

USE OF AUTOCLAVES

Safety:

Always wear autoclave gloves when adding or removing anything from the autoclave.

Always open autoclave doors several inches to allow release of any remaining steam before fully opening.

Procedure:

- *Place all flasks and bottles in an autoclave resistant container.* This prevents spills that can clog the autoclave drain and interfere with proper functioning of the autoclave.
- *Allow sufficient time for sterilization.* The entire solution must be exposed to an adequate temperature (i.e. steam at 121°C) for about 15 min for sterilization. This requires much longer than the time needed for the autoclave chamber to reach this temperature, especially if the volume of solution is large or if cold solutions are placed in the autoclave. For example, 25 min after the chamber reaches 121°C is usually sufficient for sterilization of a 400 ml solution at room temperature, but 1 hr is required for a 2 liter solution. Some rules of thumb are listed below:

Vol solution	Vol flask	Minimal autoclave time	Comments
400 ml	1000 ml Pyrex erlenmeyer	30 min	
400 ml	800 ml Borosilicate bottle	60 min	Place bottles in autoclave resistant container with about 2-3 cm water to prevent breakage
1000 ml	2000 ml Pyrex erlenmeyer	40 min	
2000 ml	4000 ml Pyrex erlenmeyer	60 min	

- *Note the chamber temperature and pressure before opening the door.* The elevated pressure in the autoclave prevents fluids from boiling. However, if the pressure is quickly released (by using the "dry cycle" on the autoclave or by opening the autoclave door before the temperature drops to below the boiling point at atmospheric pressure) the fluids will rapidly boil over and may even cause the containers to explode.

USE OF DRYING OVENS

- Always wear autoclave gloves when adding or removing anything from the drying ovens.
- Never place plastic of any type in the high temperature drying ovens. The drying ovens should only be used for pipets in metal cannisters, glassware with metal caps, or glassware with foil covers.