Thermal disinfection

**Thermal Disinfection (e.g., Pasteurization)**

There are two disinfection methods for semi-critical devices used in health care settings – chemical disinfection and thermal disinfection.

Thermal Disinfection is a process of hot water disinfection, which is accomplished through the use of automated pasteurizers or washer disinfectors with a validated thermal disinfection cycle. The exposure time and temperature will vary with the type of thermal disinfection process. Semi-critical medical devices suitable for thermal disinfection include equipment for respiratory therapy and anaesthesia. Devices require thorough cleaning and rinsing prior to thermal disinfection. See below information from Section II.6, *Section 6, Cleaning (Decontamination) of Reusable Medical Devices*, for information about cleaning prior to thermal disinfection.

The manufacturer’s instructions for installation, operation and ongoing maintenance of thermal disinfection equipment shall be followed.

a) If a washer disinfecter is intended to provide the thermal equivalent to pasteurization, the facility shall obtain documentation from the manufacturer (or 3rd party) to confirm that the washer disinfecter has been validated for this use according to CSA/ISO 15883 and is licensed by Health Canada;

b) For each cycle, the time, and temperature shall be monitored and recorded; and

c) The accuracy of the recording devices (for time and temperature) shall be periodically confirmed.

Following thermal disinfection, medical devices shall be handled in a manner that prevents contamination. Devices shall be transported directly from the pasteurizer/disinfector to a clean area for drying, assembly and packaging. Medical devices shall be thoroughly dried in a drying cabinet that is equipped with a high efficiency particulate air filter (HEPA) and is used exclusively for the drying of pasteurized devices.

Printed records of each cycle (i.e., temperature, time) shall be retained in accordance with the health care facility’s requirements.

**Section 6**

### C Preparation for Cleaning of Medical Devices

Once medical devices have been received in the reprocessing area, they should be disassembled and sorted. They may also require pre-treatment prior to cleaning:

a) **Disassembly** – facilitates access of the cleaning agent, disinfectant and/or sterilant to device surfaces:
   i) Devices shall be disassembled before cleaning if there is one or more removable parts, unless otherwise recommended by the manufacturer.
   ii) Follow the manufacturer’s recommendations when disassembling medical devices prior to cleaning.

b) **Sorting** – keeps medical devices that belong to a set together and streamlines the cleaning process:
   i) Sort devices into groups of like products requiring the same processes.
   ii) Segregate reusable sharps and/or delicate devices to prevent injury to personnel and damage to the device.

c) **Pre-treatment** (e.g., soak or spray) loosens soil that may remain on devices, and it makes them easier to clean:

---

1 *Best Practice Guidelines for Cleaning, Disinfection and Sterilization in Health Authorities - October 2011*  
British Columbia Ministry of Health
Thermal disinfection

i. Cleaning products should be appropriate for medical devices and approved by the device manufacturer.

ii. If detergent based products are used, ensure that they are mixed to the correct in-use dilution.

iii. Avoid prolonged soaking of devices.

iv. Do not use saline as a soaking solution as it damages some medical devices.

D. Cleaning

Cleaning shall be done manually or using mechanical cleaning machines (e.g., washer-disinfector, ultrasonic washer) after gross soil has been removed. Automated machines may increase productivity, improve cleaning effectiveness and decrease staff exposure to blood and body fluids. Manual cleaning may be required for delicate or intricate items.

Devices shall be cleaned with a detergent solution unless otherwise recommended by the device manufacturer. Selection of the detergent shall depend upon:

a. Instructions of the device manufacturer;

b. Instructions of the detergent manufacturer;

c. The type of residual soil left on the device; and

d. The water quality.

The device manufacturer’s cleaning instructions shall be followed, including specifications for detergent type, water temperature and cleaning methods. The following procedures are included in the cleaning process:

a) Manual Cleaning

- Ensure that the device to be cleaned is compatible with the chemical solutions that are being used;
- Completely submerge immersible items during the cleaning process to minimize aerosolization and to assist in cleaning;
- Remove gross soil using tools such as brushes and cloths;
- Minimize the production of aerosols when cleaning non-immersible devices;
- Clean devices that have lumens with a disposable brush, according to the manufacturer’s instructions, then manually or mechanically flush with a detergent solution and rinse with potable water; and
- Check devices with lumens for obstructions and leakage.

b) Mechanical Cleaning

Whenever possible, clean devices by mechanical means:

i) Use mechanical washers in accordance with the manufacturer’s instructions;

ii) Manually clean heavily soiled devices before mechanical cleaning if necessary;

iii) Ensure that the device to be cleaned is compatible with the mechanical cleaning equipment, cycle parameters and chemical solutions that are being used;

iv) Ultrasonic washers are strongly recommended for any semi-critical or critical medical device that has joints, crevices, lumens or other areas that are difficult to clean.

- The manufacturer’s instructions shall be followed for use and routine cleaning and maintenance of the ultrasonic washer.
- Devices shall be completely immersed in the cleaning solution/bath.
- After cleaning, devices shall be rinsed thoroughly prior to further reprocessing
Thermal disinfection

- The ultrasonic solution shall be changed at least daily or more frequently if it becomes visibly soiled or if the manufacturer’s instructions specify more frequent changes.

  v) Washer-disinfectors are strongly recommended for medical devices that can withstand mechanical cleaning, to achieve the required exposure for cleaning and to reduce potential risk to personnel. When used:

  - Washer-disinfectors shall meet the requirements of CSA and ISO 15883.
  - The manufacturer’s instructions shall be followed for the use, preventative and routine maintenance, cleaning, and calibration of the washer-disinfector.

c) Care of Cleaning Tools

  i) Follow manufacturer’s instructions for use, cleaning, disinfection, drying, and storage of cleaning tools.

  ii) Inspect brushes and other cleaning equipment for damage after each use, and discard if necessary.

  iii) The use of single-use cleaning tools is recommended. If reusable tools are used, they shall be disinfected at least daily.

d) Rinsing

  Rinsing following cleaning is necessary to remove loosened soil and residual detergent:

  i) Rinse all devices thoroughly after cleaning with water to remove residues which might react with the disinfectant/sterilant; and

  ii) Perform the final rinse of lumens of intravascular/intrathecal devices with commercially prepared sterile, pyrogen-free water (note: distilled water is not necessarily sterile or pyrogen-free).

e) Drying

  Drying is an important step that prevents dilution of chemical disinfectants which may render them ineffective and prevents microbial growth:

  i) Follow the manufacturer’s instructions for drying of the device;

  ii) Devices shall be air-dried or dried by hand with a clean, lint-free towel;

  iii) Dry lumens with compressed medical grade or HEPA-filtered air at a pressure specified by the device manufacturer. Use a regulator to control pressure; and

  iv) Dry stainless steel devices immediately after rinsing to prevent spotting.

---

1 Canadian Standards Association. CAN/CSA Z314.8-08 Decontamination of Reusable Medical Devices. Mississauga, Ont.: Canadian Standards Association; 2008.


Thermal disinfection


vi Canadian Standards Association. CAN/CSA Z314.8-08, Section 10.4. Decontamination of Reusable Medical Devices. Mississauga, Ont.: Canadian Standards Association; 2008.

vi Canadian Standards Association. CAN/CSA Z314.8-08 Decontamination of Reusable Medical Devices. Mississauga, Ont.: Canadian Standards Association; 2008.


ix Canadian Standards Association. CAN/CSA Z314.8-08 Decontamination of Reusable Medical Devices. Mississauga, Ont.: Canadian Standards Association; 2008.

x Canadian Standards Association. CAN/CSA Z314.8-08 Decontamination of Reusable Medical Devices. Mississauga, Ont.: Canadian Standards Association; 2008.

xi Association for the advancement of medical instrumentation. AAMI TIR34/Ed.2 and AAMI TIR34:2007 "Water for the Reprocessing of Medical Devices", 2007.

xii Canadian Standards Association. CAN/CSA Z314.8-08 Decontamination of Reusable Medical Devices. Mississauga, Ont.: Canadian Standards Association; 2008.