



# Procedures for Using Steam Autoclaves



QUESTIONS: Contact DRS, 217-333-2755, for additional information.

## CHOOSE PROPER OPERATING CONDITIONS:

### MAINTENANCE & CARE:

#### Check the Pressure:

- Check all pressure gauges.
- Jacket pressure gauge should be a minimum of 15 psi (refer to manufacturers' instructions for maximum psi).

#### Use Sterilization Indicators

- Visual indicators, e.g., chemical/tape indicators, measure one or more physical conditions of the autoclave cycle.
- Mechanical indicators record the time-temperature profile attained during a cycle.
- Biological indicators, i.e., spore vials, are the only approved way to prove sterility.

### NOTIFY FACILITIES SUPPORT WHEN A PROBLEM OCCURS:

- No steam.
- Valves leaking.
- Door gasket deterioration.
- Jacket pressure below 15 psi.
- Temperature not reaching 121°C (250°F).
- Erratic temperature or pressure during cycle.
- Steam escapes from around door during cycle.
- Water on floor or in chamber after a cycle.
- Articles very wet after a fast exhaust or dry cycle.
- Excessive steam in area during cycle or after opening door.

- Sterilization will occur only when the conditions of time, temperature, pressure, and humidity have been met.
- Incorrect selection of time or exhaust cycle may damage the autoclave, cause liquid to boil over, or bottles to break.
- Proper use of autoclave will minimize the chance of serious injury.

Items	Biological Waste (Gravity Cycle)	Liquids (Liquid Cycle)	Dry Items (Gravity Cycle)	Glassware (Gravity Cycle)
Preparation	Open the bag >2", Place in tray, Place indicator if needed	Loosen caps or use a vented closure, Fill containers no more than 75% capacity	<b>Fabrics</b> Wrap; <b>Instruments:</b> Clean, dry, lay in pan	<b>Dirty:</b> Place in middle of the pan; <b>Clean:</b> wash, rinse, wrap
Placement in Autoclave	In the center	Upright in pan	<b>Fabrics:</b> Separated, on edge; <b>Instruments:</b> Flat	<b>Dirty:</b> In detergent and pan; <b>Clean:</b> On side or inverted
Temperature	121°C	121°C	121°C	121°C
Treatment Time in Minutes	60-120 min. depending on load size and packing density	22 min. for volumes <100mL; 40 min. for volumes >100mL	30-60 min.	30-60 min.
Exhaust Cycle	Slow exhaust	Slow exhaust	Fast exhaust and dry	<b>Dirty:</b> Slow exhaust; <b>Clean:</b> Fast/dry
Notes:	Avoid puncturing bags. Overbag and dispose of properly.	Hot bottles may explode. Let cool before moving.	Check reference for proper packaging methods	Glassware with cracks or deep scratches may crack

### CAUTION:

- **NEVER AUTOCLAVE FLAMMABLE, REACTIVE, CORROSIVE, TOXIC or RADIOACTIVE MATERIALS, e.g., bleach.**
- Materials that melt (plastic lab wear) at  $\geq 121^\circ\text{C}$  will block chamber exhaust drain if not placed in a shallow autoclave pan able to withstand that temperature.
- Use caution when increasing autoclave temperature to  $135^\circ\text{C}$  because plastics (including some plastic pans) melt at this temperature, causing difficult clean-up and damage to temperature sensors.
- Always wear safety glasses, goggles, or face shield, lab coat or apron, and heat-protective non-asbestos gloves when opening door or removing item(s) from autoclave.
- Do not mix loads that require different exposure times and exhaust.
- Open door only after chamber pressure returns to zero. Leave door open for several minutes to allow pressure to equalize and for materials to cool.
- Open door slowly. Beware of rush of steam or water.

### DECONTAMINATING BIOHAZARDOUS WASTE BAGS:

- Use autoclavable, high strength polymer bags imprinted with chemical indicator (if possible).
- Add approximately 250 mL water to bag before closing and transporting to autoclave area.
- Place bag in a polypropylene or stainless tray before autoclaving.
- Open the bag at least 2" to allow steam to enter.
- When complete, the sterilization indicators must show adequate decontamination before disposal as municipal solid waste.
- Repeat cycle if sterilization indicators do not show evidence of sterilization.
- Overbag biohazardous waste bag with an opaque trash bag before placing in the regular trash.

### Reminders

- Store biohazardous waste in a closed leak-proof container.
- Never allow waste to accumulate in the lab.
- Never leave waste unattended.
- Clean up leaks and spills with a suitable disinfectant.

**Reference:** "Using the Gravity Displacement Steam Autoclave in the Biomedical Laboratory"  
DHHS/PHS/HHI/DS