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## Soxhlet Distillation Apparatus #SOXHLET3

### Warning:

- **Not a toy; use only in a laboratory or educational setting.**
- **California Proposition 65 Warning: This product can expose you to chemicals including lead, which are known to the State of California to cause cancer, birth defects, or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).**

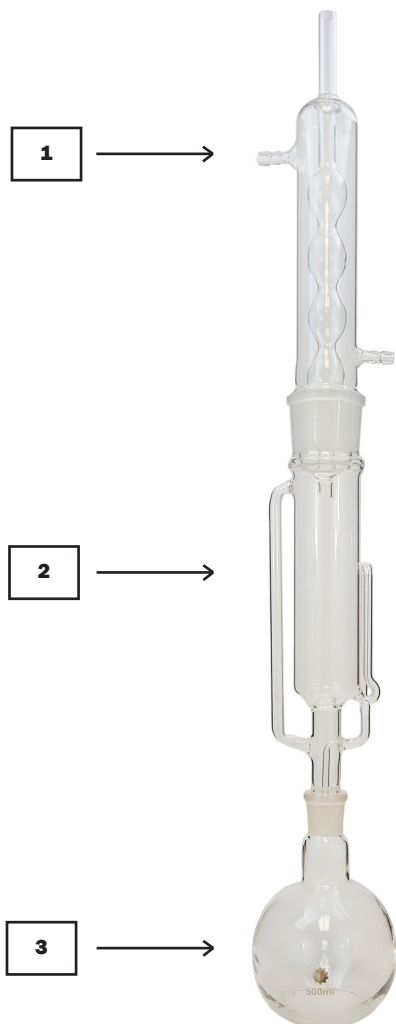


### Introduction

The Soxhlet distillation apparatus, invented in 1879 by Franz von Soxhlet, is a very efficient tool for dissolving a solid compound using a small amount of solvent. It is able to continuously recycle a small amount of solvent as it dissolves any solid compound with limited solubility. Since this extractor recycles its own solvent via its siphon mechanism, it can run for extended time periods with little active management.

### Components

Our Soxhlet apparatus comes with three components. Additional parts are required but are not included. All parts are explained below:



1. **Alihn Condenser** – This section of the apparatus allows for boiled solvent to condense and fall into the extraction chamber. Its side arms are for connecting to a coolant pump (not included).
2. **Soxhlet Extractor** – The extractor holds a thimble (not included) filled with the compound you are dissolving. Solvent steam will travel up the straight arm into the condenser. Once the solvent condenses and fills the chamber past the bend of the curved arm, its siphon will drain the chamber and restart the process.
3. **Flat-Bottom Boiling Flask, 500ml** – This flask holds the solvent. It is heated up with a constant temperature using a heating mantle (not included).
4. **Not included** – This apparatus requires a **thimble, a coolant pump (with tubing), a support stand, and a heating mantle** to function. It is also recommended to use joint clips to keep it properly held together.

**(Note:** The thimbles you buy should fit in the chamber snugly and come just up above the bend in the siphon arm. The extraction chamber is 1.95” (~50mm) in diameter, and the siphon arm is roughly 4” (~101mm) tall.)

## How to Use

Soxhlet extraction is a fairly simple process, though it does require some understanding of organic chemistry to assure that the correct solvent is used for the material you are working with. The following instructions cover only assembly and general use.

1. Obtain a thimble for your extraction (use the note at the bottom of the front page for sizing information). Fill it with the compound you will be dissolving. Often times, you will grind your substance to a fine powder using a mortar and pestle to improve the efficiency of the extraction. Do not overfill.
2. Fill your flask with solvent. (**Note:** When the Soxhlet is empty and has no compound or thimble in it, the siphoning mechanism works with approximately 175ml of liquid in the chamber. It is fine to have some solvent still in the flask when the siphon fills, but all excess solvent will need to be evaporated away at the end of the extraction, so be aware of how much you are using.)
3. Place your flask in a heating mantle.
4. Connect the Soxhlet extractor to the top of your flask, and then connect your condenser to the top of the Soxhlet. Secure the apparatus to your support stand.
5. Turn your heating mantle on and let your solvent boil. Once your solvent has evaporated into the condenser, it will condense and fall into the Soxhlet. The Soxhlet will fill until the solvent level goes over the top of the siphon arm. Once the siphon engages, it will empty the solvent-compound mixture into the the flask. The solvent in the flask will begin to boil again and the cycle will start over.
6. Let the apparatus run for as long as necessary to fully dissolve the compound you are extracting. You can run this process for hours or even days without any direct management. It is recommended to shut off the apparatus when no lab technician is present just because of the inherent dangers of leaving water and a machine (in the case of the coolant pump) beside each other without at least passive observation. If your extraction calls for a length of time that can't be achieved in one session, it is okay to turn your apparatus off and resume your extraction the next day.
7. Once you have completed as many cycles as needed to dissolve your compound, your extraction results will be contained in the flask. Use whichever method of removing your dissolved compound from the flask that you are comfortable with.

