



Purpose

The purpose of this SOP is to provide basic instruction in the proper operation of the Tuttnauer tabletop autoclave located on the third floor of the Health Sciences Building.

Materials

1. Printer paper
2. Mild soap, damp cloth, or sponge
3. Autoclave pouch or non-woven wrapping material
4. Tray
5. PPE (lab coat, eye protection, heat-insulated gloves, closed-toe shoes)
6. Distilled water

Safety Precautions

1. NEVER autoclave flammable, reactive, corrosive, toxic, or radioactive materials.
2. Do NOT firmly seal caps of liquids. Pressure can build up, and glassware may explode in the autoclave or upon opening the autoclave.
3. ALWAYS place materials in a tray. This will prevent spills from reaching the drain.
4. ALWAYS wear PPE when working with the autoclave.
5. Do NOT attempt to open the door until the cycle is complete and the temperature and pressure have returned to a safe range.
6. Upon completion of the cycle, unscrew the door closing mechanism as far as it will go, but do not move it to the side. This will allow the door to open about three-quarters of an inch.
7. Allow the autoclaved load to stand for 10 minutes before removing. This will allow steam to clear and trapped air to escape from hot liquids, reducing burn risk.
8. Do not agitate containers of super-heated liquids or remove caps before unloading.
9. Allow autoclaved materials to cool before transporting.
10. In the event of a spill, allow the autoclave and materials to cool before attempting cleanup.

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Cycles

The autoclave has three cycles (unwrapped goods, wrapped goods, liquids):

Table 1

Cycle	Description	Load Type
Unwrapped Goods	This is the most basic sterilization cycle. Steam displaces air in the chamber by gravity (i.e., without mechanical assistance) through a drain port.	Glassware, unwrapped goods, utensils
Wrapped Goods	Air is mechanically removed from the chamber and the load through a series of vacuum and pressure pulses. This allows the steam to penetrate porous areas of the load that could not otherwise be reached with simple gravity displacement.	Wrapped goods, packs, porous material, autoclavable lab waste
Liquids	A gravity cycle with a slower exhaust to minimize boil-over	Media, LB broth, water, other liquids

Recommended Cycle Times

Table 2

Total Sterilization Time				
Cycle	Temperature	Cold Start	Hot Start	Dry Time
Unwrapped Goods	134°C	32 min	23 min	15 min
Wrapped Goods	134°C	36 min	27 min	15 min
Liquids	134°C	45 min	35 min	N/A

Methods

1. Check the water reservoir for the appropriate water level.
 - A. Ensure the drain valve is in a closed position.
 - B. Remove the water reservoir cover.
 - C. **Use distilled water only.** Pour distilled water into the reservoir through the opening on top of the autoclave until it reaches the base of the safety valve holder. **Do not under any circumstances fill the reservoir any higher than the base of the safety valve holder.**
 - D. For proper operation, make sure the water level is above the coils of the cooling coil.
2. Place a sterilization indicator in each tray or inside each wrapped pack.
3. Load the sterilizer chamber and close the door. Make sure the door handle is hand tight.

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- A. All packages must be positioned in the chamber to allow free circulation and penetration of steam, enhance air elimination, and prevent entrapment of air or water. Do NOT overpack.
 - B. When using an autoclave pack, the plastic side should always be down.
 - C. Items capable of holding liquids should be oriented in the same direction and arranged so that any condensation will drain out.
 - D. Products capable of producing a liquid must be placed in a tray capable of holding the liquid.
4. Select the appropriate cycle type (unwrapped goods, wrapped goods, liquid).
 5. Select the appropriate cycle length.
 6. Once the cycle is complete, the end-of-cycle buzzer will sound. Open the door slowly to avoid burns from the steam. Use appropriate gloves to remove the contents.

Service and Maintenance Instructions

1. Weekly
 - A. Clean the door gasket with a mild detergent, water and a soft cloth or sponge. The gasket should be clean and smooth.
 - B. The water should be changed weekly or every 20 to 22 cycles.
 - C. The drain valve is located on the front left side of the autoclave after the door is opened.
 - I. Disconnect the electric cord to the power source
 - II. Connect a silicone hose to drain into a bucket.
 - III. Turn the drain valve counterclockwise to the open position.
 - IV. Fully drain the reservoir.
 - V. With a quart of DI water, flush out the reservoir.
 - VI. Turn the drain valve clockwise to the close position.
 - VII. Connect the electric cord to a power source.
 - VIII. Fill the reservoir with distilled water to just below the safety valve.
 - IX. Turn on the main power switch.

In the event of a problem, contact the Lab Services group (spok.labservices@wsu.edu or 509-358-7621).