

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.

Autoclaves 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 holding items being autoclaved.
- Bio hazards.
- Chemical hazards.
- Manual handling ie lifting items in and out of the autoclave.
- Fire and explosion.

## Pressure Systems

**Remember** as autoclaves work by creating steam under pressure they are classed as a 'pressure system'. This means the Pressure Systems Safety Regulations (PSSR) apply.

In response to the requirements of PSSR, the University has developed the [Safe Use of Pressure Systems Policy](#).

The following, details **a few** of the key College / Department responsibilities detailed in the Safe Use of Pressure Systems Policy:

- Notifying the University Insurance Officer of all new autoclaves.
- Confirming with the Insurance Officer that the item has been added to the Pressure Systems Schedule. This to ensure ongoing formal examinations are undertaken by the University's Insurance Provider's Competent Engineer.
- Appointing a local Nominated Person to oversee arrangements to ensure the safe operation of autoclaves.
- Ensuring only competent, authorised personnel operate systems.
- Ensuring systems are inspected, tested and maintained by a Technical Person as required.

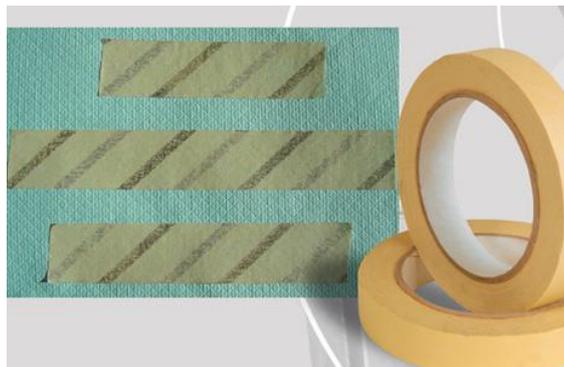
## General Autoclave Guidance



- **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 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. Keep sleeves tucked into the gloves to stop steam going up them.



- Label all wastes clearly.
- To check the autoclave is working, apply a piece of 'autoclave tape' to some items. Black lines will appear if everything is ok (see below).



Autoclave Tape

- To protect your own 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.

## 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

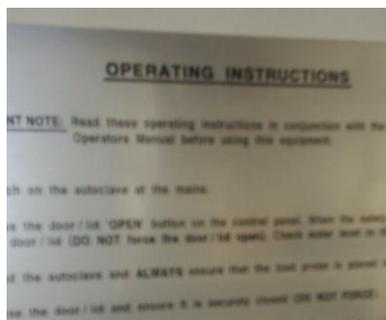


## Loading and Operating the Autoclave

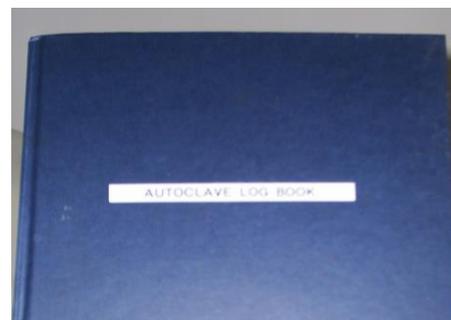
- Transport liquid wastes to the autoclave in appropriate leak proof containers.
- Use suitable bags to contain solids. Always double bag.
- Do not overfill containers and loosen tops to let steam penetrate.
- Leave space between items to allow steam to circulate.
- When autoclaving petri dishes containing agar, use a suitable tray to contain any leaks.
- Clean up agar spills once the machine has cooled to prevent accumulation and damage.
- Follow 'Instructions for Use'<sup>(1)</sup> these should be displayed to the side. If they aren't, do not use the autoclave. Knowing how to use one autoclave, doesn't mean you know how to use another.
- Complete the Log Book<sup>(2)</sup> as required.



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- 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.
- **AFTER** a cycle, check the dial reads '0' and wait at least 5 minutes to allow items to cool.

**FINALLY:**



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