

lechyd a Diogelwch – Health and Safety

LABORATORY SAFETY – SAFE USE OF AUTOCLAVES

This Information Sheet provides guidance on using autoclaves safely in a laboratory environment.

An autoclave is a common laboratory machine that uses high pressure steam to sterilise laboratory equipment / items. They destroy micro-organisms, and are the most dependable systems available for the decontamination of biological waste and the sterilisation of laboratory glassware, media, and reagents.

There are many different types at the University, but they all pose similar hazards including physical hazards (e.g. heat, steam and pressure) and biological / chemical hazards.

Autoclave Hazards

The following list details common risks associated with the use of autoclaves:



- Burns from steam.
- Burns from hot parts of the autoclave.
- Burns from containers used to hold items being autoclaved.
- Bio hazards.
- Chemical hazards.
- Manual handling, when lifting items in / out of the autoclave.
- Fire and explosion.

Before you Start

The following guidance should ensure your health and safety when autoclaving items / equipment:

General

- **DO NOT** allow biohazard waste to accumulate. It is good practice to have clearly defined areas for autoclaved and non-autoclaved wastes within the autoclave room.



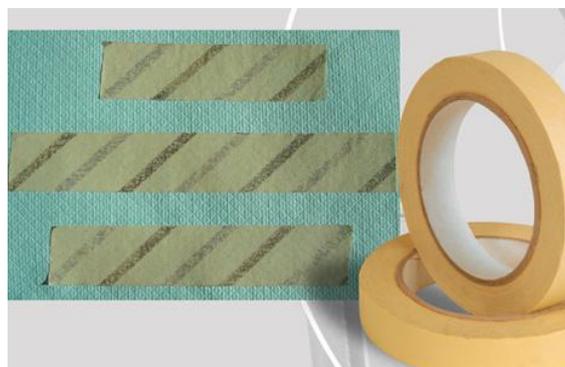
- **NEVER** operate autoclaves unless you are trained and authorised to do so.
- **ALWAYS** refer to the COSHH and Risk Assessments before autoclaving an item.
- **NEVER** autoclave flammable or toxic materials.



- **ALWAYS** wear a lab coat, goggles and heat resistant gloves, keeping your sleeves tucked into the gloves to stop steam going up your sleeves.



- Label all wastes clearly.
- To check the autoclave is working, tape a piece of autoclave tape to some items being autoclaved. Black lines will appear if everything is ok (see below).
- To protect your back, don't autoclave too much in one go. Make sure you can carry items and lift them into and out of the autoclave easily. If you are struggling, reduce the amount being autoclaved or ask for help.



Autoclave Tape

Opening the Autoclave - Before and After Use

- Always make sure the chamber pressure has returned to zero before opening the door.
- Stand away from the door and open it slowly to avoid a rush of steam.
- Wait 5 minutes after opening door before removing liquids so they don't burn you.



Must read '0'

Wait at least **5** minutes

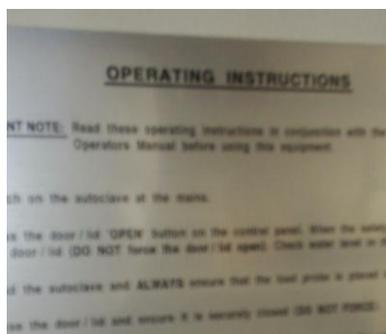


Loading and Operating the Autoclave

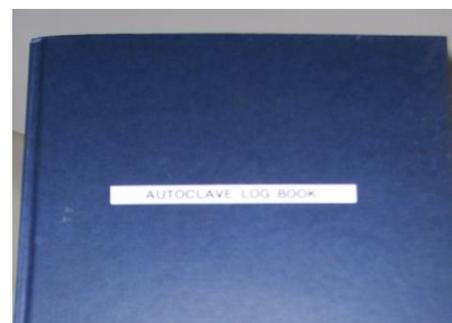


- Liquid wastes must be transported to the autoclave in appropriate leak proof containers.
 - Use suitable bags to contain solid wastes. Double bags should be used.
 - Do not overfill containers and loosen tops to allow steam to penetrate.
 - Leave space between items to allow steam to circulate.
 - When autoclaving petri dishes containing agar, ensure a suitable tray is used to contain any leaks. Always clean up spills of agar once the machine has cooled to prevent accumulation and damage to the machine.
- Follow 'Instructions for Use'⁽¹⁾. These should be displayed to the side. If they aren't, do not use it. Because you know how to use one autoclave, doesn't mean you know how to use another.
 - Complete the Log Book⁽²⁾ as required.

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- Be careful to select the correct autoclave cycle for the sterilisation of the waste material. **If in doubt ask!**
- **ALWAYS** make sure the autoclave lid is closed and secure before operating.



FINALLY:

- If you think there is something wrong with the autoclave, **STOP** using it, place a sign on it to ensure others don't use it and report it immediately to your Supervisor / Lab Technician.
- All autoclaves at the University are examined regularly by an external contractor. This is to ensure integrity of the structure and correct functioning of safety devices and interlocks.