

Knowledge Domain: Plumbing

Unit: Leaking

Skill: Epoxy

Tools and Parts Required:

- 1) Jar
- 2) Oversized lid
- 3) Epoxy
- 4) Rubber tube
- 5) Soapy water
- 6) Safety goggles
- 7) Latex gloves
- 8) Scrap stick to mix epoxy
- 9) Bucket
- 10) Toilet or tissue paper

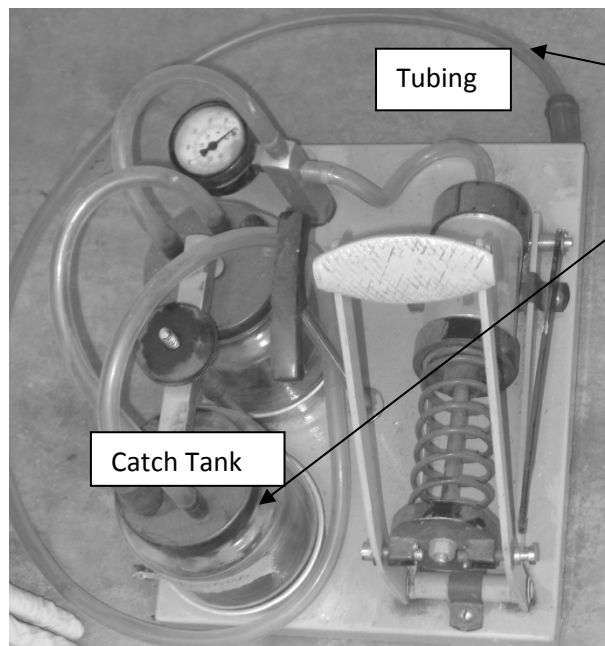
Introduction

Epoxy is very strong glue. Epoxy adheres well to steel, plastic, wood, and ceramics. Epoxy is two liquids that must be mixed. Epoxy must be used immediately after mixing. Epoxy does not weaken in water.

Leaks are common problems in suction machines. Sometimes the lid of the collection jar is too large. If the lid of the collection jar is too large the tank will not be air tight and the machine will lose suction. Sometimes there are leaks in the tubing. Air escapes through these leaks and the machine will lose suction. Epoxy can be used to fix both types of leaks. Epoxy can be used to fix leaks on many medical devices.

Example

Below is a picture of a suction machine.



Common location for leaks:

1. Tubing: Rub soapy water over entire tubing. Look for bubbles. Bubbles indicate a leak.
2. Under the lid: Verify that air is not escaping between the lid and the collection jar. Verify that the lid fits tightly on the tank.

Identification and Diagnosis

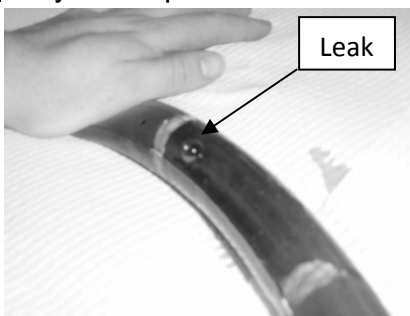
Use epoxy if the leak cannot be fixed using rubber patches, superglue, or electrical tape. Use epoxy if the leak cannot be fixed by cutting or melting the tube. Epoxy works on tubes that carry water (epoxy does not weaken in water).

If a suction machine is not working properly, leaks are usually the problem.

Lids: If you suspect a leak between the jar lid and the collection jar:

- 1) Tighten the jar lid as much as possible.
- 2) Place a piece of toilet or tissue paper entirely around the jar lid. Hold the ends of the toilet paper together. Turn on the suction pump. If the paper is sucked inward, there is a leak.
- 3) Submerge the jar into a bucket of water. Do not submerge the ends of any tubing connected to the jar. If bubbles rise to the surface, there is a leak

Tubing: If you suspect a leak in the tubing:



- 1) Rub soapy water over entire tubing.
- 2) Look for bubbles. Bubbles indicate a leak. Indicate and mark the locations of all the leaks.

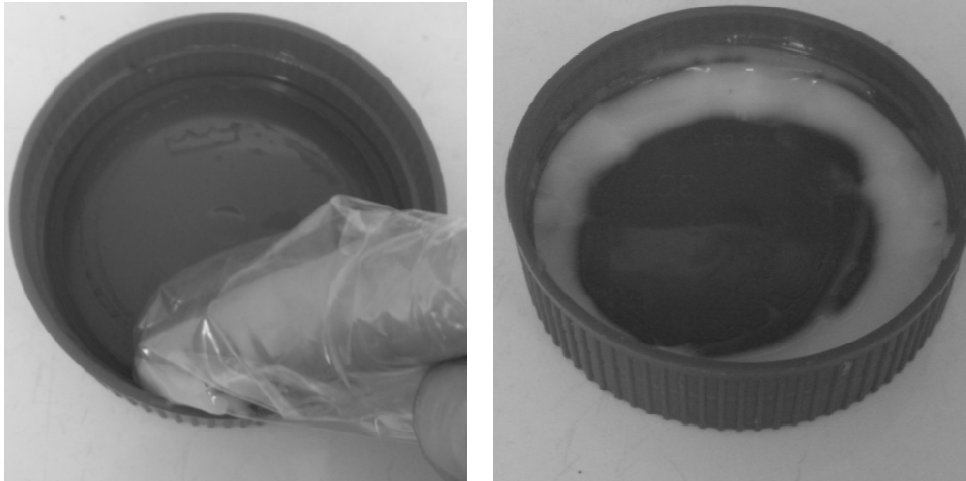
Cracks: Epoxy can also fill cracks in jars and plastic containers.

Procedure

1. Wear safety goggles and gloves when working with epoxy.
 - The fumes can be dangerous. Avoid touching epoxy to skin.
 - If your skin contacts epoxy: Clean skin with alcohol-based hand sanitizer or vinegar. Rub hand sanitizer or vinegar on affected area. Wipe hand sanitizer or vinegar from skin with a towel.
2. Follow the directions on the epoxy label. Mix epoxy on a piece of scrap paper. Use a scrap piece of metal or wood to mix the two liquids. Mix the two liquids thoroughly.

3. Use a gloved hand to transfer the epoxy to the leak or crack.

Leaking or oversized Lids: Place the epoxy along the circumference of the lid. If the lid is extremely loose, use a thick layer of epoxy. If the lid is slightly loose, use less epoxy.



DO NOT put the jar lid on the jar at this time, or the lid will not be removable.

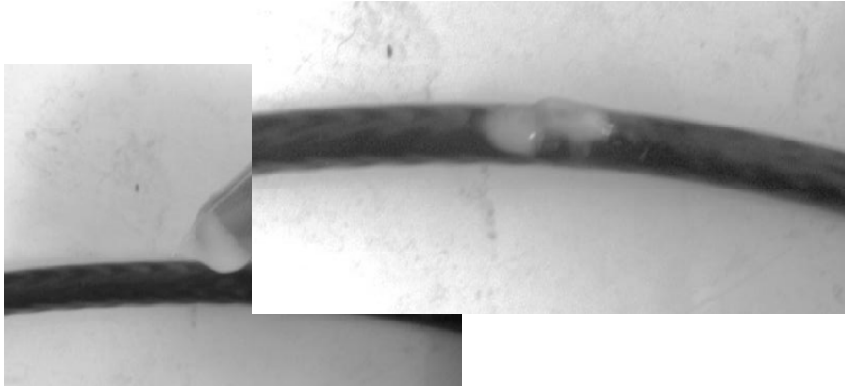
Caution: Suction machine collection jars must be emptied and washed regularly. The goal is to create an airtight seal when the jar lid is closed. However, the jar lid must be removable. If you are using epoxy on a suction machine jar lid, do not create a permanent seal between the jar and lid.

Read the epoxy label to find the required cure time. Let the lid dry for the required cure time. The typical cure time is approximately 24 hours.

After the cure time has elapsed, place the lid on the jar. Turn the jar upside down. Notice the oversized lid remains firmly on the jar.

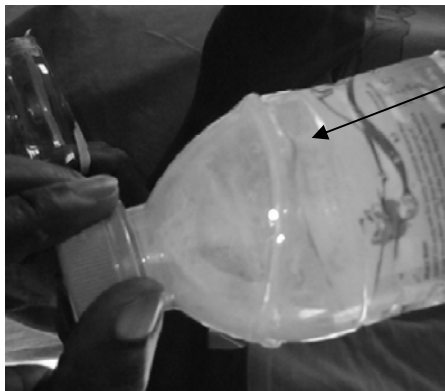


Tubing: Apply epoxy over and around the leak.



Read the epoxy label to find the required cure time. Let the tube dry for the required cure time. The typical cure time is approximately 24 hours. Do not pump water through the tube until the epoxy is cured.

Cracks: Apply epoxy over and around the crack. Read the epoxy label to find the required cure time. Let the tube dry for the required cure time. The typical cure time is approximately 24 hours. Do not disturb the item until the epoxy is cured.



A sealed crack from a water bottle. Epoxy was used to seal the crack.

Exercise

Your instructor will give you some or all of the below:

- A jar with an oversized or leaking lid.
- A water bottle with a crack.
- A cracked tubing

Test for the leaks with the instructions above. Use epoxy to repair the leaks.

Your instructor must verify your work before you continue.

Preventative Maintenance and Calibration

Verify that the leak has been completely repaired. Look for and repair leaks in suction machines and other medical devices.

Epoxy can be used to seal cracks before the object breaks. You may need to enlarge small cracks to help epoxy adhere to the object.

Always calibrate every medical device before returning it to use.