



Plastics Covered and Chrome-Plated Copper

Plastics covered copper tube

Plastics covered copper tube has many uses in plumbing and heating systems and is specified in EN 13349. It comprises either half hard (R250 condition) or hard (R290 condition) straight lengths, or soft condition (R220) coiled copper tube, to EN 1057 covered with either Low Density Polyethylene or Polyvinyl chloride. The complete impermeability of copper tube and the external protection of the plastics covering means that water supply pipes can pass through contaminated ground without compromising the quality of the water. Where solid floor or wall construction is encountered, plastics covered tube can be installed in the structure in accordance with the Water Regulations, either buried in the walls or in the screed (with few or no joints) by using coiled soft copper tube, which is available in lengths up to 50m.

The plastics covering is formed around the copper without a seam, this provides a reliable continuous protective coating. The covering is available in either solid or castellated pattern, see Figure 1. The castellated pattern gives a number of advantages: noise transmission is reduced, some lateral expansion can be

accommodated and a lower surface temperature than that of the fluid being transported. This can be particularly useful on jobs where low surface temperature heat emitters are specified.

As well as providing a tube suitable for buried services in corrosive environments, the plastics covering can be colour coded to aid fluid identification: blue or green for water, yellow ochre for fuel gases and white as a neutral colour for other services, such as central heating lines.

Bending plastics covered copper tube

Normal internal bending springs can be used to support the tube walls for hand bending, and formers and guides are also available that accommodate the increased overall tube diameter to enable plastics covered tube to be machine bent easily using standard techniques. The suitability of tooling depends on the size and temper of the tube to be manipulated. Machine bending on castellated covered tube is not recommended above 15mm. For detailed advice consult the relevant tube manufacturer's literature.

Joining plastics covered copper tube

Whether using capillary, compression, push-fit or press fittings, the tube should be cut with a pipe cutter (or with a fine tooth hacksaw) and then deburred both inside and outside as necessary.

When joining using capillary fittings, the plastics covering should be slit lengthways with a sharp knife and folded back about 100 to 150mm, see Figure 2. When heating, care should be taken not to allow the flame of the blowtorch to come into contact with the plastics covering. It is recommended that the end of the plastic and part of the exposed copper be wrapped with a wet rag, to prevent over-heating and possible damage. As usual, when soldering capillary fittings, the use of excess flux should be avoided. Flux the outside surface of the tube only (not the inside of the fitting), twist the tube slightly as the fitting is pushed on to it, and remove any residual flux both to prevent unsightly stains, or in extreme cases corrosion of the pipework, which could occur if the excess flux were to run down the tube and into the spaces between the copper and the castellated plastics covering.

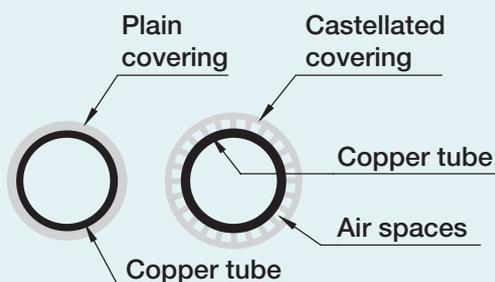


Figure 1

Fold back covering and protect with a wet cloth whilst capillary soldering

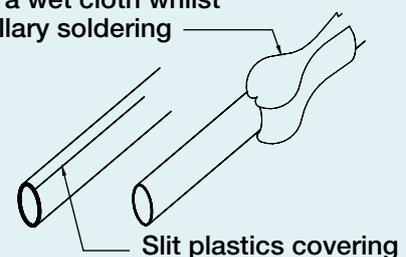


Figure 2

When using compression fittings the plastics covering should be cut all round and removed, see Figure 3. This is to permit entry of the copper tube up to the tube stop in the body of the fitting; and, for manipulative (type B) fittings, for the tube end to be flared. Do not slit the covering lengthwise when using compression, push-fit or press fittings as this may create a lengthwise score along the copper's surface and this could prevent the 'O' ring from making a complete seal.

When jointing is complete it is essential that any cut and folded plastics coverings are returned to their original positions and the lengthways cut and any exposed tube and fitting are carefully and completely protected by spirally wrapping the joint with self-adhesive

generally half hard copper; R250, to EN 1057 - chrome plated in accordance with EN ISO 1456, usually to Service Condition 2. Matching chrome plated capillary, compression, push-fit and press fittings are also available. To maintain the decorative finish of the product the copper tube is not always engraved. As chromium cannot be directly electrodeposited on to copper with satisfactory adhesion, a preparatory layer (10µm nominal thickness) of nickel is deposited before the finishing layer of chromium (0.3µm) is applied.

Bending chrome plated copper tube

Chrome plated tubes are suitable for cold bending in the 'as supplied' condition using appropriately sized springs or

former and guide should also be clean and unmarked by scratches or dents, otherwise surface marks will occur when the tube is bent.

Capillary jointing chrome plated copper tube

It is essential to remove the chrome plating in order to solder capillary fittings. This is not an easy task as care must be taken not to remove too much metal; otherwise the capillary gap may become too large for a leak-tight joint to be made. The most effective tool to use is a fine-toothed flat file. Carefully file off the chrome until bare copper is visible all the way round the tube for the full insertion depth of the fitting. The remainder of the jointing process is the same as for plain tube and capillary fittings except that a damp rag should be wrapped around the tubes close to the fitting so that the heat of the blowtorch flame does not damage the chrome plating.

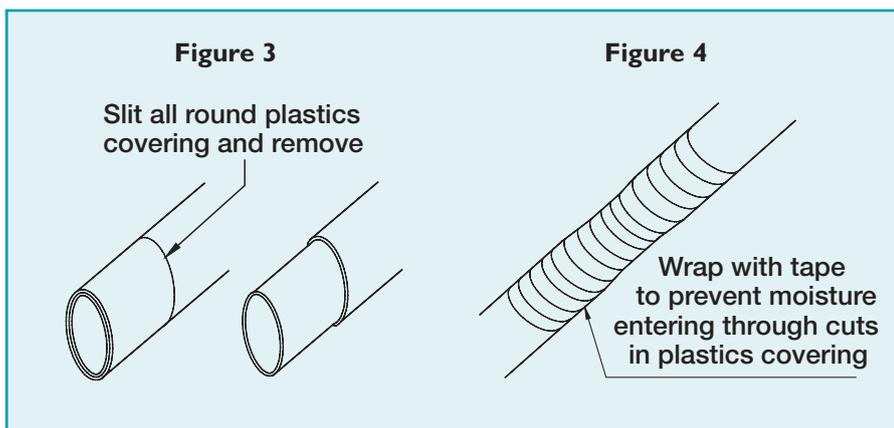
Compression jointing chrome plated copper tube

When making hand-tightened compression joints with chrome plated tubes, the relatively hard nature of the chrome plating, compared to plain copper tube, means that it is necessary to increase the torque (pressure) used when tightening the fitting with spanners to ensure a sound joint.

Push-fit fittings with chrome plated copper tube

It is sometimes necessary to use a special scribing tool to create a scored mark in the correct position all around the tube, see Figure 6. This is to enable the grab ring to grip effectively on to the tube.

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polyethylene or PVC waterproof tape, see Figure 4.

Moisture should be prevented from entering the channels in castellated plastics coverings at positions where the covering has been terminated. Particular care should be taken to prevent run-off water from fresh concrete (concrete latency water) from entering the spaces as this can corrode or crack copper. Moisture can be prevented from entering the gap by the application of a suitable waterproof adhesive plastic tape over the last 25mm or so of plastics covering and a similar length of the immediately adjacent bare copper tube, see Figure 5.

Chrome plated copper tube

Chrome plated tube is usually used on surface fixed applications where a decorative finish is required. It is

bending machine formers and guides. Chrome plated tube must not be annealed as the heating process will damage the finish. When using a bending machine, care should be taken not to damage the chrome surface, by ensuring that the equipment used is in good condition. A lubricant (thin oil) can be used on the former and guide to ease bending. The inside surfaces of both the

