

Apr 03, 2024

Version 3

Sterilizer (Consolidated SR-24A) V.3

DOI

<https://dx.doi.org/10.17504/protocols.io.6qpvr3e4zvmk/v3>

Rebecca Bennett¹, Nimalka Weerasuriya²

¹USDA-ARS; ²USDA



Nimalka Weerasuriya

USDA, Oklahoma State University

Create & collaborate more with a free account

Edit and publish protocols, collaborate in communities, share insights through comments, and track progress with run records.

Create free account

OPEN  ACCESS



DOI: <https://dx.doi.org/10.17504/protocols.io.6qpvr3e4zvmk/v3>

Protocol Citation: Rebecca Bennett, Nimalka Weerasuriya 2024. Sterilizer (Consolidated SR-24A). **protocols.io**
<https://dx.doi.org/10.17504/protocols.io.6qpvr3e4zvmk/v3> Version created by **Nimalka Weerasuriya**

License: This is an open access protocol distributed under the terms of the **Creative Commons Attribution License**, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited

Protocol status: Working

We use this protocol and it's working

Created: April 03, 2024



Last Modified: April 03, 2024

Protocol Integer ID: 97713

Keywords: autoclave, sterilizer, autoclave, sterilizer

Abstract

How to use a Sterilizer/Autoclave (general)

Guidelines

Anyone who uses the autoclave **MUST** sign a training log that will be kept by Angie Harting.

Materials

Personal Protective Equipment:

- DRY, arm-length autoclave gloves
- Safety glasses
- Closed-toe shoes
- Pants
- Neoprene overcoat or lab coat (optional)
- Face shield (optional)

Safety warnings

- ! Users **MUST** receive training, read and understand the operating manual for this piece of equipment prior to use. **Personal Protective Equipment required.**
Specific Hazards: Hot Surfaces, Hot Liquids.



Prepare Autoclave

45m

- 1 Sign up in advance to use the autoclave using the sign-up sheet next to the autoclave. Turn on using the power switch located on the right back side of the autoclave.
- 2 Turn on the jacket pressure (top right of touch screen) to get the jacket pressure up so that the autoclave cycle will take less time.
Allow autoclave ~20-30 minutes to reach jacket pressure and temperature.
- 3 Make sure that the chamber as well as the drain strainer is free of debris. **This should be done before every cycle, every day.** A clean drain strainer is essential for safe operation of the sterilizer.



Prepare Materials and Load Autoclave (Liquid and Solid)

- 4 Load chamber appropriately, **wearing DRY orange autoclave gloves** to protect your hands.
 1. Trash must be in autoclave bags. Do NOT fill more than $\frac{3}{4}$ full!
 2. Appropriate secondary containers are **stainless steel** or **aluminum trays** and **Nalgene bins**. Choose the deeper Nalgene bins if you are autoclaving tall items, though you may need to add ~1" of roH₂O to the bottom of the container to ensure even distribution of heat.
- 4.1
 1. **You MUST use secondary containment if autoclaving media with AGAR or anything else that will make a mess in the chamber (e.g. bags of soil, used media plates, potentially heat-labile plastic).**
 2. Secondary containment is not necessary for other items but may help in moving multiple smaller items in and out of the autoclave more easily.
 3. Be certain that any plastics you are sterilizing are autoclavable. If you are uncertain, use secondary containment. Do not hesitate to ask questions.
- 4.2 **Loosen any screw caps** before starting sterilization. If caps are tight, pressure may build inside the container, risking **explosion** or container **deformation**.
- 4.3 **Label items with autoclave tape**, if you haven't already done so, to indicate that the item has been autoclaved. Adding a date on the autoclave tape can be helpful.
- 5 **CONSIDER EASE AND SAFETY WHEN LOADING AND REMOVING ITEMS into the chamber. For example, do not load tall flasks with liquids on the top shelf where there is little space.** Remove the shelf if you are sterilizing extra-tall items.
- 6 Liquids:



1. Do not sterilize liquid in the same secondary container as dry material. Liquids may boil over during the cycle and wet the dry material.
2. **Never sterilize any volatile chemicals, pesticides, alcohols, bleach, chlorides, or any hazardous materials!**

7 Solids:

1. Biohazardous waste bags should be twist-tied to allow for air escape.
2. The bag should be rotated to have the opening at the bottom to allow for any liquid to drain into the bins and not into the autoclave.

Check Autoclave Settings

- 8 Close the door and first turn the single long handle clockwise to extend the latching arms into the door. Then turn the three-handled wheel approximately 4 times from the completely open position, using the green tape as a guide for the number of turns.
 1. Steam will exit from the door if not tightened sufficiently.
 2. Tighten securely but not excessively; **overtightening the wheel will damage the door.**
- 9 The temperature should be set at  121 °C for most applications. If it is not at  121 °C or you need to use a different temperature, ask for assistance.
- 10 Conserve water and energy by utilizing as much autoclave capacity whenever possible. Plan ahead and check with others about autoclaving needs before turning on the machine. **However, do not compromise SAFETY.**
- 11 If sterilizing agar media, check that the "Liquid" setting is on. This ensures that the chamber pressure will be reduced slowly to minimize boil-over of liquids. If you wish to dry your items, the "Dry" cycle may be used.
- 12 Check that the autoclave is set for 20 minutes. This is sufficient time to sterilize most materials, so use 20 minutes unless you're given specific instructions to use another duration.
- 13 Press "Start" to start the cycle. Set your personal timer to ~60 minutes if you are doing a fluid cycle because it will take approximately that much time for the autoclave to return to atmospheric pressure. Set your timer 90 minutes if using a "Dry" cycle. It is a good idea to check back after 5-10 minutes to make sure that the autoclave door is completely shut.



1h 30m

Removing Items from Autoclave and Shutting Down



- 14 The monitor screen will indicate when the sterilization cycle is finished. You must wear closed-toe shoes. **PUT ON THE PERSONAL PROTECTIVE EQUIPMENT** on the cart or hanging on the cart or the wall by the autoclave: **arm-length, DRY autoclave gloves, and neoprene apron or lab coat.**
- 15 **Open door slowly and only partly. Stand away from the autoclave** and allow a few seconds for steam to escape before opening completely.
- 15.1 ***If water leaks from the front of the sterilizer, DO NOT open the door. Contact service personnel.***
- 16 Carefully remove sterilized materials and place onto a cart to cool. Move the cart back to the lab and use the "HOT" sign to warn lab mates from burning themselves.
- 17 If there are spills and debris has littered the sterilizer, allow autoclave to cool fully before cleaning. Clean it thoroughly with water, sponges, scouring pads, and paper towels before further use. **Never use bleach or any other chlorides to clean the sterilizer** – these are corrosive and will damage the autoclave.



Protocol references

From R. Bennett, Sterilizer (Consolidated SR-24A). Anyone who uses the autoclave MUST sign a training log that will be kept by Angie Harting.