K65

K65 high strength copper alloy fittings enable simple, safe and economical installation of high pressure refrigeration applications up to 1885 psi K65 fittings are particularly suited for use with CO2 (R-744) in transcritical applications.

Operating pressure: K65 fittings are UL 207 recognized and listed, with a maximum operating pressure of 1885 psi.

Easy to identify – even after installation: K65 is readily identifiable and easy to distinguish from traditional copper due to its slightly magnetic property, the K65 and 130 bar (1885 psi) markings.

Limited warranty: When professionally installed K65 fittings are covered by a twenty five year limited warranty.

Range: Wide range of fittings from 3/8" up to 2 1/8".

Jointing: K65 has excellent processing properties that are similar to those of copper. Copper iron (EN CuFe2P CW107C, UNS C19400) tubes can be brazed to K65 fittings without any need for expensive or specialized equipment and skills required for TIG welding of stainless steel tubes.

Corrosion resistance: K65 (EN CuFe2P CW107C, UNS C19400) is immune to stress corrosion cracking and exhibits a high resistance to natural atmospheric corrosion.

Certification: K65 fittings are UL 207 recognized and listed, refrigerant fitting report reference SA44668, approved use for field and factory installations.

Electrical continuity: Maintains earth continuity without the need for additional earth continuity straps.

Lighter for easy handling: The lower weight of the tubes (when compared with thick wall standard copper tubes) results in a product that is easier to handle, for example, when mounting the tubes on ceilings.

Lower installed cost: K65's high mechanical strength enables tube and fittings to be made lower in weight when compared with traditional thick walled copper or stainless steel. This is supported by traditional brazed jointing leading to lower installed cost and improved handling.

Quality: Conex Bänninger is an ISO 9001 quality assured company, which assures you the very best in quality.

Physical Properties	
Material composition	Fe 2.10 - 2.60%, Zn 0.05 - 0.20%, P 0.015 - 0.15%, Pb max. 0.03%, Cu balance
Thermal conductivity	>1802.7025 Btu·in/(h·ft^2 °F)
Coefficient of thermal expansion	9.7778 x 10^{-6}/°F between 32°F and 572°F
Density	556.875 lb/ft^3
Modulus of elasticity	17839.6 Ksi
Specific heat capacity	0.091955 Btu/lb·°F
Mechanical properties (annealed)	Rm min. > 43.5113 Ksi Rp0.2 max. 36.2594 Ksi A min. >25% For the calculation of the required wall thickness see VdTÜV Material Sheet 567
Operating Parameters	
Applications	Air conditioning and refrigeration in particular high pressure CO_2 (R-744) **Note:** Not for use with Ammonia (R-717) nor Acetylene
Maximum operating pressure	1885 psi / 130 bar / 13 MPa at 302°F / 150°C **Note:** Other pressure ranges for tubes are available
Burst pressure >3 x maximum operating and abnormal pressure ISO 5149-2, EN 378-2.	5656 psi / 390 bar / 39 MPa
UL 207 recognized and listed continuous operating temperature	250°F / 121°C
Operating temperature range	-320°F to 302°F / -196°C to 150°C
Tube compatibility	K65 fittings are compatible with tubes manufactured from copper iron alloy EN CuFe2P CW107C, UNS C19400 with the external dimensions and tolerances conforming to ASTM B280 and ASTM B88

Note: For detailed technical information on the jointing and fabrication properties of K65 please contact Conex Bänninger Technical Department, technical@ibpgroup.com

Standards, Specifications and Certifications

- ASTM B88 - 20 Standard Specification for Seamless Copper Water Tube.
- ASTM B280 - 20 Standard Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service.
- ASME B31.3 - Process Piping.
- ASME B31.5 - Refrigeration Piping and Heat Transfer Components.
- ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings.
- ASHRAE 15 - Safety Standard for Refrigeration Systems, compliant.
- ISO 5149-2, EN378-2 5.3.2.2.3 Strength pressure test, compliant.
- K65 fittings are UL 207 recognized and listed, refrigerant fitting report reference SA44668, approved use for field and factory installations.

*Federal, state and local regulations, codes of practice and bylaws governing the installation must be adhered, during the selection of the tubes and fittings for different applications.

K65

Assembly preparation:

1. Check sizes

- Ensure the tube and fitting sizes are compatible.

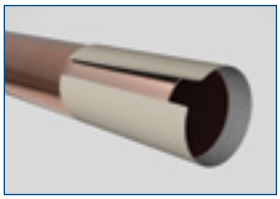
2. Cut to length

- Cut the tube end square, an electric tube cutter is recommended.
- Check the tube has retained its shape and is damage free.

3. Deburr the tube end

- Deburr the inside, and outside of the tube.

4. Clean the tube end



- Clean the tube end using a cleaning pad.
- Tube ends must be free from oxidation, dirt and debris.

5. Mark insertion depth

- Mark the correct insertion depth on the tube.
- The mark will be used as a visual aid prior to brazing.

To braze K65 fittings to K65 tubes:

1. Fully insert tube

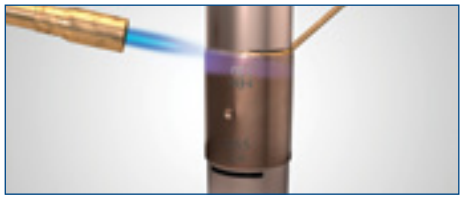
- Insert the tube fully into the socket to ensure joint integrity.
- Use the insertion depth mark as a guide.

2. Apply heat evenly

- Apply heat, keeping the flame moving to ensure that parent metals are evenly heated to a cherry-red color.

Note: A suitable inert gas such as oxygen free nitrogen (OFN) should be passed through the pipework during the brazing process to prevent the buildup of oxides or scale on the inner surface of the tube.

3. Braze Joint



- Touch a brazing rod, strip or wire to the joint mouth and melt in the flame.
- Filler metal is drawn into the fitting socket by capillary action.
- A continuous fillet of filler metal will be visible around the joint.
- To aid development of the fillet, the flame should be kept slightly ahead of the point of the filler metal.

4. Allow joint to cool

- Once brazing is complete, heating should be discontinued.
- During cooling, do not move or twist the components.

Using a flux coated brazing rod:

2a. Apply heat and flux

- Apply heat, keep the flame moving, apply flux from the outside of the rod. Be careful to avoid localized overheating which may melt the base metal and burn a hole through the tube.
- At the correct temperature, the flux should be clear and flow over the joint area. The parent metals should show a cherry-red color.

Note: A suitable inert gas such as oxygen free nitrogen (OFN) should be passed through the pipework during the brazing process to prevent the buildup of oxides or scale on the inner surface of the tube.

4a. Remove flux residue

- Flux residue must be removed so the joint can be properly inspected, pressure and leak tested (eliminate early life failures), eliminate risk of corrosion through hygroscopic action and allow any protective coatings to adhere to the base metal.
- Clean the outside of the joint(s) with a wet cloth, or remove flux residue using an abrasive pad.

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