Procedures for Using Steam Autoclaves

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

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.

CHOOSE PROPER OPERATING CONDITIONS:

- 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	**Fabrics** Wrap; **Instruments:** Clean, dry, lay in pan	**Dirty:** Place in middle of the pan; **Clean:** wash, rinse, wrap
Placement in Autoclave	In the center	Upright in pan	**Fabrics:** Separated, on edge; **Instruments:** Flat	**Dirty:** In detergent and pan; **Clean:** 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	**Dirty:** Slow exhaust; **Clean:** 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 ≥ 121°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°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/HIH/DS