



Instrument Cleaning & Sterilization

Instrument Cleaning

All instruments need to be cleaned and dried prior to being sterilized. If not done immediately after rinsing, instruments should be submerged in a solution of water and neutral PH (7) detergent. For micro and delicate instruments, use manual cleaning.

- **Ultrasonic Cleaning**
 - Instruments should be processed in a cleaner for the full recommended cycle time- usually 5 to 10 minutes.
 - Place instruments in open position into the ultrasonic cleaner. Make sure that “Sharp” (scissors, knives osteotomes, etc.) blades do not touch other instruments.
 - All Instruments have to be fully submerged.
 - Do not place dissimilar metals (stainless, copper, chrome plated, etc.) in the same cleaning cycle.
 - Change solution frequently – at least as often as manufacturer recommends.
 - Rinse instruments after ultrasonic cleaning with water to remove ultrasonic cleaning solution.

- **Automatic Washer Sterilizers**
 - Follow manufacturers’ recommendations but make sure instruments are lubricated after last rinse cycle and before sterilization cycle.

- **Manual Cleaning**
 - Most instrument manufacturers recommend ultrasonic cleaning as the best and most effective way to clean surgical instruments, particularly those with hinges, locks and other moving parts. If ultrasonic cleaning is not available observe the following steps.
 - Use stiff plastic cleaning brushes (nylon, etc.)
 - Do not use steel wool or wire brushes except specially recommended stainless steel wire brushes for instruments such as bone files, or on stained areas in knurled handles.
 - Use only neutral PH (7) detergents because if not rinsed off properly low PH detergents will cause breakdown of stainless protective surface and black staining. High PH detergent will cause surface deposit of brown stain, which will also interfere with smooth operation of the instruments.
 - Brush delicate instruments carefully and, if possible, handle them totally separate from general instruments.
 - Make sure all instrument surfaces are visibly clean and free from stains and tissue.

- After scrubbing, rinse instruments thoroughly under running water. While rinsing, open and close hinged instruments to make sure the hinge areas are thoroughly rinsed out.

Sterilization Methods

Autoclaving – Dry Heat Oven

- Lubricate all instruments which have any “metal to metal” action such as scissors, hemostats, needle holders, self-retaining retractors, etc.
- Recommend surgical lubricants such as instrument milk are best. Do not use WD-40, oil or other industrial lubricants.
- Disposable paper or plastic pouches are ideal. Make sure you use a wide enough pouch (4” or wider) for instruments with ratchet locks such as needle holders and hemostats so the instrument can be sterilized in an open (unlocked) position.
- Standard Conditions – 60-120 min at 320°F/160°C (15psi)

Autoclaving Instrument Sets

- Unlock all instruments and sterilize them in an open position. Place heavy instruments on bottom of set (when two layers are required).
- Never lock an instrument during autoclaving. It will not be sterile as steam cannot reach the metal-to-metal surfaces. The instrument will develop cracks in hinge areas because of heat expansion during the autoclave cycle.
- Do not overload the autoclave chamber as pockets may form that do not permit steam penetration.
- Place towel on bottom of pan to absorb excess moisture during autoclaving. This will reduce the chances of getting “Well Packs”. Make sure the towels used in sterilization of instruments have no detergent residue and are neutral – PH (7) if immersed in water. This can be a real problem as laundries frequently use inexpensive but high PH (9-13) detergents and do not properly rinse out or neutralize those detergents in the final wash/rinse cycle. Sometimes bleaches such as Clorox are added and are not neutralized.
- CAUTION- At the end of the autoclave cycle-before the drying cycle-unlock autoclave door and open it more than a crack (about 3/4”). Then run dry cycle for the manufacturer. If the autoclave door is opened fully before the drying cycle, cold room air will rush into the chamber, causing condensation on the instruments. This will result in water stains on instruments and also cause wet packs

Unsaturated Chemical Vapor

- Time efficient, non-corrosive, items dry quickly after cycle
- Do not use closed containers
- Dry instruments or dip in special solution
- Provide adequate ventilation
- Standard Conditions - 20 min at 270°F/132°C (20-40psi)

Steam Autoclave

- Time efficient with good penetration
- Use fractionated vacuum or gravity procedure sterilizers.
- Do not use closed containers
- Use of hard water may leave deposits
- Must dry instruments thoroughly prior to handling
- Must follow AAMI/ANSI ST55 and AAMI/ANSI STB
- Manufacturer instructions on routine inspection and maintenance of sterilizer must be observed.
- Sterilizer must be cleaned on a regular basis
- Only low contaminated and deionized water (purified water) should be used.
- Sterilized items have to be completely dried after sterilization and before handling.

Minimum Cycle Times for Wrapped Instruments:

- Gravity Displacement Steam Sterilization
 - Exposure - 30 minutes at 250°F/121°C (15psi)
 - Drying Time – 30-minute minimum
- Fractionated Vacuum Steam Sterilization
 - Exposure – 4 min at 270°F/132°C
 - Drying Time – 30-minute minimum
- Dynamic-Air-Removal (Pre-Vacuum) Steam Sterilization Cycle
 - Exposure Time - 4 min at 270°F/132°C
 - Drying Time - 30-minute minimum

Restrictions

- Flash sterilization procedure must not be used
- Do not use radiation sterilization, formaldehyde sterilization, ethylene oxide sterilization, or plasma sterilization.

Bite Block Sterilization

- Silicone bite blocks may be sterilized by cold sterilization, steam autoclave, chemiclave or “dry heat” up to 500°F/260°C