

Knowledge Domain: Plumbing
Unit: Leaking
Skill: Melting tube

Tools and Parts Required:

- 1) Plastic tube with leaks
- 2) Matches and a candle, soldering iron, or other heat source

Introduction

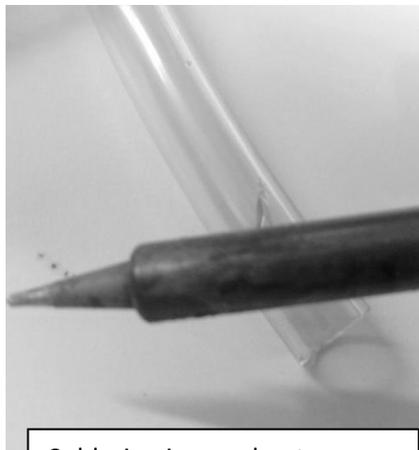
Some small tubing leaks can be repaired by melting the tubing. High heat melts small sections of certain kinds of plastic and rubber tubing. The melted plastic is transferred to cover the leak. The melted tubing then sets and becomes sealed. The melting tube method insures that the leak is repaired with the same material as the tube.

Example

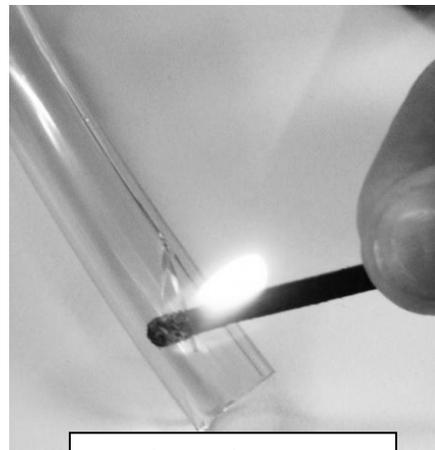
Below are pictures showing a leak in a plastic tube and the melting process.



Leak in a plastic tube



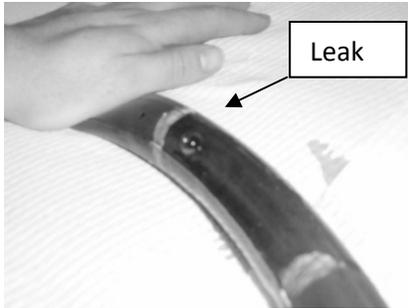
Soldering iron as heat source



Matches as heat source

Identification and Diagnosis

If a medical device with tubing is not working properly, there may be leaks. Refer to the skill *Plumbing-Leaking-Finding Holes*. Rub the tube with soapy water. Blow air through one end of the tube. Bubbles will form where there is a leak.



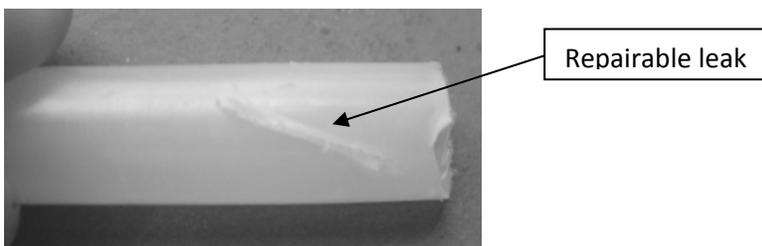
When to use the melting tube method:

- Use the melting tube method only if the tubing is rubber or plastic. Some types of rubber and plastic tubing will not melt easily. The melting method will not work for tubes that will not melt easily
- Use the melting tube method if you do not have access to epoxy, super glue or electrical tape.
- Use the melting tube method if you cannot cut the tube to eliminate the leak.
- Use the melting tube method if you do not want to add another material to the tube.
- Use this method for small leaks. This method may not properly seal large leaks.
- NEVER use the melting tube method if the surrounding material is flammable.

Procedure

A soldering iron is a convenient heat source because there is no open flame. Do not touch the soldering iron or heat source directly to the tube. Melting rubber or plastic can release dangerous fumes. Work in a well-ventilated area to avoid breathing in the fumes.

1. Heat can harm a variety of materials. Verify that the heat will not have an adverse effect on the material. Cut off a 1-inch piece from the end of your tubing. Practice the following procedure with the 1-inch piece of tubing. Only continue if you are certain that melting will not ruin the tubing. If the surrounding material is flammable, do not continue.
2. Identify the leak you wish to repair.

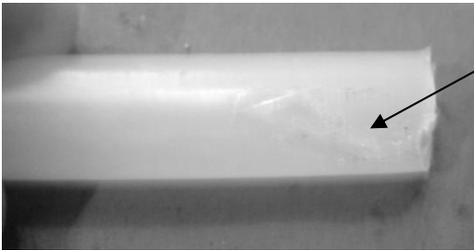


3. Use your fingers to pinch the leak closed. Hold the heat source over the section of the tube with the leak. Never directly touch the heat source to the tube. Hold heat source safely near the tube.



NEVER touch the heat source to the tube. Hold heat source safely near the tube.

4. Hold the tube and the heat source steady until you see the tube melting significantly. Remove the heat source. Continue using your fingers to apply pressure to the sides of the tube. Pinch the tube with your fingers for at least more two minutes. The melted tubing should be mostly cooled by then.



Sealed leak

5. After melting, the plastic or rubber will appear distorted. Allow the tube to set. The leak should be sealed.

Exercise

Your instructor will give you plastic tubing that leaks. The object may be a piece of medical equipment from your hospital. Use the melting tube method to repair the leaks. Use caution while working with heat. Allow ample time for the tubing to cool after melting.

Your instructor must verify your work before you continue.

Preventative Maintenance and Calibration

Look for small rips and leaks in the tubing of a medical device. Melting can be used to fix leaks which are in certain plastic and rubber tubes. Melting can repair small leaks before they become large.

Always calibrate every medical device before returning it to use.