












SAFE OPERATION PROCEDURES FOR AUTOCLAVE


Location of Equipment	Makmal Bioteknologi, Pusat Perkhidmatan Penyelidikan & Lapangan				
Warnings					
	Hot Surfaces	Biohazard	Take care with sharps	Explosive	Manual handling
Restrictions					
	Do not autoclave flammables, oxidizing, toxic or explosive substances		Do not overfill vessels, packs or bags		
Personal Protective Equipment					
	Gloves Heat Proof	Enclosed Footwear	Lab Coat	Face Shield	
Potential Hazards	Hazard	Possible Consequences		Controls	
	Hot Surfaces & Steam	Burns		Wear PPE as determined	
	Pressure Vessel	Explosion, injury, damage to property		Follow SOP, training, yearly pressure vessel certification	
	Inadequate sterilization/ decontamination	Cross contamination of samples, accidental release of biohazard into environment		Yearly calibration, weekly performance test, autoclave tape	
	Sharp items	Injury, infection, blood loss, and even traumatic amputation		Wear PPE as determined	
Environment	Equipment must be on solid level surface, suitable lighting and ventilation and allowing sufficient room to minimize manual handling injury and injury to other lab users.				
Procedure	<ol style="list-style-type: none"> 1. Turn the power ON (Main switch – Circuit Breaker – Power ON/OFF). 2. Open the lid and pour the distilled water into the chamber until can see distilled water through the hole of heater cover. 3. Check distilled water level: <ul style="list-style-type: none"> • Exhaust bottle (in front of the unit) - between the LOW and HIGH level 				

	<ul style="list-style-type: none"> • Small exhaust bottle (at back of the unit) – should not touch the hose tip/ should keep at min 200ml <ol style="list-style-type: none"> 4. Load the substance/sample and close the lid. All items must be tagged with autoclave tape. 5. Check and select mode of operation: <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p style="text-align: center;">Mode 1: Agar Mode 2: Liquid Mode 3: Solid</p> </div> <ul style="list-style-type: none"> • Press the SET/ENT switch • Press the NEXT switch to select an item to change • Change the value using increase/decrease switches • Press SET/ENT switch to store the new value 6. Start the operation by pressing START/STOP switch. Do not attempt to open the lid while autoclave is operating. 7. Check if operation is complete (Indicated by 3 times beeping sound). 8. The lid can be opened after the pressure is 0 MPa and temperature is below <70°C. Open the lid about 1 inch to allow hot steam come out from the chamber. 9. Allow the autoclaved load to stand for 10 minutes in the chamber. This will allow steam to clear and trapped air to escape from hot liquids, reducing risk to operator. 10. Unload the substance/sample while wearing heat-insulated gloves. Place them in an area which clearly indicates the items are 'hot' until the items cool to room temperature. 11. In order to start a new cycle, please wait until the temperature is below 50 °C. 12. Drain off distilled water inside the chamber every week to keep chamber and heater in clean condition.
Emergency Procedures	<ul style="list-style-type: none"> • In case of burns, flush the area with cold running water for at least 15 minutes, cover the area with clean, non-adherent dressing and seek medical attention. • In case of biological exposure, wash skin with water/soap. • In case of biological spill, report to science officer and assist with clean up using biological spill kit.
Clean Up & Waste Disposal	<ul style="list-style-type: none"> • Clean spills immediately and leave autoclave chamber clean. Put all the autoclaved waste into black plastic bag and dispose as domestic waste.
Maintenance	<ul style="list-style-type: none"> • Yearly pressure vessel testing & calibration test, weekly monitoring, clean chamber as required. • Preventative maintenance or repair to be conducted by qualified person.

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MATERIAL PREPARATION




Loosen all lids to prevent pressure build up

All items must be tagged with autoclave tape.


Glassware must be heat-resistant borosilicate

Containers of liquid must not exceed two-thirds (2/3) full

Discarded sharps must be in a designated 'Sharp'




All items must be tagged with autoclave tape



Plastics must be heat-resistant, i.e., polycarbonate (PC), PTFE ("Teflon") and most polypropylene (PP) items.

All items must be tagged with autoclave tape.



Loose dry materials must be wrapped or bagged in steam-penetrating paper or loosely covered with aluminum foil

Glassware must be heat-resistant borosilicate

All items must be tagged with autoclave tape