

Proper Procedures for Using Steam Autoclaves

MAINTENANCE & CARE:

Check the Pressure

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

Use Sterilization Indicators

- **Spore testing (biological indicators) is the only approved way to ensure sterility.**
- Mechanical recorder/indicators record the time-temperature profile attained during a cycle.
- Visual indicators chemically measure one or more physical conditions of the autoclave cycle.

NOTIFY FACILITIES SUPPORT WHEN A PROBLEM OCCURS:

- No steam.
- Valves leaking.
- Door gasket deterioration.
- Jacket pressure below 15 psi.
- Temperature not reaching 250°F (121°C).
- 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 only result 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 break bottles.
- Proper use of autoclave will minimize the chance of serious injury.

ITEM(S)	PREPARATION	PLACEMENT	TREATMENT TIME
Glassware^α	Dirty: Place in suitable pans on side or inverted.	Dirty: Detergent and water in pan.	Dirty: 30 minutes on slow exhaust.
	Clean: Wash, rinse, wrap.	Clean: On side or inverted.	Clean: 30 minutes fast exhaust and dry cycle.
Dry Items^β	Fabrics: Wrap.	Fabrics: Separated, on edge.	30-60 minutes with fast exhaust and dry cycle.
	Instruments: Clean, dry, lay in pan, wrap.	Instruments: Flat.	
Liquids^γ	Loosen caps or use vented closures.	Upright.	Test tubes: 30 minutes.
	Fill no more than 75% capacity.		Erlenmeyer flasks: 40 minutes.
	Use type 1 borosilicate glass.		Slow exhaust for liquids.
Autoclave Bags^δ	Place in suitable pan.	In pan or other appropriate container.	50 minutes on slow exhaust.
	Include biological indicator to ensure sterility.		

^α Check manufacturer's recommendations for proper packaging methods.
^β Glassware with cracks or deep scratches may break.
^γ Hot bottles may explode. Cool before using.
^δ Avoid puncturing bags. Dispose of waste properly.

CAUTION:

1. Never autoclave **FLAMMABLE, REACTIVE, CORROSIVE, TOXIC** or **RADIOACTIVE MATERIALS**.
2. 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.
3. Open door slowly. Beware of rush of steam.
4. 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.
5. Do not mix loads which require different exposure times and exhaust.
6. Materials that will melt (plastic lab wear) and block chamber exhaust drain should be placed in a shallow stainless steel autoclave pan.

DECONTAMINATING AUTOCLAVE BAGS:

- Use appropriate autoclave bags:
 - Use autoclavable, high strength polymer bags imprinted with process indicator (if possible).
- **Add approximately 250 mL water to bag before closing and transporting to autoclave area.**
- Place bag in pan before autoclaving.
- When complete, the process indicator must show adequate decontamination before disposal as municipal solid waste.
- Repeat cycle if process indicator does not show evidence of sterilization.
- See the **UNH Hazardous Waste Management Plan** for additional disposal information.

- ★ Never allow waste to accumulate in the lab.
- ★ Never leave waste unattended in hallways, etc.
- ★ Clean up leaks and spills with a suitable disinfectant.

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

QUESTIONS:

Contact the Office of Environmental Health and Safety (OEHS) 862-4041 for additional information.