table X/Y, ASTM 1/4" to 11"

Tube	Dimension	Temper		Operating pressure*	Nominal weight	Water content	Tube length per meter
	mm	half-hard R250	hard R290	bar	kg/m	l/m	m/l
0	6 x 1.0	•	•	224	0.140	0.013	79.58
	8 x 1.0	•	•	162	0.197	0.028	35.37
0	10 x 1.0	•	•	126	0.253	0.050	19.89
	12 x 1.0	•	•	104	0.309	0.079	12.73
	14 x 1.0	•	•	88	0.365	0.113	8.84
	15 x 1.0	•	•	82	0.393	0.133	7.53
	15 x 1.5		•	127	0.569	0.113	8.84
	16 x 1.0	•	•	76	0.421	0.154	6.50
	18 x 1.0	•	•	66	0.477	0.201	4.97
	18 x 1.5		•	101	0.695	0.177	5.66
	22 x 1.0	•	•	53	0.590	0.314	3.18
	22 x 1.1	•		59	0.646	0.308	3.25
	22 x 1.5		•	82	0.864	0.284	3.53
	28 x 1.0	•	•	42	0.758	0.531	1.88
	28 x 1.2	•	•	50	0.903	0.515	1.94
	28 x 1.5	•	•	63	1.116	0.491	2.04
	32 x 1.0		•	36	0.871	0.707	1.41
	35 x 1.0		•	33	0.955	0.855	1.17
	35 x 1.2		•	40	1.139	0.835	1.20
	35 x 1.5		•	50	1.411	0.804	1.24
	40 x 1.0		•	29	1.095	1.134	0.88
	42 x 1.0		•	28	1.152	1.257	0.80
	42 x 1.2		•	33	1.375	1.232	0.81
	42 x 1.5		•	42	1.706	1.195	0.84
	54 x 1.0		•	21	1.489	2.124	0.47
	54 x 1.2		•	26	1.780	2.091	0.48
	54 x 1.5		•	32	2.212	2.043	0.49
	54 x 2.0		•	43	2.921	1.963	0.51
	64 x 2.0		•	36	3.483	2.827	0.35
	76,1 x 2.0		•	30	4.162	4.083	0.24
	88,9 x 2.0		•	26	4.881	5.661	0.18
	108 x 2.5		•	27	7.408	8.332	0.12
	133 x 3.0		•	26	10.953	12.668	0.08
	159 x 3.0		•	22	13.144	18.385	0.05

^{*} Calculated with 3.0 times safety coefficient on the basis of soft copper tubes with R_m 200 N/mm² at an operating temperature of 100 °C, according to EN 14726



WICU - System solutions

The WICU system consists of Wieland copper tubes equipped, thermal or noise insulation.

WICU tube

WICU tubes have a mill-applied protective coating. They are therefore suitable for concealed installation under plaster or in environments with an aggressive atmosphere, and for installation outdoors, either above or below ground.

Applications:

- Domestic hot and cold water supply
- Central heating systems
- Gas services for heating/cooking
- Liquefied gas
- Oil services for heating
- Rainwater
- Compressed air



Technical properties:

- The tubes conform to EN 1057 and are quality assured
- Protective coating conforms to EN 13349
- External protection: DIN 30672-1
- Fire resistance conforms to EN 13501-1-E
- Color of coating: light grey
- Temperature range: up to 100 °C operating temperature



WICU - Coils

- Temper: soft R220

- wrapped in plastic film

Tube	Dimension	Delivery fo	Delivery form		Total outside diameter	Water content	Tube length per meter
	mm	25 m	50 m	bar	mm	l/m	m/l
	6 x 1.0	•	•	224	10	0.013	79.58
	8 x 1.0	•		162	12	0.028	35.37
	10 x 1.0	•		126	14	0.050	19.89
	12 x 1.0	•	•	104	16	0.079	12.73
	14 x 1.0	•	•	88	18	0.113	8.84
	15 x 1.0	•	•	82	19	0.133	7.53
	16 x 1.0	•	•	76	20	0.154	6.50
	18 x 1.0	•	•	66	23	0.201	4.97
	22 x 1.0	•		53	27	0.314	3.18

WICU - Straight lengths

- Temper: hard R290

- packed in cardboard boxes / wrapped with plastic film

Tube	Dimension	Temper	Operating pressure*	Total outside diameter	Water content	Tube length per meter
	mm	hard R290	bar	mm	l/m	m/l
0	12 x 1.0	•	104	16	0.079	12.73
000	15 x 1.0	•	82	19	0.133	7.53
0	18 x 1.0	•	66	23	0.201	4.97
	22 x 1.0	•	53	27	0.314	3.18
	28 x 1.0	•	42	33	0.531	1.88
	28 x 1.2	•	50	33	0.515	1.94
	35 x 1.2	•	40	40	0.835	1.20
	42 x 1.2	•	33	48	1.232	0.81

^{*} Calculated with 3.0 times safety coefficient on the basis of soft copper tubes with R_m 200 N/mm² at an operating temperature of 100 °C, according to EN 14726



WICU Flex

WICU Flex is a plumbing tube with a flexible coating for rapid installation. The coating consists of closed-cell PE foam covered by a structured protective film. WICU Flex is supplied in coils for rapid connection to manifolds, etc and for underfloor installations.

Applications:

- Connecting tubes
- Domestic hot and cold water supply
- Central heating systems



Technical properties:

- The tubes conform to EN 1057 and are quality assured
- Insulation reduces the heat loss of the tube by up to 80 %
- Thermal conductivity of the insulation layer $\lambda = 0.040 \text{ W/mK} (40 ^{\circ}\text{C})$
- Fire resistance conforms to EN 13501-1-E
- Color of coating: white

WICU FLEX in coils

- Temper: soft annealed

Tube	Dimension	Delivery form	Delivery form		Total outside diameter	Water content	Tube length per meter
	mm	25 m	50 m	bar	mm	l/m	m/l
	12 x 1.0	•	•	104	24	0.079	12.73
	14 × 1.0		•	88	26	0.113	8.84
	15 x 1.0	•	•	82	27	0.133	7.53
	16 x 1.0		•	76	28	0.154	6.50
	18 x 1.0	•	•	66	30	0.201	4.97
	22 x 1.0	•		53	34	0.314	3.18

^{*} Calculated with 3.0 times safety coefficient on the basis of soft copper tubes with R_m 200 N/mm² at an operating temperature of 100 °C, according to EN 14726

Copper tubes for surface heating

In addition to the particularly flexible copper tubes with a firmly adhering coating of the cuprotherm CTX type classic copper tubes are also available for surface heating, with an orange coating or without a coating

- Absolute impermeability to oxygen diffusion
- Unlimited aging resistance
- High mechanical resistance
- Long-term solution
- Optimal heat conduction



cuprotherm.blank



The powerful heating tube with external protection

Technical properties:

- Mechanical properties according to EN 1057

- Fire class: EN 13501-1-E - Color of the coating: orange

- With RAL quality mark

- Diffusion rate: 0.00 mg/m² d after 50 years

Applications:

- Underfloor heating / cooling
- Industrial surface heating
- Sports floor heating
- Open space heating

The bare heating tube

Technical properties:

- Mechanical properties according to EN 1057

- Fire class: EN 13501-1 - A1 - With RAL quality mark

- Diffusion rate: 0.00 mg/m² d after 50 years

Applications:

- Underfloor heating with mastic asphalt screed

Tube types and dimensions cuprotherm.plus and cuprotherm.blank

Tube	Dimension	Item number	Operating pressure*	Total outside diameter	Nominal weight	Water content	Packaging unit
	mm		bar	mm	kg/m	l/m	Palett
cuprotherm.plus	12 x 0.7	426112700	74	14	0.222	0.088	15 coils = 750 m
cuprotherm.plus	14 x 0.8	426114800	72	16	0.297	0.121	15 coils = 750 m
cuprotherm.blank	12 x 0.7	425012700	74	12	0.222	0.088	15 coils = 750 m
cuprotherm.blank	14 x 0.8	425001400	72	14	0.297	0.121	15 coils = 750 m

^{*} calculated with 3.0 times safety coefficient on the basis of soft copper tubes with R_m 200 N/mm² at an operating temperature of 100 °C, according to EN 14726



cuprotherm CTX

cuprotherm CTX tubes are copper tubes with a firmly adhering coating. Due to their structure, they are very easy to process and are characterized by a flexibility hitherto unknown for metal tubes. CTX tubes are a technically high-quality and at the same time economically interesting solution: They offer an attractive price per meter for copper tubes at stable conditions, and are therefore also convincing in terms of reliability in planning.

Applications:

- Heating
- Cooling
- Plumbing
- Radiator connection
- Rainwater harvesting systems
- Geothermal collectors (water/glycol)
- Concrete core activation

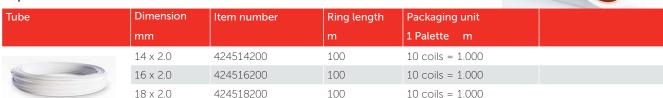


Technical properties:

- Flexible copper tube made of pure copper Cu-DHP
- Temper: soft R220 according to EN 1057 with firmly adhering coating made of PE-RT
- Fire behavior EN 13501-1-E
- Color of the coating: white, similar to RAL 9010 (pure white)
- Operating temperature range: up to 95 °C
- Environmental product declaration according to ISO 14025

Dimensions

cuprotherm CTX







Technical characteristics

cuprotherm CTX

Dimension		14 x 2	16	x 2	18 x 2
Outer diameter, coating	mm	14	'	16	18
Wall thickness, coating	mm	1.70	1	65	1.65
Wall thickness, copper tube	mm	0.30	0).35	0.35
Temper as per EN 1057		R 220	R 2	220	R 220
Permissible operating pressure up to 100°C**	bar	35		34	29
Total weight	kg/m	0.147	0.1	189	0.215
Delivery form	in coils				
Coil length	m	100	1	100	100
Coil length per pallet	m	1000	10	000	1000
Bending radius with bending devices*	mm	50		55	72
Manual bending radius	mm	70		80	110
Water content	l/m	0.079	0.3	113	0.154
Material copper tube			Pure copper	Cu-DHP according to	EN 1057
Roughness of the inner surface Ra	μm			≤ 1.5	
Coefficient of thermal expansion	mm/mK			0,017	
Material, coating				PE-RT	
Thermal conductivity, coating / copper tube	W/mK	0.35/> 344			
Coating color		white (similar RAL 9010)			
Reaction to fire		EN 13501-1 E			
Max. operating temperature	°C	95	95		95
Examples of circuit lengths for surface heating	m	80-100	100	0–120	120-150

^{*} With special bending devices, significantly smaller radii are possible

^{**}calculated with 3.0 times safety coefficient on the basis of soft copper tubes with R_m 200 N/mm² at an operating temperature of 100 °C, according to EN 14726



Crimp fittings

CTX crimp fittings are intended for the use with CTX tubes and are approved, for example for drinking water installations up to pressure rage PN10. The connection is made with the CTX crimping tool contour TH. Commercially available crimping tools from other vendors can also be used.

Applications:

- Drinking water, hot
- Drinking water, cold
- Surface heating
- Surface cooling
- Hot water heating
- Concrete core activation
- Rainwater harvesting system



Technical properties:

- Crimp sleeve made of stainless steel 1.4301,
 inspection window for checking the insertion depth
- Sealing elements double arranged, according to DIN DVGW W270 tested, in accordance with KTW requirements
- Pressure stage PN 10
- Version with black pastic ring: approved for drinking water according to DIN 50930-6, DVGW W534 and UBA list

Crimp fittings

Article Article number/Dimensions in mm	Minimum packaging unit
CTX coupling for joining of flexible copper tubes. 650114000	Packed in PE bag 10 pieces 10 pieces 10 pieces
CTX adapter for joining flexible copper tubes to copper plumbing tubes. 650414150	Packed in PE bag 10 pieces 10 pieces 10 pieces



Accessories

	Article Article number/Dimensions in mm	Minimum packaging unit	
	CTX union with eurocone Thread connection $^3I_4^{**}$, female, brass, nickel-plated, for connection to the heating group manifold. 650014000 14×2 650018000 16×2	Packed in PE bag 10 pieces 10 pieces 10 pieces	
	cuprotherm compression fitting 3 pieces, consisting of union nut, clamping ring and support sleeve, Euro cone, for cuprotherm tubes. 625203300 union nut R ³ / ₄ " x 12 x 0.7 mm 625203100 union nut R ³ / ₄ " x 14 x 0.8 mm	Packed in PE bag 10 pieces 10 pieces	
	cuprotherm capillary soldering sleeve made of copper Cu-DHP, for the connection of cuprotherm tubes. 625205000 14 x 0.8 mm	Packed in PE bag 10 pieces	
	cuprotherm bracket of steel wire, for fastening the CTX tubes on the system insulation by hand. 625202000 for tubes up to 20 mm	Boxed 500 Pieces	
	cuprotherm twin bracket of steel wire, for fastening the CTX tubes on the system insulation with a system tacker. 625202200 For tube outside diameter 14 to 20 mm	Boxed 1,000 Pieces	
and a manufacture of the second	cuprotherm grid foil as insulating layer cover and installation aid with printed spacing grid. 625201000 0.2 mm thick, 1,100 mm wide	1 roll = 50 m	



Accessories

Article Article number/Dimensions in mm	Minimum packaging unit
cuprotherm knob panel "ekoBoden" System board with installation distances of 7.5 cm and 15 cm. Made of polystyrene. Suitable for cuprotherm CTX tubes 14 x 2 mm. Meander as well as helical (bifilar) installation possible. Fire class B2 according to DIN 4102 Color: black 625271000 1,275 x 975 x 23 Incl. overlap Effective surface per panel: 1.08 m²	1 box = 18 pieces = 19.44 m ²
cuprotherm door/distributor element for "ekoBoden" Suitable for cuprotherm screed knob plate, made of solid polystyrene for the door and distribution area. With cut-outs for one-sided fixation. Fire class B2 according to DIN 4102 Color: black. 625271200 1,200 x 575 x 1 mm	1 Pieces lose
cuprotherm dry construction element TBE 25 System board for dry construction with installation distances of 12.5 cm and 25 cm. Made of polystyrene foam EPS 035 DEO dh according to EN 13163. Suitable for cuprotherm CTX tubes 14×2 mm. Meander as well as helical (bifilar) installation possible. Fire class B1 according DIN 4102 Thermal conductivity class WLS 035. 625275100 1,000 × 500 × 25 mm	packed in PE film 10 elements = 5 m ²
cuprotherm heat conducting lamella WLL Made of galvanized sheet steel for the cuprotherm dry construction element. Suitable for the cuprotherm CTX tube 14 x 2 mm. Tool-less divisible every 100 mm. 625275300 750 x 122 x 0.4 mm	1 box = 50 pieces
CTX radiator connection block With insulation box made of EPS, insulation thickness at the back 18 mm for plastering into the wall (installation depth 50 mm), with bent copper tube 15 x 1 mm, for SANCO and WICU tubes. Dimensions: Height: 260 mm, Width: 100 mm Mounting depth: 50 mm (base 210 mm) Distance between axes: 215 mm Bottom insulation: 14 mm. 625433000	1 piece loose



Tools

Article Article number/Dimensions in mm	Minimum packaging unit
CTX cutting tool Calibrating and deburring CTX tubes for use of CTX crimp fittings. 655100100 14 / 16 / 18 x 2.0	Loose 1 piece
cuprotherm tacker for easy fastening of cuprotherm double anchors, suitable for commercially available insulation boards of EPS, PU, Styrodur, Foamglas, cork, autoclaved aerated concrete and wood soft fibre boards. 625220700	Loose 1 piece
cuprotherm calibration tool consisting of a mandrel and ring. 625429600 for copper tube 12 x 0.7 mm 625220100 for copper tube 14 x 0.8 mm	Packed in PE bag





Copper tubes for use in refrigeration / air conditioning technology and medical gas supply systems

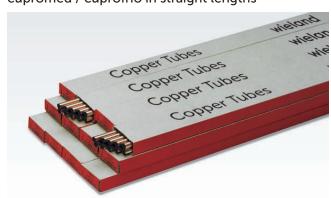
The seamless drawn copper tubes cupromed and cuprofrio are suitable for the transport of technical gases and liquids (refrigerants) in chillers, refrigeration and air conditioning systems, heat pumps and, in the case of cupromed, especially for medical gases and for vacuum.

cupromed and cuprofrio tubes meet the requirements for copper tubes used in refrigeration and air conditioning described in EN 12735-1 and EN 378 and comply with the requirements of the current Pressure Equipment Directive PED 2014/68 / EU.

cupromed tubes also meet the requirements of ISO 7396-1 for medical gas supply systems and exceed the cleanliness of the inner surface according to EN 13348.

Both types have a clean and dry inner surface. The tube ends are plugged to maintain the respective defined condition of the inner surface during storage and transport.

cupromed / cuprofrio in straight lengths



Material: Cu-DHP / Wieland K20

Temper: R290 / R250 Ends: closed

Packaging: in cardboard boxes
Design: EN 12735-1 / EN 13348
Environmental declaration: in accordance with

ISO 14025

cuprofrio in coils



Material: Cu-DHP / Wieland K20

Temper: R220 Ends: closed

Packaging: in cardboard boxes

Design: EN 12735-1

Environmental declaration: in accordance with

ISO 14025





cupromed/cuprofrio - Straight lengths

- Temper: hard R290 and half-hard R250
- in straight length of 5 m

ube	Dimension	Item number half-hard R250	Item number hard R290	Operating pressure**	Nominal weight	Packaging unit
	mm			bar	kg/m	m/cardboard box
0_	6 × 1,0		432506100	224	0.140	200
	8 × 1,0		432508100	162	0.197	100
<u> </u>	10 × 1,0	432210100	432510100	126	0.253	75
	12 x 1,0	432212100	432512100	104	0.309	50
	14 × 1,0		432514100	88	0.365	50
	15 x 1,0		432515100	82	0.393	50
	16 × 1,0	432216100	432516100	76	0.421	50
	18 × 1,0	432218100	432518100	66	0.477	50
	22 x 1,0	432222100	432522100	53	0.590	50
	28 x 1,0	432228100	432528100	42	0.758	50
	28 x 1,5		432528150	63	1.116	25
	35 x 1,0		432535100	33	0.955	25
	35 x 1,5		432535150	50	1.411	25
	42 x 1,0		432542100	28	1.152	25
	42 x 1,5		432542150	42	1.706	25
	54 x 1,5		432554150	32	2.212	20
	54 x 2,0		432554200	43	2.921	20
	64 x 2,0		432564200	36	3.483	5
	76,1 x 2,0		432576120	30	4.162	5
	88,9 x 2,0		432588920	26	4.881	5
	108 x 2,5		432510825	27	7.408	5

^{*} other dimensions are available on request

^{**} calculated with 3.0 times safety coefficient on the basis of soft copper tubes with R_m 200 N/mm² at an operating temperature of 100 °C, according to EN 14726



cuprofrio - Coils

- Temper: soft R220

- EN 12735-1

ube	Dimension	Item number	Operating pressure**	Nominal weight	Packaging unit
	mm		bar	kg/m	m/Kcardboard box
	4 x 1,0	432104100	366	0,084	2 x 35
	6 x 1,0	432106100	224	0,140	2 x 35
	8 x 1,0	432108100	162	0,197	2 x 35
	10 × 1,0	432110100	126	0,253	35
	12 x 1,0	432112100	104	0,309	35
	14 × 1,0	432114100	88	0,365	35
	15 x 1,0	432315100	82	0,393	25
	16 x 1,0	432316100	76	0,421	25
	18 × 1,0	432318100	66	0,477	25
	22 x 1,0	432322100	53	0,590	25
ck dime	nsions * cuprofrio in lar	ge coils			
	10 x 1,0	432410100	126	0,253	100

^{*} other dimensions are available on request

cuprofrio - Straight lengths

Temper: soft R220in straight length of 5 m

Гube	Dimension	Item number half-hard R250	Operating pressure**	Nominal weight	Packaging unit
	mm		bar	kg/m	m/wooden box
0	28 x 1.5***	432202815	63	1.116	600
	35 x 1.5***	432203515	50	1.411	500
	42 x 1.5***	432204215	42	1.706	350
	54 x 2.0***	432205420	43	2.921	200

^{*} other dimensions are available on request

^{**} calculated with 3.0 times safety coefficient on the basis of soft copper tubes with R_m 200 N/mm² at an operating temperature of 100 °C, according to EN 14726

^{**} calculated with 3.0 times safety coefficient on the basis of soft copper tubes with R_m 200 N/mm² at an operating temperature of 100 °C, according to EN 14726

^{***} only EN 12735-1



Pre-insulated refrigeration tube

This tube consists of a seamless drawn Wieland cuprofrio refrigeration tube with a heat-insulating coating. cuprofrio.plus is used for the transportation of technical gases and refrigerants.

cuprofrio.plus is very easy to unwind and to bend. This is possible because a heat-insulating coating is already applied during production.

The cuprofrio tube meets and exceeds the requirements of EN 12735-1 for copper tube for air conditioning and refrigeration. Wieland-Werke AG has concluded a separate warranty agreement with VDKF (Verband Deutscher Kälte-Klima-Fachbetriebe e.V. – Association of Refrigeration and Air Conditioning Contractors) covering property damage and bodily injury.

cuprofrio.plus meets the requirements of the Pressure Equipment Directive 2014/68/EU.

The coating consists of an elastomer-modified thermoplastic specially developed for air conditioning and refrigeration. The highly tear-resistant material proves its worth on building sites, for example when tubes are being fed through wall apertures.

Additional advantages of this material are low thermal conductivity and extremely high water vapour diffusion resistance, which, in combination with the insulating layer thickness, prevent the formation of condensation water on the tube surface. Together with modern refrigerants this ensures safe long-term operation.

The insulation is classified as a flame-retardant building material. It has the best classification in terms of smoke development, i.e. no to low smoke development, which is the most important property for the protection of life in the event of fire. In the context of structural fire protection, products with smoke class s1 are therefore always advantageous and are therefore the preferred choice. For certain public buildings with a high traffic volume, this may also be mandatory.

Energy losses are reduced by the factory-provided insulation. Furthermore, the insulation reduces the probability that humidity will condense on the tubes. Taking into account the air temperature and relative humidity, the following table shows the minimum media temperatures at which condensation does not occur on the insulation.

Air temperature	Tube dimension / relative humidity	6 x 1 (mm)	10 x 1 (mm)	12 x 1 (mm)	16 x 1 (mm)	18 x 1 (mm)	22 x 1 (mm)
	50 %	−37 °C	−29 °C	−27 °C	−23 °C	−22 °C	−20 °C
25 °C	60 %	−20 °C	−14 °C	−13 °C	−10 °C	−9 °C	−8 °C
	70 %	−6 °C	−2 °C	−1 °C	1 °C	1 °C	2 °C
	50 %	−36 °C	−27 °C	−25 °C	−21 °C	−20 °C	−18 °C
30 °C	60 %	−18 °C	−12 °C	−10 °C	-7 °C	-7 °C	−5 °C
	70 %	-3 °C	2 °C	3 °C	4 °C	5 °C	6 °C
	50 %	−34 °C	−26 °C	−23 °C	−19 °C	−18 °C	−16 °C
35 °C	60 %	−16 °C	−9 °C	-7 °C	-5 °C	−4 °C	−2 °C
	70 %	0 °C	5 °C	6 °C	8 °C	9 °C	10 °C
40 °C	50 %	−34 °C	−24 °C	−21 °C	−17 °C	−16 °C	−14 °C
	60 %	−14 °C	-7 °C	−5 °C	−2 °C	−1 °C	1 °C
	70 %	3 °C	8 °C	9 °C	11 °C	12 °C	13 °C



An outstanding characteristic of cuprofrio.plus is its bright, clean and dry inner surface. The tube ends are closed In order to keep the surface clean from storage and transportation through to installation.



Material of copper tube: Cu-DHP, Wieland-K20,

R220 soft

Design: EN 12735-1 Pressure Equipment Directive: compliant

Thermal insulation: elastomer-modified

polyethylene

Thermal conductivity: 0,036 W/mK at 10 °C

Operating temperature: max. 105 °C

Protective foil: polyethylene structured Environmental declaration: according to ISO 14025 Fire class: EN 13501-1; C_L -s1,d0

Coils - Temper soft

Stock dimen	nsions* cuprofrio.plus (m	etric) in coils, tem	per soft			
Tube	Dimension	Item number	Operating pressure**	Nominal weight	Insulation thickness	packaging unit
	mm		bar	kg/m	mm	m/coil
	6 x 1.0	432706125	224	0.140	9	25
	10 x 1.0	432710125	126	0.253	9	25
	12 x 1.0	432712125	104	0.309	9	25
	16 x 1.0	432716125	76	0.421	9	25
	18 x 1.0	432718125	66	0.477	9	25
	22 x 1.0	432722125	53	0.590	9	25
Stock dimen	nsions* cuprofrio.plus (inc	ch) in coils, tempe	er soft			
	(1/4") 6.35 x 0.8	432863558	170	0.125	9	50
	(3/8") 9.52 x 0.8	432895258	109	0.196	9	50
	(1/2") 12.70 x 0.8	432812758	80	0.267	9	50
	(5/8") 15.88 x 1.0	432815881	77	0.418	9	25
	(3/4") 19.05 x 1.0	432819051	62	0.507	9	25
	(7/8") 22.22 x 1.2	432822221	64	0.709	9	25

^{*} other dimensions are available on request

^{**} calculated with 3.0 times safety coefficient on the basis of soft copper tubes with R_m 200 N/mm² at an operating temperature of 100 °C, according to EN 14726



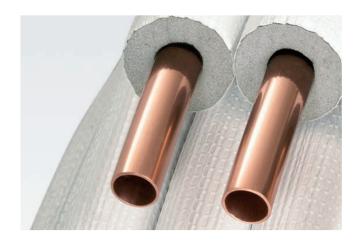
Pre-insulated refrigeration twin tubes

This tube consists of two seamless drawn Wieland cuprofrio refrigeration tubes with a heat-insulating coating. Cuprofrio.plus in twin version is mainly used for the transportation of technical gases and refriegrants. The special joint of the insulations of the cuprofrio.plus in twin version allows a simple and tool-free cutting and joining for a particularly efficient and aesthetic installation.

The cuprofrio.plus in twin version meets and exceeds the requirements of EN 12735-1 for copper tubes for air conditioning and refrigeration and also EN 378. Furthermore, the tubes meet the requirements of the Pressure Equipment Directive PED 2014/68/EU.

The highly tear-resistant material proves its worth on building sites, for example when tubes are being fed through wall apertures.

Additional advantages of this material are low thermal conductivity and extremely high water vapour diffusion resistance.



Material of copper tube: Cu-DHP, Wieland-K20,

R220 soft

Design: EN 12735-1 Pressure Equipment Directive: compliant

Thermal insulation: elastomer-modified

polyethylene

Thermal conductivity: 0,036 W/mK at 10 °C

Operating temperature: max. 105 °C

Protective foil: polyethylene structured Environmental declaration: according to ISO 14025 Fire class: EN 13501-1; C_L – s1, d0

An outstanding characteristic of cuprofrio.plus in twin version is its bright, clean and dry inner surface. The tube ends are closed in order to keep the surface clean from storage and transportation through to installation.

Coils - Temper soft

Stock dimension	tock dimensions* cuprofrio.twin (metric) in coils, temper soft							
Tube	Dimension	Item number	Operating pressure**	Insulation thickness	Packaging unit			
	mm		kg/m	mm	m/coil			
	6 x 1.0 - 10 x 1.0	432906110	0.393	9-9	25			
	6 x 1.0 - 12 x 1.0	432906112	0.449	9-9	25			
	6 x 1.0 - 16 x 1.0	432906116	0.561	9-9	25			
	10 x 1.0 - 16 x 1.0	432910116	0.674	9-9	25			
Stock dimension	s* cuprofrio.twin (inch) in coils, tempe	er soft						
	(1/4") 6.35 x 0.8 - (3/8") 9.52 x 0.8	432914380	0.321	9-9	25			
	(1/4") 6.35 x 0.8 - (1/2") 12.70 x 0.8	432914120	0.392	9-9	25			
	(1/4") 6.35 x 0.8 - (5/8") 15.88 x 1.0	432914580	0.543	9-9	25			
	(3/8") 9.52 x 0.8 - (5/8") 15.88 x 1.0	432938580	0.614	9-9	25			

^{*} other dimensions are available on request

^{**} calculated with 3.0 times safety coefficient on the basis of soft copper tubes with R_m 200 N/mm² at an operating temperature of 100 °C, according to EN 14726



Geothermal energy tube

The seamless drawn cuprogeo tube is used for geothermal energy production. cuprogeo is designed for the use of refrigerants and gases for direct evaporation. The advantage of this application is that high performance can be achieved with suitable heat pumps.

In addition, cuprogeo can be used for the transportation of technical gases and liquids in chillers, air-conditioning and refrigeration units as well as heat exchangers if a solid outer sheathing is required.

An outstanding characteristic of cuprofrio is its clean and dry inner surface.

The tube ends are closed to maintain the defined condition of the inner surface during storage and transportation.

cuprogeo meets the requirements of EN 12735-1 for use in air-conditioning and refrigeration and for transportation of technical gases. cuprogeo complies with the Pressure Equipment Directive 2014/68/EU.



Material copper tube: pure copper Cu-DHP,

Wieland-K20

Condition: soft R220

Thermal conductivity: $\lambda \ge 344 \text{ W/(m\cdot K)}$

Design: EN 12735-1 Pressure equipment directive: compliant

Coating: Polye

Thermal conductivity coating: λ = 0.35 W/(m·K)

Tube ends:

Packaging: Rings on a pallet

soft R220 $\lambda \ge 344 \text{ W/(m·K)}$ EN 12735-1 compliant Polyethylene $\lambda = 0.35 \text{ W/(m·K)}$ tightly closed

Coils - Temper soft

Dimensions* cuprogeo in coils, temper soft									
Tube	Dimension	Item number	Operating pressure**	Total outside diameter	Nominal weight	Packaging unit			
	mm		bar	mm	kg/m	m/coil			
	10 x 0,7	424410770	89	12	0,183	70			
	12 x 0,7	424412775	74	14	0,252	75			

^{*} other dimensions are available on request

^{**} calculated with 3.0 times safety coefficient on the basis of soft copper tubes with R_m 200 N/mm² at an operating temperature of 100 °C, according to EN 14726



The tube system for high-pressure applications

The K65 tube system has been developed in response to the use of CO_2 R744 as an environmentally friendly refrigerant in the commercial field, especially that of supermarket refrigeration systems. The use of CO_2 as a refrigerant led to high operating pressures, and therefore variations in the gauge of tube being specified. K65 simplifies the selection process, as the Wieland K65 alloy provides the mechanical strength high enough to withstand the huge pressure ratings required. K65 has already been used with success in electrical engineering and the automotive industry, and is a safe and economical installation in refrigeration systems with high operating pressures.

Applications

High-pressure tube systems, particularly when CO_2 is used as a refrigerant. K65 can be used in other fluids applications in consultation with the manufacturer.

Proven joining technique

K65 has excellent processing properties that are similar to those of copper. Wieland K65 tubes can be brazed to Conex | Bänninger K65 fittings without any need for expensive or special equipment.

Safety ensured by two well-known manufacturers

K65 tubes by Wieland and K65 fittings by IBP Conex | Bänninger fall under a joint system guarantee that includes ${\rm CO_2}$ applications for the items listed in the tables below.

Easy to identify - even after installation

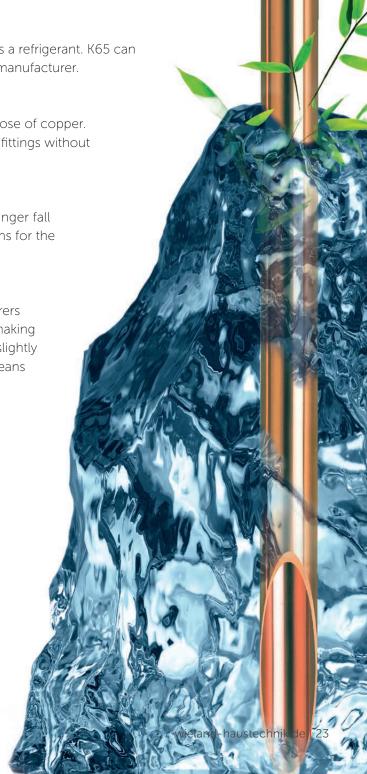
All K65 system components are marked with the manufacturers own mark, as well as the K65 mark and the pressure rating making them easy to identify at all times. In addition, the material is slightly magnetic and can be easily distinguished from copper by means of a strong magnet – a helpful and practical advantage.

Economical

Having such a high mechanical strength, the K65 tube can be made with comparatively thin walls allowing for an conomical utilization of material, while still meeting high technical demands.

Lighter for easy handling

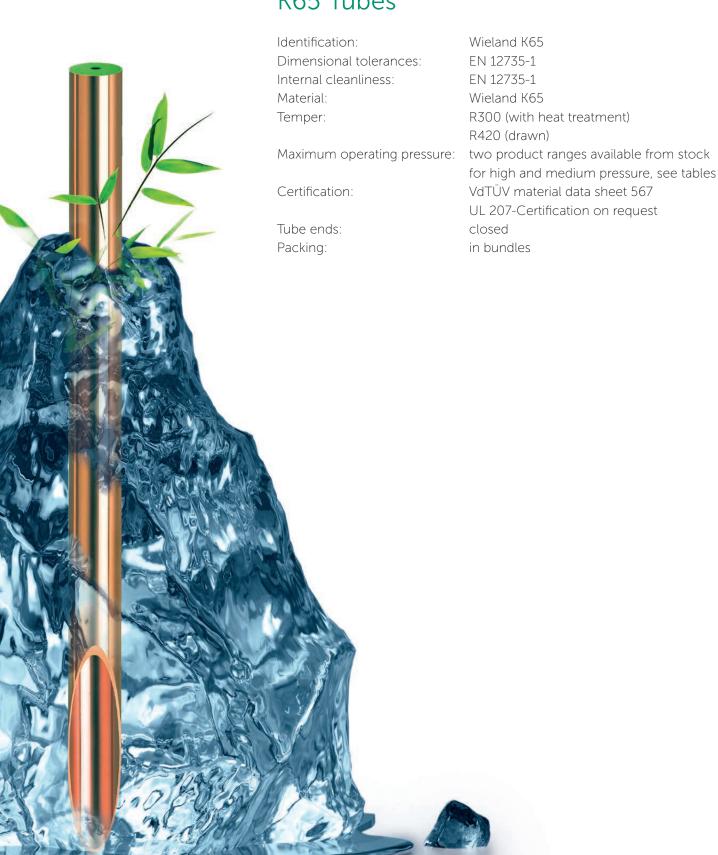
The thinner walls of the tubes not only saves on material, but results in a lighter weight product that is easier to handle, for example, when mounting the tubes on ceilings.





24 | wieland-haustechnik.de

K65 Tubes





According to the requirements of EN 14276:2020, the following dimensions are available ex stock*:

Wieland material number	Dimensions Wall thickne		il		Wall thickness	Packaging uni	t: bundle	Packaging u	nit: ballot	Minimum ben- ding radius***
namber	mm	inch	mm	Number of tubes per 5 m	Metres per bundle	Bundles per ballot	Metres per ballot	mm		
433015878	15.87	5/8"	0.63	10	50	20	1.000	63		
433019058	19.05	3/4"	0.76	10	50	20	1.000	75		
433022238	22.23	7/8"	0.89	10	50	10	500	98		
433028578	28.57	1 1/8"	1.2	5	25	20	500	102		
433034928	34.92	1 3/8"	1.47	3	15	10	150	140		
433041278	41.27	1 5/8"	1.74	3	15	10	150	140		
433053978	53.97	2 1/8"	2.27	1	5	_	_	not defined		

Wieland Dimensior material number		ons	Wall thickness	Packaging unit: bundle		Packaging u	nit: ballot	Minimum ben- ding radius***
Hamber	mm	inch	mm	Number of tubes per 5 m	Metres per bundle	Bundles per ballot	Metres per ballot	mm
433009522	9.52	3/8"	0.56	20	100	20	2,000	43
433012702	12.70	1/2"	0.75	20	100	20	2,000	52
433015872	15.87	5/8"	0.93	10	50	20	1,000	63
433019052	19.05	3/4"	1.19	10	50	20	1,000	75
433022232	22.23	7/8"	1.38	10	50	10	500	98
433028572	28.57	1 1/8"	1.78	5	25	20	500	102
433034922	34.92	1 3/8"	2.17	3	15	10	150	140
433041272	41.27	1 5/8"	2.56	3	15	10	150	140
433053972	53.97	2 1/8"	3.35	1	5	_	_	not defined

^{*} Other dimensions are available on request.

Processing information

The processing instructions for the installation of copper tubes according to EN 378 common for refrigeration are to be followed. Please refer to the K65 installation instructions. The safety precautions for high-pressure systems, particularly for pressure testing and commissioning have to be observed!

^{**} K65 tubes are suitable for temperatures down to -196 °C.

^{***} The dimensions mentioned here can be cold bent with suitable bending equipment and bending segments that are precisely tailored to the outside diameter. Hot bending is not recommended. Industrial bending machines also enable tighter bending radii. Bending of hairpins is possible on suitable bending equipment.



K65 fittings

Identification: >B< K65

Maximum operating pressure: 130 bar / 1885 psi

The following K65-fitting designs are available:

Туре	Detailed designation	Size	Item No.
K65 Bend 90°	K5001 i/a	3/8"	K5001003000000
i/a	K5001 i/a	1/2"	K5001004000000
	K5001 i/a	5/8"	K5001005000000
	K5001 i/a	3/4"	K5001006000000
	K5001 i/a	7/8"	K5001007000000
	K5001 i/a	1 1/8"	K5001009000000
	K5001 i/a	1 1/3"	K5001011000000
	K5001 i/a	1 5/8"	K5001013000000
	K5001 i/a	2 1/8"	K5001017000000
K65 Bend 90°	K5002 i/i	3/8"	K5002003000000
i/i	K5002 i/i	1/2"	K5002004000000
	K5002 i/i	5/8"	K5002005000000
	K5002 i/i	3/4"	K5002006000000
	K5002 i/i	7/8"	K5002007000000
	K5002 i/i	1 1/8"	K5002009000000
	K5002 i/i	1 3/8"	K5002011000000
	K5002 i/i	1 5/8"	K5002013000000
	K5002 i/i	2 1/8"	K5002017000000
K65 Bend 45°	K5040 i/a	3/4"	K5040006000000
i/a	K5040 i/a	7/8"	K5040007000000
	K5040 i/a	1 1/8"	K5040009000000
	K5040 i/a	1 3/8"	K5040011000000
	K5040 i/a	1 5/8"	K5040013000000
K65 Bend 45° i/i	K5041 i/i	3/8"	K5041003000000
1/1	K5041 i/i	1/2"	K5041004000000
	K5041 i/i	5/8"	K5041005000000
	K5041 i/i	3/4"	K5041006000000
	K5041 i/i	7/8"	K5041007000000
	K5041 i/i	1 1/8"	K5041009000000
	K5041 i/i	1 3/8"	K5041011000000
	K5041 i/i	1 5/8"	K5041013000000
K65 Tee	K5130	3/8"	K5130003003003
	K5130	1/2" x 3/8" x 3/8"	K5130004003003
	K5130	1/2" x 1/2" x 3/8"	K5130004004003
	K5130	1/2"	K5130004004004
	K5130	5/8" x 1/2" x 1/2"	K5130005004004
	K5130	5/8" x 5/8" x 3/8"	K5130005005003
	K5130	5/8" x 5/8" x 1/2"	K5130005005004

Туре	Detailed designation	Size	Item No.
K65 Tee	K5130	5/8"	K5130005005005
	K5130	3/4" x 3/4" x 1/2"	K5130006006004
	K5130	3/4" x 3/4" x 5/8"	K5130006006005
	K5130	3/4"	K5130006006006
	K5130	7/8" x 7/8" x 1/2"	K5130007007004
	K5130	7/8" x 7/8" x 5/8"	K5130007007005
	K5130	7/8" x 7/8" x 3/4"	K5130007007006
	K5130	7/8"	K5130007007007
	K5130	1 1/8" x 7/8" x 1/2"	K5130009007004
	K5130	1 1/8" x 1 1/8" x 3/4"	K5130009009006
	K5130	1 1/8" x 1 1/8" x 7/8"	K5130009009007
	K5130	1 1/8"	K5130009009009
	K5130	1 3/8" x 1 3/8" x 3/4"	K5130011011006
	K5130	1 3/8" x 1 3/8" x 7/8"	K5130011011007
	K5130	1 3/8" x 1 3/8" x 1 1/8"	K5130011011009
	K5130	1 3/8"	K5130011011011
	K5130	1 5/8" x 1 5/8" x 3/4"	K5130013013006
	K5130	1 5/8" x 1 5/8" x 7/8"	K5130013013007
	K5130	1 5/8" x 1 5/8" x 1 1/8"	K5130013013009
	K5130	1 5/8" x 1 5/8" x 1 3/8"	K5130013013011
	K5130	1 5/8"	K5130013013013
	K5130	2 1/8" x 2 1/8" x 1 5/8"	K5130017017013
	K5130	2 1/8" x 2 1/8" x 2 1/8"	K5130017017017
K65 Red	K5240	1/2" x 3/8"	K5240004003000
Coupler	K5240	5/8" x 1/2"	K5240005004000
	K5240	3/4" x 5/8"	K5240006005000
	K5240	7/8" x 3/4"	K5240007006000
	K5240	1 1/8" x 1/2"	K5240009004000
	K5240	1 1/8" x 7/8"	K5240009007000
	K5240	1 3/8" x 1/2"	K5240011004000
	K5240	1 3/8" x 5/8"	K5240011005000
	K5240	1 3/8" x 3/4"	K5240011006000
	K5240	1.3/8" x 7/8"	K5240011007000
	K5240	1 3/8" x 1 1/8"	K5240011009000
	K5240	1 5/8" x 3/4"	K5240013006000
	K5240	1 5/8" x 7/8"	K5240013007000
	K5240	1 5/8 x 1 1/8"	K5240013009000
	K5240	1 5/8" x 1 3/8"	K5240013011000
	K5240	2 1/8" x 1 5/8"	K5240017013000





Туре	Detailed designation	Size	Item No.
K65 Reducer	K5243 o-i	1/2" x 3/8"	K5243004003000
	K5243 I/M	1/2" x 12 mm	K5243004012000
	К5243 о-і	5/8" x 3/8"	K5243005003000
	K5243 o-i	5/8" x 1/2"	K5243005004000
	K5243 I/M	5/8" x 15 mm	K5243005015000
	K5243 o-i	3/4" x 3/8"	K5243006003000
	K5243 o-i	3/4" x 1/2"	K5243006004000
	К5243 о-і	3/4" x 5/8"	K5243006005000
	K5243 I/M	3/4" x 18 mm	K5243006018000
	К5243 о-і	7/8" x 3/8"	K5243007003000
	К5243 о-і	7/8" x 1/2"	K5243007004000
	К5243 о-і	7/8" x 5/8"	K5243007005000
	К5243 о-і	7/8" x 3/4"	K5243007006000
	K5243 I/M	7/8" x 22 mm	K5243007022000
	K5243 o-i	1 1/8" × 1/2"	K5243009004000
	K5243 o-i	1 1/8" x 5/8"	K5243009005000
	K5243 o-i	1 1/8" × 3/4"	K5243009006000
	К5243 о-і	1 1/8" x 7/8"	K5243009007000
	K5243 I/M	1 1/8" x 28 mm	K5243009028000
	К5243 о-і	1 3/8" x 1 1/8"	K5243011009000
	K5243 I/M	1 3/8" x 35 mm	K5243011035000
	К5243 о-і	1 5/8" x 7/8"	K5243013007000
	К5243 о-і	1 5/8" x 1 3/8"	K5243013011000
	K5243 I/M	1 5/8" x 42 mm	K5243013042000
	К5243 о-і	2 1/8" x 1 5/8"	K5243017013000

Туре	Detailed designation	Size	Item No.
K65 Coupler	K5270	3/8"	K5270003000000
1 1 1 1 1 1 A	K5270	1/2"	K5270004000000
W W	K5270	5/8"	K5270005000000
	K5270	3/4"	K5270006000000
	K5270	7/8"	K5270007000000
	K5270	1 1/8"	K5270009000000
	K5270	1 3/8"	K5270011000000
	K5270	1 5/8"	K5270013000000
	K5270	2 1/8"	K5270017000000
K65 Stop End	K5301	3/8"	K5301003000000
	K5301	1/2"	K5301004000000
- F	K5301	5/8"	K5301005000000
	K5301	3/4"	K5301006000000
	K5301	7/8"	K5301007000000
	K5301	1 1/8"	K5301009000000
	K5301	1 3/8"	K5301011000000
	K5301	1 5/8"	K5301013000000
	K5301	2 1/8"	K5301017000000



Application of different tubes

Refrigeration and air conditioning	Symbol	Product
Safety refrigerant		
H-FCKW (Halogenated flourochlorocarbon) no longer permitted!		cupromed cuprofrio cuprofrio.plus cuprogeo K65
H-FKW, e.g. R134a, R404A, R407C, R410A, R507		
Flammable refrigerants	C_nH_n	
Others		
Carbon dioxide*	CO ₂	J
Ammonia	NH_3	currently not permitted!

Technical gases	Symbol	Product		
Noble gases	·			
Helium	Не	cupromed cuprofrio cuprogeo		
Neon	Ne			
Argon	Ar			
Krypton	Kr			
Xenon	Xe			
Radon	Rn			
Inert gases				
Nitrogen	N_2			
Carbon dioxide*	CO ₂			
Sulphur hexafluoride	SF ₆			
Fuel gases				
Hydrogen	H_2	cupromed, cupro- frio, cuprogeo		
Methane	CH ₄	Please contact us regarding technical set of rules		
Liquid gases	C_nH_n			
Coke oven gas				
Acetylene**	C_2H_2	Copper not permitted!		

Medical technology and laboratory gases	Symbol	Product		
Oxygen	O ₂			
Nitrogen	N_2			
Carbon dioxide*	CO ₂			
Nitrous oxide	N ₂ O			
Argon	Ar			
Helium	Не	cupromed		
Xenon	Xe			
Compressed air with cleanliness requirements according to ISO 8573-1 and for medical purposes				
Vacuum				
* The gas must be absolutely dry, as in the case, for example, in compressed air cylinders. Respect the maximum operating pressure of the tubes.				

- For high pressures (e.g. 120 bar), use K65 tubes.
- ** Formation of the highly explosive copper acetylide possible! To observing regulations: "Industrial Safety Ordinance" (BetrSichV) and "Technical rules for acetylene plants and Calcium Carbide Bearings "(TRAC).

Marking of copper tubes

Each tube has an identification mark.

The indication of the product name documents our claim to the safety of the major brands and the production according to specified procedures "better than standards and regulations". The following is an example of the marking of plumbing tubes:

SANCO The product is manufactured using a patented process

WIELAND The manufacturer is Wieland-Werke AG, Ulm

DEUTSCHLAND The place of manufacture is Germany

• RAL quality mark for tubes

DVGW DV 7204AU2106 DVGW approval for gas and drinking water (depending on dimensions)

15 x 1 Dimensions: outside diameter x wall thickness EN 1057 Fulfillment of the requirements from EN 1057

HH Temper half-hard R2502021 Year of ManufactureIV Quarter of manufacture

CE Conformity with the EU Construction Products Regulation



We secure the trust of our partners through exemplary quality management.

Branded copper tubes from Wieland for building services are in accordance with the specifications of EN 1057 manufactured and consist of the standardized material Cu-DHP (oxygen-free pure copper). This manufacture is extensive internal like subject to external quality assurance measures and according to ISO 9001 and EN 14001 and EMAS 2

certified. Branded copper tubes for the areas of drinking water and gas e.g. additionally the requirements of the DVGW worksheet GW 392.

The permanent internal monitoring is carried out by a certified and accredited according to 17025. Research laboratory ensured. Numerous quality test certificates and product approvals of all well-known Testing organizations prove a consistent high quality level of Wieland branded copper tubes.

Wieland – the company

The Wieland Group

Wieland is a leading global supplier of semi-finished products made of copper and copper alloys. With a global network of production facilities, service and trading houses, the company offers a wide range of products, technologies and services. From prototype to series production, Wieland develops solutions for automotive, electronics, refrigeration and air

conditioning technology and other industries. With high-performance copper materials, Wieland drives the success of its B2B customers in future fields such as electromobility, connectivity and urbanization. High technical competence, customer-oriented thinking and sustainability determine the actions and have been the basis for the company's success since 1820.

Plant Vöhringen – production site for copper installation plumbing tubes



Our copper installation tubes meet the highest demands, in some cases better than the regulations and standards. Our action is based on the needs of our customers. We are also clearly committed to the three-tier approach distribution channel. With regard to the skilled crafts, we appreciate the long-standing partnership with trade associations and the ZVSHK,

which is expressed, for example, in the new version of the warranty. Experienced application engineers support you in all questions. Compared to the craft we appreciate the long-therm partnership professional associations and the ZVSHK, the e.g. in the new version of the warranty for expression comes. Experienced application engineers support you in all questions.

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wieland

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