

12 Cleaning and Disinfection

12.1 Safety During Cleaning and Disinfection

CAUTION!

Improper care and cleaning of optical components

could lead to coating failure. Contaminants on the optical surfaces increase scatter off the surface and absorb light energy, creating hot spots that eventually lead to coating failure.

CAUTION!

Cleaning lenses too frequently

can damage optic surfaces.

- ▶ Clean optics only when necessary.
- ▶ Keep the protective cover on your device when not in use.

12.2 Cleaning Agents

Item	Explanation
Latex Finger Cots and Gloves	Solvents are harsh to the skin; wear protection.
Optics Cleaning Tissue	Soft, absorbent, lint-free lens tissue is best.
Swabs	Cotton swabs with wooden handles or polyester swabs with polypropylene handles are best.
Blower	Filtered dry nitrogen blown through an antistatic nozzle is best. Canned dusters also work. Bulb-type blowers and brushes must be kept clean to prevent recontamination.
Mild Soap	Neutral soap, 1% in water. Avoid perfumed, alkali, or colored soaps. Several drops of green soap (available at a pharmacy) per 100 cc of distilled water is acceptable.
Isopropyl Alcohol	Spectroscopic grade; evaporates more slowly than acetone.
Acetone	Spectroscopic grade.
Hemostats	For holding lens tissue.
Bright Light	For inspection.

12.3 Cleaning optical components

12.3.1 Brush Cleaning Method

This technique is ideal for cleaning smaller optics, including lenses, and involves holding a folded lens tissue with a hemostat to brush the surface clean.

NOTE

Edges on mounted optics

are often hard to reach.

- ▶ Wrap a lens tissue around a swab.
- ▶ Soak the covered swab in acetone.
- ▶ Brush around the edge of the lens and then across the middle using a continuous figure-eight stroke.
- ▶ Repeat if necessary.

Action

1. Fold a lens tissue so as not to touch the part of the tissue that will make contact with the optic. The fold should be about as wide as the optic.
2. Hold the tissue with hemostats parallel to and near the fold.
3. While holding the optic, using tweezers if necessary, blow off any dust.
4. Soak the tissue with acetone.
5. Brush the fold in the tissue across the surface of the optic using light pressure.
6. Repeat as necessary until the optic is clean, making sure new lens tissue is exposed with each wipe.

12.3.2 Wipe Cleaning Method

For heavier cleaning of lenses and mirrors, this method involves wiping an optic with a lens tissue by hand.

Action

1. Blow off dust.
2. Fold a lens tissue as with the brush method.
3. Apply acetone to the tissue.
4. Holding the lens tissue in your hand with the fold near the tip of your fingers, apply uniform pressure while gently wiping across the surface of the optic.
5. Repeat as necessary until the optic is clean, making sure new lens tissue is exposed with each wipe.

12.3.3 Dust Cleaning

Dust on optics can be very tightly bound by static electricity. Blowing removes some dirt; the remainder can be collected by the surface tension of a wet alcohol swab. Acetone helps promote rapid drying of the optic to eliminate streaks.

Action

1. Blow off dust.
2. If any dust remains, twist lens tissue around a swab, soak in alcohol, and wipe the optic in one direction with a gentle figure-eight motion.
3. Repeat as necessary.
4. Repeat the steps above, using acetone.

12.3.4 Cleaning Heavy Contamination

Fingerprints, oil, or water spots should be cleaned immediately. Skin acids attack coatings and glass, and can leave permanent stains. Cleaning with solvents alone tends to redistribute grime. These contaminants must be lifted from an optical surface with soap or other wetting agent. The optic is then rinsed in water and the water removed with alcohol. Acetone helps speed drying and helps eliminate streaks from forming.

Action

1. Blow off dust.
2. Using a soap-saturated lens tissue placed around a swab, wipe the optic gently in a figure-eight motion.
3. Repeat as necessary.
4. Repeat this procedure with distilled water.
5. Repeat again with alcohol.
6. Repeat once more with acetone.

12.4 Cleaning the Chin Cup and Forehead Rest

WARNING!

Strong solvents such as Acetone or Methyl Alcohol

will damage the chin cup and forehead rest.

- ▶ Use a gentler disinfectant such as isopropyl alcohol.

Action

1. Clean the chin cup and forehead rest with a disinfectant such as isopropyl alcohol.
2. If the ocular lens is splashed while cleaning the patient head mount assembly, gently wipe the front window lens (see Cleaning the Front Window Lens) with a soft lens tissue to avoid spotting.

12.5 Cleaning Peripherals and Table

Action

1. **CAUTION! Do not use any cleaning agent on the screen.** Wipe the monitor with a soft, non-linting cloth.

2. Regularly dust or wipe down the System table.