



## Selecting The Right Tube for the Job

### Advantages of Copper Tube

High-strength, corrosion resistant, smooth-bore copper plumbing tube is the leading choice, by far, of modern contractors for plumbing and heating installations in all kinds of residential and commercial buildings. There are seven primary reasons for this popularity.

#### 1. Copper resists corrosion.

Excellent resistance to corrosion and scaling assures long trouble-free service with copper which, in turn, means satisfied customers.

#### 2. Copper is lightweight.

Copper tube does not require the heavy thickness of ferrous or threaded pipes of the same internal diameter. This means copper costs less to transport, handles more easily and, when installed, takes less space.

#### 3. Copper is formable.

Because copper tube can be readily bent and formed, it is frequently possible to eliminate elbows and joints. Smooth bends permit the tube to follow contours and corners of any angle. With soft temper tube, particularly when used for renovation or modernization projects, much less wall and ceiling space is needed.

#### 4. Copper is easy to join.

Copper tube can be joined with capillary fittings. These fittings save material and make smooth, neat, strong and leak proof joints. No extra thickness or weight is necessary to compensate for material removed by threading.

#### 5. Copper is safe.

Copper tube will not burn or support combustion and decompose to toxic gases. Therefore, it will not carry fire through floors, walls and ceilings.

#### 6. Copper is dependable.

Copper tube is manufactured to well- defined

## Easy "flux free" jointing of copper tube

Strong, leak-tight connections can easily be made in copper tube systems by brazing with "filler metals", a technique used extensively in plumbing, refrigeration, airconditioning, fire protection and mechanical services installations.

The most popular of these filler metals is "silver brazing alloy" (silver solder), an alloy of silver (Ag); copper (Cu); and phosphorus (P). These "silver solders" melt at a temperature range of 640°C to 750°C.

In Australia for example, the Australian National Plumbing Code stipulates a nominal silver (Ag) content of 2% and brazing sticks are usually colour coded canary yellow for ease of identification. If this type of silver brazing rod is used for "copper to copper" joints, then flux is not required. Please check with your local building service authorities as requirements for minimum silver contents in brazing alloys may vary from country to country.

**Kembla Tube & Fittings** can provide a full range of "Kembla" brand copper "capillary" fittings and accessories which are completely compatible with "Kembla" copper tube.

## Brazing In Six Easy Steps



**1.** Cut the tube ends square, deburr, and if soiled or excessive oxide has built up, clean the surface with a light grade emery tape or wire brush.



**2.** Push the tube tightly into the fitting or the expanded end of the other tube and apply heat. Brazing torches fuelled with air-acetylene, propane-oxygen or oxyacetylene torches are all suitable.



**3.** Apply heat uniformly to both tube and fitting, by moving the torch around to ensure even heating before adding the silver solder.



**4.** As the heated area gradually changes colour to a bright red, apply silver solder by lightly brushing the tip of the stick into the shoulder of the fitting. If sufficient heat is being applied, the solder should melt on contact and flow into the capillary space between the tube and the fitting. Keep a cherry red colour, not a bright red. As the heat is applied evenly around the joint, the molten brazing alloy will be automatically drawn in by "capillary action". Care should be taken not to over heat the tube.



**5.** To complete the joint, an even build-up of solder should be **just** visible around the shoulder of the fitting. Remove the heat (taking care not to disturb the joint) until the molten brazing alloy solidifies to a tan black colour (approx. 10-15 seconds) After brazing is completed, the joints are normally left to cool in the air. However, if necessary the joints may be quenched in water or cooled with a wet rag.

composition standards and marked with permanent identification so you know exactly what it is and who made it.

### 7. Copper is economical.

The combination of easy handling, forming, and joining permits savings in installation time, material and overall costs. Long-term performance reliability and wide code acceptance make copper the ideal cost-effective piping material.

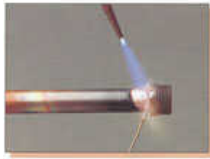


**6.** To braze an upwards vertical joint follow the same procedures, although more heat should be concentrated on the fitting than the tube. This will draw the molten brazing alloy upwards into the capillary gap.

### Brazing Copper Tube to Brass and other Copper Alloys



**1.** These combinations of materials require the use of a non-aggressive, water soluble flux. Using a brush or a clean rag apply a small amount of flux to the end of the tube and to the inside surface of the fitting. Avoid overloading and spilling flux inside the tube itself as the residue **needs** to be removed on completion of the joint.



**2.** The procedures for these joints are essentially the same as for Copper to Copper jointing, only that more heat should initially be concentrated on the brass or copper-alloy fitting to bring it to temperature. Take care not to overheat the fitting. Dull red colour is sufficient.

