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.

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

Atual:
- 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