

# Steam Autoclave Usage for Safety and Quality Control

### Routine Task in Care of Sterilizers

- Check jacket pressure for minimum pressure of 15 psig when operating
- Check temperature for 250°F (121°C) when operating
- Inspect drain strainer daily. Clean when blocked.

### Use Sterilization Indicators

- Mechanical recorder/indicators record the time-temperature profile attained during a cycle
- Visual indicators chemically measure one or more physical conditions of the autoclave cycle.
- Biological indicators (spore strips are the only specific indicators of sterility.
- Use indicators to determine best treatment time.

### Notify Autoclave Repair if These Troubles Persist:

- No Steam
- Valves leaking
- Door gasket deteriorated
- Jacket pressure below 15 psig
- Temperature not reaching 250°F (121°C)
- Erratic temperature or pressure during cycle.
- Steam escapes from around door during cycle.
- Water on floor or in chamber after a cycle.
- Articles very wet after a Fast Exhaust and Dry Cycle.
- Excessive steam in area during cycle or after opening door

### Choose Proper Operating Conditions

Sterilization will only result when conditions of time, temperature, pressure and humidity have been met. Incorrect selection of time of exhaust cycle may damage the autoclave, cause liquid boil-over or break bottles. Proper use of autoclave will minimize the chance of serious injury.

Typical Articles	Glassware		Dry Items		Liquids	Biohazard Bags
Preparation	Dirty	Clean	Fabrics	Instruments		
	Place in metal pans on side or inverted	Wash Rinse Wrap	Wrap* 	Clean and Dry Lay in Pan Wrap* 	Loosen caps or use a vented closure  Fill to no more than 75% capacity  Use type 1 borosilicate glass	Place in metal pan  Affix indicator if needed
Placement in Autoclave	Detergent & Water in Pan 	On side or inverted 	Separated, on edge 	Flat 	Upright in pan 	In Pan 
Treatment Time (minutes) Exhaust Cycle	30 Slow Exhaust	30-60 Fast Exhaust & Dry	30-60 Fast Exhaust & Dry	30-60 Fast Exhaust & Dry	20 min.-test tubes 40 min.-100ml Erl/flasks Slow Exhaust (Liquids)	50 Slow Exhaust
Notes	Glassware with cracks or deep scratches may break		*Check reference for proper packaging methods		Hot bottles may explode. Cool before moving	Avoid puncturing bags Dispose of waste properly

### Cautions

1. Always wear goggles or faceshield, labcoat or apron.
2. Open door slowly. Beware of rush of steam
3. Open door only after chamber pressure returns to zero. Leave door open for several minutes to allow pressure to equalize and materials to cool.
4. Do not mix loads which require different exposure time and exhaust.
5. Materials that will melt (plastic labware) and block chamber exhaust drain should be placed in a shallow stainless steel autoclave pan.

### Need Help?

General Information:  
Safety Operations and Support Branch  
496-2346

Waste Disposal Problems:  
Division of Environmental Protection  
496-7990

Reference:  
“Using the Gravity Displacement Steam Autoclave in the Biomedical Laboratory”  
DHHS/PHS/NIH/DS

### Decontaminating Medical Pathological Waste (MPW) Contained in Biohazard Autoclave Bags

Investigators should add ~250 ml water to bag before autoclaving.

Biohazard autoclave bags must indicate adequate decontamination before disposal.

- Use autoclave high strength polymer bags imprinted with process indicator.
- Attach autoclave tape if indicator is not present.
- Place bag in pan before autoclaving.
- Repeat cycle if process indicator has not changed color to show evidence of steam processing.
- See “NIH Waste Disposal Guide” calendar for additional information.

Safety Operations and Support Branch  
Division of Occupational Health and Safety  
Office of Research Services

