



CONSTRUCTION INDUSTRY COUNCIL
建造業議會

REFERENCE MATERIALS ON CONNECTING COPPER PIPES



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Disclaimer

Whilst reasonable efforts have been made to ensure the accuracy of the information contained in this publication, the Construction Industry Council nevertheless would encourage readers to seek appropriate independent advice from their professional advisers where possible and readers should not treat or rely on this publication as a substitute for such professional advice for taking any relevant actions.

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REFERENCE MATERIALS ON CONNECTING COPPER PIPES

Preface

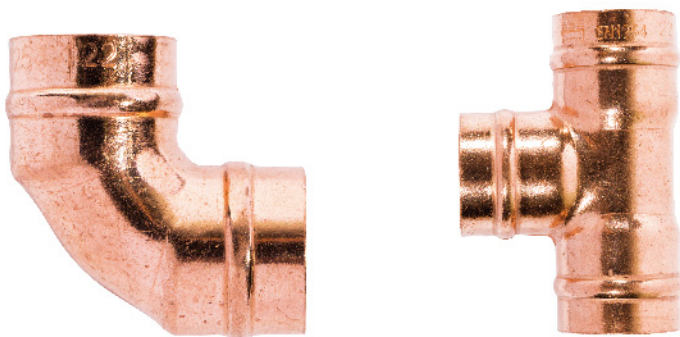
The Construction Industry Council (CIC) is committed to seeking continuous improvement in all aspects of the construction industry in Hong Kong. To achieve this aim, the CIC forms Committees, Task Forces and other forums to review specific areas of work with the intention of producing Alerts, Reference Materials, Guidelines and Codes of Conduct to assist participants in the industry to strive for excellence.

Reference Materials for adopting standards or methodologies in such ways that are generally regarded by the industry as good practices. The CIC recommends the adoption of these Reference Materials by industry stakeholders where appropriate.

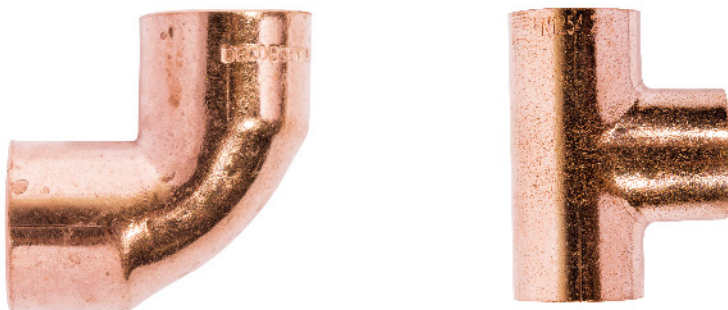
It is recommended that all plumbing practitioners when carrying out soldering should consider the safe and reliable installation of the drinking water system, and follow the relevant British Standard and European Norm in selection of materials. Relevant materials should have General Acceptance (G.A.) issued by the Water Supplies Department.



- ① A copper tube with insulation (above) and a copper tube without insulation (below)



- ② Integral ring soft solder fittings - no addition of solder wire will be required during installation



- ② Capillary fittings - addition of solder wire will be required during installation

1. Use copper tube that complies with BS EN 1057 specification under British Standard and European Norm.

2. Copper tube installation – Fittings

Copper tube fittings must comply with BS EN 1254 specification. It is recommended to use integral ring soft solder fittings because no solder wire is needed.

3. Copper tube installation - Copper tube soldering materials

(A) Water-based Ammonia-free flux (commonly known as resin) should be used.



▲ Water-based Ammonia-free flux (resin)

Note : Please follow the manufacturer's recommendations when use.

(B) Solder wire used in soft soldering must be lead-free and complies with BS EN ISO 9453 specification.



▲ Lead-free solder wire

Note : Plumbing practitioners should use suitable personal protection equipment such as gloves when soldering (including the pre-soldering preparatory work). It should be noted that flux is generally acidic and direct contact of flux with skin should be avoided.

4. Steps for copper tube installation - Soldering

Step 1

Use a cutter or hand saw to cut the tube into the desired length and ensure that it is cut at right angle. Use a reamer or a fine file to remove burrs in the tube.

Step 2

Carefully inspect all fittings for defect or damage before installation. Clean the end surface of the tube and the internal jointing part of the fitting with steel cotton or emery cloth to ensure that no oxide remains at the jointing surface.

Step 3

Use a clean brush to smear a thin layer of flux (commonly known as resin) evenly onto the end surface of the tube and, where recommended by the manufacturer, the whole internal soldering surface of the fitting (Note). Avoid using excessive flux. Then, fit the fitting completely into the end of the tube to prepare for soldering. Remove any excessive flux by a clean cloth.

Note : The application of flux should follow the manufacturer's recommendations. Some manufacturers recommend application of flux on the end surface of the tube only while other recommend application of the flux to the internal surface of the fitting as well.

Step

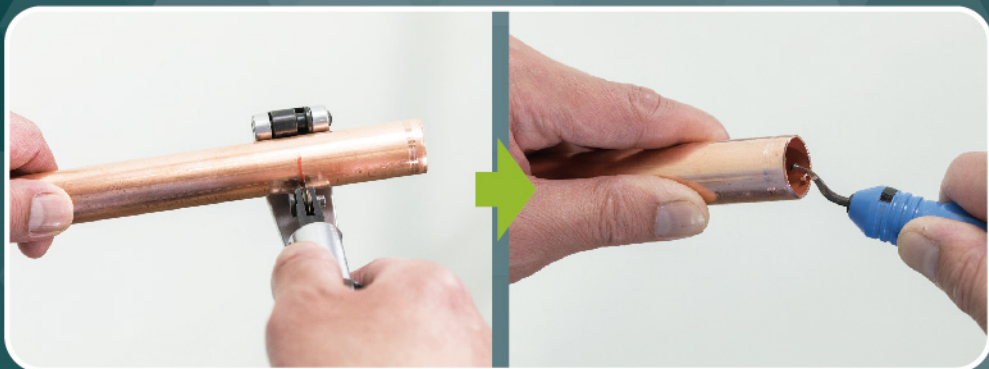
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Step

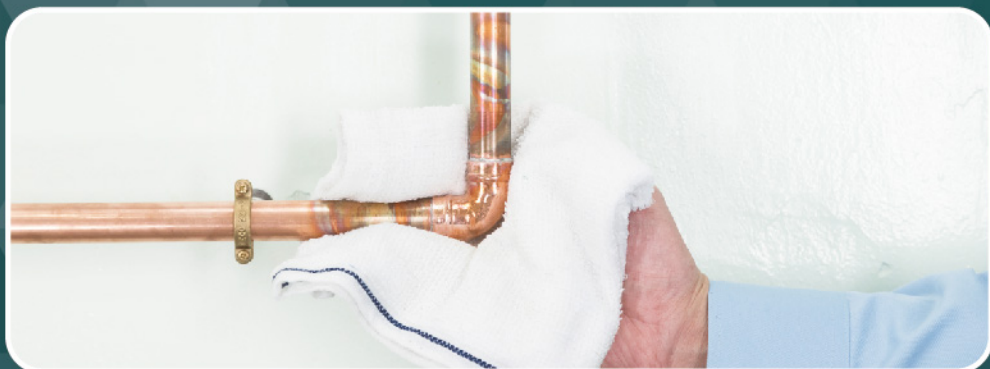
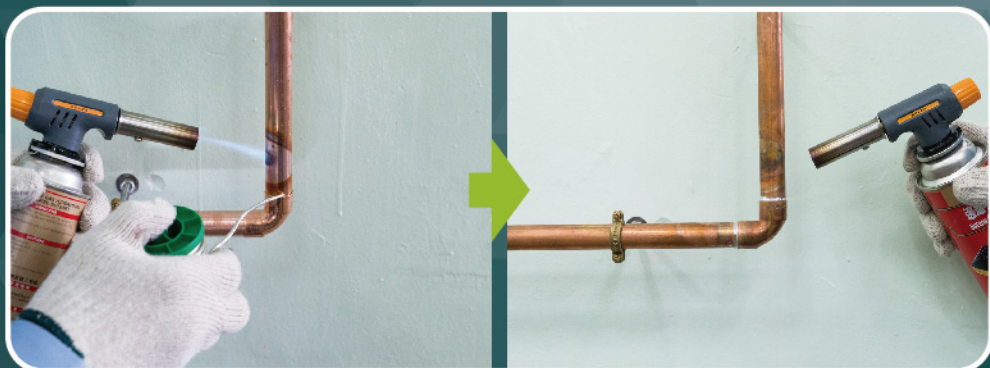
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Step

3



Note : Please follow the manufacturer's recommendation when use.



Step
4A

Step 4

Tube and fitting should be properly assembled and supported before heating. Heat the tube and fitting to a right temperature with a blowburner.

(A) Integral ring soft solder fittings

No extra solder is needed. Stop heating when the joint is properly heated and solder melted and flowed to the edge of the joint.

(B) Capillary fittings

Move the soldering material (lead-free solder wire) to the joint and melt it. The soldering material permeates into the joint through capillarity. Stop heating when the joint is fully-filled.

Step
4B

Step 5

After removing from flames, the soldering material will turn from a shiny liquid state into a matte solid state after cooling down. Clean the remaining flux by a wet towel.

Note : After completing soldering of copper pipe, thorough flushing of the pipe should be carried out immediately to remove flux residue or other debris. The strainers at the water taps shall be removed during the flushing of pipes.

Step
5

5. Use swabs for instant test to examine whether the material at the joint contains any lead after completion of soldering.



Related Standard:

Information about water supply pipes and fittings with valid General Acceptance (“G.A.”) from the Water Supplies Department is available at the following website:

<https://www.wsd.gov.hk/en/plumbing-engineering/pipes-and-fittings-to-be-used-in-inside-service-or/index.html>

BS EN 1057:2006 + A1:2010

Copper and copper alloys - Seamless, round copper tubes for water and gas in sanitary and heating applications

BS EN 1254-1:1998

Copper and copper alloys - Plumbing fittings. Fittings with ends for capillary soldering or capillary brazing to copper tubes

BS EN ISO 9453:2014

Soft solder alloys. Chemical compositions and forms



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