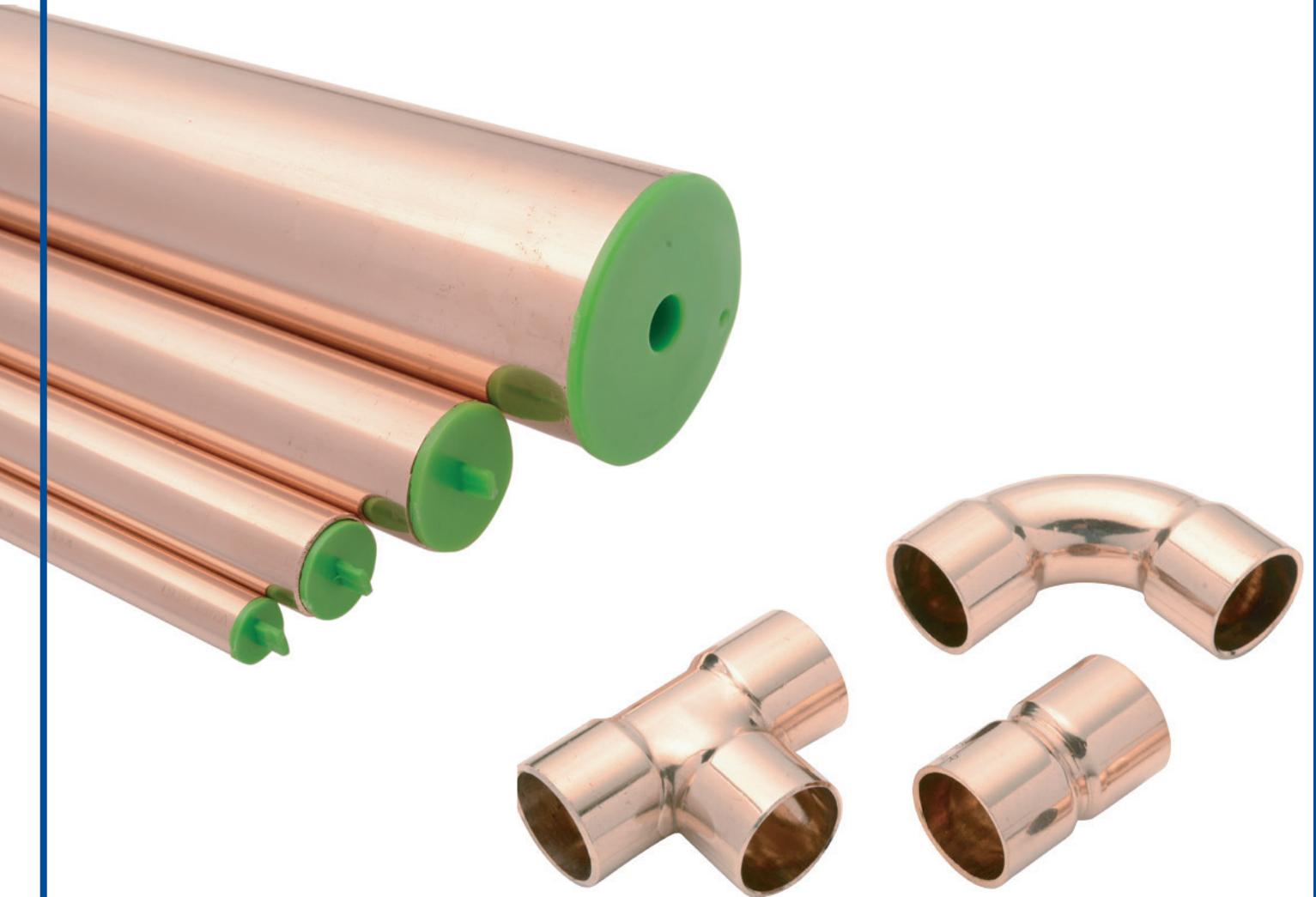




**HENRY**  
TECHNOLOGIES

## K65<sup>®</sup>-SYSTEM



THE TUBE SYSTEM FOR HIGH-PRESSURE

[www.henrytech.com](http://www.henrytech.com)

**Wieland**

# High-Pressure Tube System

In air conditioning/refrigeration, and in particular in the area of commercial or industrial refrigeration systems, more and more ecology-oriented concepts are being implemented, with the focus being on efficiency and environmentally friendly refrigerants.

The use of the natural refrigerant CO<sub>2</sub> (R744) leads to higher operating pressures, particularly in transcritical operation. The new K65 system, consisting of tubes and fittings, is particularly suited to these applications.

K65 is a high-strength copper alloy and enables simple, safe and economical installation of refrigeration systems with operation pressures of up to 120 bar (other pressure levels on request).

## Applications

- Air conditioning and refrigeration, heating, non-hazardous refrigerants, in particular the refrigerant CO<sub>2</sub> (R744).
- Further media are possible after consultation with the manufacturer.

## Material properties

### Material designation

K65, CW 107C,  
CuFe2P  
UNS C19400

### Composition

Fe 2.10 – 2.60 %  
Zn 0.05 – 0.20 %  
P 0.015 – 0.15 %  
Pb max. 0.03 %  
Cu balance

### Standards

EN

CuFe2P (EN 12449)  
CW107C

VdTÜV

Material Sheet 567

UNS\*

C19400

\* Unified Numbering System (USA)

### Temper\*

K65 tubes = R300, according to EN 12449 and VdTÜV 567 (heat treated) and/or R420 according to EN 12449 (hard as drawn)

\* The temper for K65 fittings is above the value R300 due to workhardening during manufacturing process.

### Corrosion resistance

K65 is insensitive to stress corrosion cracking and exhibits high resistance to natural atmosphere.

Both the tubes and the fittings of the K65 system are TÜVcertified and, therefore, meet the requirements of the European Pressure Equipment Directive 97/23/EC.

K65 tubes and K65 fittings are clearly marked, so that the system components can be easily identified at all times.

Your benefits of using K65:

- Cost reduction and improved handling due to weight reduction
- Excellent heat transfer characteristics
- Known and user friendly processing technologies (e.g. brazing)
- Existing processes and equipment can be used
- Clear identification of the system components
- TÜV-certified

## Physical properties\*

Thermal conductivity >260 W/(mK)  
Density 8.91 g/cm<sup>3</sup>  
Coefficient of thermal expansion 17.6·10<sup>-6</sup>/K

\* Reference values at room temperature

K65 is slightly magnetic and can easily be distinguished from other copper materials (e.g. Cu-DHP) by means of a neodymium magnet – a helpful, practical advantage.

## Processing

### Proven joining technology – brazing!

K65 has excellent processing properties which are similar to those of pure copper. K65 tubes may be joined with K65 fittings through brazing. K65 fittings are manufactured by IBP Conex/Bänninger.

Silver-containing solders with a silver content of min. 2 % have proved to be very successful. Usually, no flux is necessary for the brazing of K65 tube and K65 fitting and the use of silver-containing CuP solders. For the joining of copper alloys such as brass the additional use of fluxes, e.g. FH 10 according to DIN EN 1045, is recommended. This ensures optimum filling of the capillary gap. Residual flux has to be removed after brazing (e.g. with a moist cloth).

The processing instructions for the installation of tubes and connecting tubes made of copper, e.g., according to EN 378 and DK1 information i164\*, common for air conditioning and refrigeration, have to be followed. In addition, compliance with the basic requirements of the European Pressure Equipment Directive 97/23/EC has to be examined in individual cases. The safety precautions of high-pressure systems, particularly for pressure testing and commissioning have to be observed, if necessary by calling in experts.

\* i164, Copper tubes in air conditioning and refrigeration for technical and medical gases



During brazing, it is imperative that the brazed joint is handled and heated properly. Additional heating and annealing of the tubes and the fitting body are not permitted.

### Joining properties of K65

Brazing	excellent
Soft soldering	excellent
Inert gas welding	excellent
Resistance welding	good
Laser welding	good

# Wieland K65 Tube

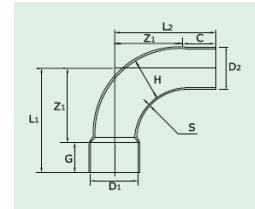
Dimension	Wieland Material Number	Outer Diameter (mm)	Wall Thickness (mm)	Small Bundle		Ballot		Temper	Minimum bending radius (mm)	Weight (kg) per 5mt length
				No. of tubes of 5m ea	Meters per small bundle	Small bundles per ballot	Meters per ballot			
3/8	433009520	9.52	0.65	20	100	20	2000	R420	43	0.81
1/2	433012700	12.70	0.85	20	100	20	2000	R420	52	1.41
5/8	433015870	15.86	1.05	10	50	20	1000	R300	63	2.18
3/4	433019060	19.05	1.30	10	50	20	1000	R300	74	3.23
7/8	433022230	22.23	1.50	10	50	10	500	R300	98	4.35
1 1/8	433028510	28.57	1.90	5	25	20	500	R300	115	7.09
1 3/8	433034920	34.92	2.30	5	25	10	250	R300	-	10.49
1 5/8	433041270	41.27	2.70	3	15	10	150	R300	-	14.56
2 1/8	433053970	53.97	3.55	1	5	10	50	R300	-	25.03

\* No standard bending radii defined  
Changes in surface colour are possible with this material but have no impact on technical properties.

## K65 - System Fittings

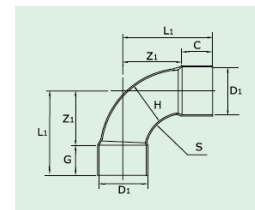
### K65 Copper Elbows - 90 Degree Elbow (Male to Female)

Part Number	Dimension	L1	L2	L3	Z1	Z2	Z3	Pack QTY	Box QTY	Weight (kg) per Pack
1022-0606-K65	3/8	20.0	22.0		12.0			5	100	0.037
1022-0808-K65	1/2	25.5	27.5		16.0			5	100	0.084
1022-1010-K65	5/8	31.5	33.5		20.0			5	100	0.132
1022-1212-K65	3/4	37.5	39.5		24.0			5	100	0.251
1022-1414-K65	7/8	44.5	46.5		28.0			5	100	0.357
1022-1818-K65	1.1/8	52.5	54.5		36.0			5	100	0.710
1022-2222-K65	1.3/8	65.0	67.0		44.0			1	30	0.227
1022-2626-K65	1.5/8	73.0	75.0		52.0			1	20	0.447



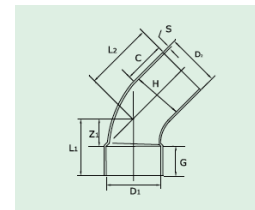
### K65 Copper Elbows - 90 Degree Elbow (Female)

Part Number	Dimension	L1	L2	L3	Z1	Z2	Z3	Pack QTY	Box QTY	Weight (kg) per Pack
1024-0606-K65	3/8	22.0			14.0			5	100	0.032
1024-0808-K65	1/2	27.5			18.0			5	100	0.084
1024-1010-K65	5/8	33.5			22.0			5	100	0.160
1024-1212-K65	3/4	39.5			26.0			5	100	0.255
1024-1414-K65	7/8	43.5			27.0			5	100	0.400
1024-1818-K65	1.1/8	54.5			38.0			5	100	0.775
1024-2222-K65	1.3/8	67.5			46.0			1	30	0.275
1024-2626-K65	1.5/8	75.5			54.0			1	20	0.470



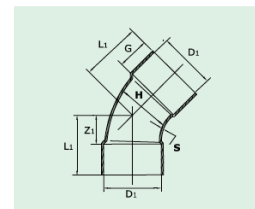
### K65 Copper Elbows - 45 Degree Elbow (Male to Female)

Part Number	Dimension	L1	L2	L3	Z1	Z2	Z3	Pack QTY	Box QTY	Weight (kg) per Pack
1026-1212-K65	3/4	21.5	37.5		8.0			5	100	0.170
1026-1414-K65	7/8	25.5	27.5		9.0			5	100	0.238
1026-1818-K65	1.1/8	28.0	31.0		12.0			5	100	0.495
1026-2222-K65	1.3/8	38.0	43.0		17.0			1	30	0.190
1026-2626-K65	1.5/8	39.0	51.0		18.0			1	20	0.278



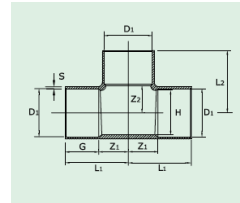
### K65 Copper Elbows - 45 Degree Elbow (Female)

Part Number	Dimension	L1	L2	L3	Z1	Z2	Z3	Pack QTY	Box QTY	Weight (kg) per Pack
1025-1212-K65	3/4	21.5			8.0			5	100	0.174
1025-1414-K65	7/8	25.5			16.0			5	100	0.243
1025-1818-K65	1.1/8	27.0			10.0			5	100	0.446
1025-2222-K65	1.3/8	39.0			19.0			1	30	0.185
1025-2626-K65	1.5/8	43.0			22.0			1	20	0.255



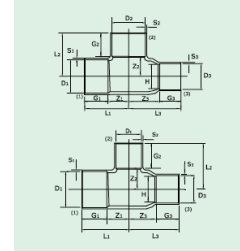
**K65 Copper Tees - Equal**

Part Number	Dimension	L1	L2	L3	Z1	Z2	Z3	Pack QTY	Box QTY	Weight (kg) per Pack
1049-060606-K65	3/8 x 3/8 x 3/8	14.5	14.5		6.5	6.5		5	100	0.055
1049-080808-K65	1/2 x 1/2 x 1/2	18.0	18.0		8.5	8.5		5	100	0.113
1049-101010-K65	5/8 x 5/8 x 5/8	22.0	22.0		10.5	10.5		5	100	0.180
1049-121212-K65	3/4 x 3/4 x 3/4	26.0	26.0		12.5	12.5		5	100	0.290
1049-141414-K54	7/8 x 7/8 x 7/8	30.5	30.5		14.0	14.0		5	100	0.445
1049-181818-K65	1 1/8 x 1 1/8 x 1 1/8	34.0	34.0		17.5	17.5		5	50	0.795
1049-222222-K65	1 3/8 x 1 3/8 x 1 3/8	42.0	42.0		21.0	21.0		1	30	0.341
1049-262626-K65	1 5/8 x 1 5/8 x 1 5/8	46.0	46.0		25.0	25.0		1	20	0.520



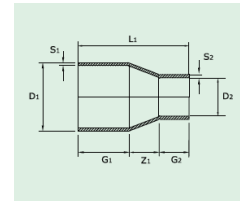
**K65 Copper Tees - Reduction**

Part Number	Dimension	L1	L2	L3	Z1	Z2	Z3	Pack QTY	Box QTY	Weight (kg) per Pack
1049-080606-K65	1/2 x 3/8 x 3/8							5	100	0.121
1049-080806-K65	1/2 x 1/2 x 3/8	18.0	18.0	18.0	8.5	8.5	10.0	5	100	0.105
1049-101008-K65	5/8 x 5/8 x 1/2	22.0	22.0	21.0	10.5	10.5	11.5	5	100	0.191
1049-100808-K65	5/8 x 1/2 x 1/2	21.0		20.0	9.5	10.5		5	100	0.198
1049-101006-K65	5/8 x 5/8 x 3/8	22.0	22.0	21.0	10.5	10.5	13.0	5	100	0.163
1049-121210-K65	3/4 x 3/4 x 5/8	26.0	26.0	25.0	12.5	12.5	13.5	5	100	0.274
1049-141412-K65	7/8 x 7/8 x 3/4	31.0	31.0	28.0	14.5	14.5	14.5	5	100	0.458
1049-181810-K65	1 1/8 x 1 1/8 x 5/8	34.0	34.0	33.0	17.5	17.5	16.5	5	100	0.800
1049-222214-K65	1 3/8 x 1 3/8 x 7/8	42.0	42.0	45.0	21.5	21.0	28.5	1	30	0.163
1049-262622-K65	1 5/8 x 1 5/8 x 1 3/8	46.0	46.0	45.0	25.5	25.0	24.0	1	20	0.480



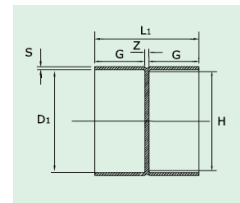
**K65 Copper Couplings - (Male to Female)**

Part Number	Dimension	L1	L2	L3	Z1	Z2	Z3	Pack QTY	Box QTY	Weight (kg) per Pack
1004-0806-K65	1/2-3/8	25.0			7.5			5	100	0.042
1004-1008-K65	5/8-1/2	28.5			7.5			5	100	0.064
1004-1006-K65	5/8-3/8	29.0			9.5			5	100	0.062
1004-1210-K65	3/4-5/8	32.0			7.0			5	100	0.094
1004-1208-K65	3/4-1/2	32.0			9.0			5	100	0.101
1004-1206-K65	3/4-3/8	32.0			13.5			5	100	0.104
1004-1412-K65	7/8-3/4	35.0			8.0			5	100	0.139
1004-1406-K65	7/8-3/8	46.0			21.5			5	100	0.168
1004-1410-K65	7/8-5/8	38.5			10.5			5	100	0.158
1004-1814-K65	1.1/8-7/8	43.5			10.5			5	100	0.288
1004-1810-K65	1.1/8-5/8	46.0			18.0			5	100	0.304
1004-2214-K65	1.3/8 - 7/8	43.0			13.0			1	60	
1004-2218-K65	1.3/8-1.1/8	48.0			10.5			1	60	0.107
1004-2622-K65	1.5/8-1.3/8	52.5			10.5			1	60	0.138



**K65 Copper Couplings - Straight Coupling**

Part Number	Dimension	L1	L2	L3	Z1	Z2	Z3	Pack QTY	Box QTY	Weight (kg) per Pack
1009-0606-K65	3/8	23.0			7.1			5	100	0.024
1009-0808-K65	1/2	27.0			8.0			5	100	0.042
1009-1010-K65	5/8	32.0			9.0			5	100	0.090
1009-1212-K65	3/4	37.0			10.0			5	100	0.140
1009-1414-K65	7/8	43.0			10.0			5	100	0.215
1009-1818-K65	1.1/8	45.0			12.0			5	100	0.380
1009-2222-K65	1.3/8	56.0			14.0			1	60	0.141
1009-2626-K65	1.5/8	57.0			15.0			1	30	0.200



**K65 CopperEnd Cap**

Part Number	Dimension	L1	L2	L3	Z1	Z2	Z3	Pack QTY	Box QTY	Weight (kg) per Pack
1120-06-K65	3/8							5	100	0.018
1120-08-K65	1/2	12.6			3.1			5	100	0.025
1120-10-K65	5/8	14.9			3.4			5	100	0.048
1120-12-K65	3/4	18.7			5.2			5	100	0.079
1120-14-K65	7/8	22.5			6.0			5	100	0.121
1120-18-K65	1.1/8	23.6			7.1			5	100	0.482
1120-22-K65	1.3/8	29.3			8.3			1	60	0.097
1120-26-K65	1.5/8	30.4			9.4			1	30	0.134

