Cleaning and Disinfecting 3M Reusable Elastomeric Half and Full Facepiece Respirators following Potential Exposure to Coronaviruses

Description

During coronavirus outbreaks, some healthcare organizations may assign reusable elastomeric facepiece respirators to workers providing care for patients with suspected or confirmed cases of coronavirus. This document contains considerations related to cleaning and disinfecting facepieces that will be reused after potential exposure to coronaviruses. 3M facepieces covered in this document: 3M™ Half Facepieces 6000, 6500, 7500, and HF-800 Series and 3M™ Full Facepieces 6000 and FF-400 Series. Photos of each respirator series are shown in below.

6000 Series  6500 Series  7500 Series  HF-800 Series  6000 Series  FF-400 Series

The 2008 U.S. Centers for Disease Control and Prevention (CDC) publication Guideline for Disinfection and Sterilization in Healthcare Facilities¹ (updated May 2019) includes information on disinfecting equipment and surfaces potentially contaminated by coronaviruses. The U.S. CDC investigated many chemicals and cited several chemical germicides as being effective for coronaviruses, when used as indicated in the product user instructions. In regions outside of the United States, where EPA-registered disinfectants may be unavailable, this CDC publication will be most helpful in addition to considering all applicable local guidance for your region as it relates to disinfection for coronaviruses.

More recently, the CDC has published Interim Infection Prevention and Control Recommendations for Patients with Suspected or Confirmed Coronavirus Disease 2019 (COVID-19) in Healthcare Settings² indicating that EPA-registered, hospital-grade disinfectants are appropriate for SARS-CoV-2 in healthcare settings. The United States Environmental Protection Agency (EPA) published List N: Disinfectants for Use Against SARS-CoV-2³. It is a list of EPA’s registered antimicrobial products for use against novel coronavirus SARS-CoV-2, the cause of COVID-19, as a reference for specific disinfectants that can be used against coronaviruses. Locations in Canada may also want to refer to the Health Canada List of Hard Surface Disinfectants for COVID-19.⁴

NOTE: 3M relies on the expertise of the CDC and EPA with respect to microbiological efficacy and has not evaluated the effectiveness of these agents with regards to inactivating viruses on 3M equipment.

Filters, Cartridges, Retainers and Adapters

3M does not recommend cleaning or disinfection of filter media (e.g., disc-style filters and pre-filter pads). However, some 3M filter products have a hard-plastic case surrounding the filter media, i.e., NIOSH part numbers 7093, 7093C, 6092X, and
D8092X as well as EN (European) part numbers 603X, 609X, D809X and D903X. This hard case can be cleaned by wiping the outside surface with a damp cloth soaked in disinfecting solution until visibly wet for the appropriate contact time and then removing the disinfecting solution with a clean, water-soaked cloth and air drying. Do not allow the disinfecting solution to reach the internal filter media and do not submerge the hard-case filters in the disinfecting solution or water. Utilize the same disinfection solutions as recommended for 3M facepieces. The table below shows cleaning methods for various 3M filters.

<table>
<thead>
<tr>
<th>Image</th>
<th>Disc Filters</th>
<th>Pre-Filter Pads</th>
<th>Hardcase Filters</th>
<th>Gas/Vapor/Particulate Cartridges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Wipe outside surface as indicated in disinfecting product user instructions with damp cloth and disinfecting solution</td>
<td>X</td>
<td>X</td>
<td>✓</td>
</tr>
</tbody>
</table>

3M™ Filter Retainer 501 and D701 and 3M™ Filter Adapter 603 are hard plastic components used to attach pre-filter pads to facepieces. The 501 and 603 can be either wiped, sprayed or soaked in disinfecting solution. If the 501/603/pre-filter assembly or 501/pre-filter/cartridge assembly are to be cleaned, they can only be cleaned by wiping the outside surfaces of the 501, 603, or cartridge with a damp cloth soaked in disinfecting solution. Ensure the outside surfaces are visibly wet for the appropriate contact time and then remove the disinfecting solution with a clean, water-soaked cloth and air dry. Do not allow the disinfecting solution to reach the pre-filter and do not spray or submerge the assembly in the disinfecting solution or water. Utilize the same disinfection solutions as recommended for 3M facepieces. The table below shows cleaning methods for 3M pre-filter assemblies and components.

<table>
<thead>
<tr>
<th>Image</th>
<th>603 Filter Adapter</th>
<th>501</th>
<th>Pre-Filter Pad</th>
<th>603/501/Pre-filter Assembly</th>
<th>501/Pre-filter pad/cartridge Assembly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>603 Filter Adapter</td>
<td>501</td>
<td>Pre-Filter Pad</td>
<td>603/501/Pre-filter Assembly</td>
<td>501/Pre-filter pad/cartridge Assembly</td>
</tr>
<tr>
<td>Cleaning Method</td>
<td>Wipe, spray or soak</td>
<td>Wipe, spray or soak</td>
<td>✓</td>
<td>Wipe outside surfaces as indicated in disinfecting product user instructions with damp cloth and disinfecting solution. Do not allow disinfecting solution to reach the pre-filter.</td>
<td></td>
</tr>
</tbody>
</table>

When to Change Reusable Respirator (RR) Filters Used to Help Reduce Exposure to Airborne Biological Aerosols
Particulate filter change schedules for RR are determined by two main considerations: filter loading (clogging of the filter from captured particulates) and a facility’s infection control policy. If the RR respirator is being used to reduce exposure to airborne biological aerosols such as droplets containing viruses or bacteria, the filter will not typically load from these particles to the point that an increase in breathing resistance occurs. As a result, loading or clogging of RR filters is typically not an issue when used to help reduce exposure to biological aerosols.

In healthcare facilities, RR filter change schedules for airborne biological aerosols are primarily determined by the facility’s infection control policy. The infection control policy should be developed based on applicable national, state, and local guidelines. Most healthcare organizations develop their filter use and reuse policy based on the biological agent of concern, likelihood of the filter becoming contaminated, and potential for patient-to-patient and patient-to-worker cross-contamination. While the outside filter body of encapsulated filters can be wiped down for cleaning, do not attempt to clean the filter media inside the filter body. When changing the RR filter, follow the hygiene and infection control practices established by your employer based on the specific contaminants to which the respirator assembly has been exposed and the cleaning agent used. Dispose of the filter according to your infection control policy and all applicable requirements. Close consideration needs to be given to the policies and practices used for cleaning the RR. It is important to remember that a RR is used to filter out contaminants from the air, and therefore contaminants are concentrated on the filter/cartridge itself, and potentially on other surfaces of the RR system. Proper cleaning and maintenance instructions and considerations for RR systems can be found in the specific User Instructions for each product.

**NOTE:** The guidance in this Technical Bulletin may exceed the directions found in certain 3M facepiece User Instructions and is therefore intended only for cleaning and disinfecting the specified respirators following potential exposure to coronaviruses. Note that respirator components may experience detrimental effects over time with prolonged or extended use of disinfecting products. As discussed in the product User Instructions, users must inspect their respirator prior to each use. If you discover any signs of damage, remove the respirator from service and either replace components or replace the entire facepiece as appropriate, following the guidance in the product User Instructions.

**Respirator Facepieces**

Your facility should review this information thoroughly prior to selecting a disinfecting product for your equipment and specific application. Follow the hygiene and infection control practices established by your employer for the targeted organisms, including coronaviruses.

Please always refer to the latest information from trusted sources such as the World Health Organization (WHO), the U.S. Centers for Disease Control and Prevention (US CDC), the US Occupational Safety and Health Administration (OSHA) and the European Centres for Disease Prevention and Control (ECDC) regarding selection, use, maintenance and cleaning of personal protective equipment.

**Possible disinfection methods:**

- Sodium hypochlorite solution (at a free chlorine concentration of 5,000 ppm) with 1-minute contact time
- 70% Isopropanol solution with 1-minute contact time

**Note:** Use of IPA solution resulted in degradation of inhalation valves after ~ 20 cycles, for some 3M facepieces. Disinfecting full facepiece respirators can cause the facepiece lens to craze and appear cloudy over time. Pay close attention to these areas during inspection, for all facepieces and replace components as needed.

**If an EPA-registered disinfectant is required please consider the following:**

- 3M™ Neutral Quat Disinfectant Cleaner Concentrate 23A (EPA Reg. No. 47371-129-10350)
Cleaning and Disinfecting 3M Half and Full Facepieces

1) Cleaning is recommended after each use. Nitrile or vinyl gloves should be worn during cleaning as well as other personal protective equipment (PPE) as indicated.
2) Remove any filters or cartridges. The facepiece may be further disassembled as necessary.
3) Inspect the facepiece per the User Instructions to identify any damage or excessive wear. Replace components or the entire facepiece as necessary.
4) Clean the facepiece by immersing it in warm water not to exceed 120°F (49°C), and scrub with soft brush until clean. Add neutral detergent. Do not use cleaners containing lanolin or other oils. **NOTE:** Solvents and strong detergents may damage 3M facepieces and should not be used for cleaning.
5) Rinse thoroughly with fresh warm water.
6) Disinfect by soaking, wiping or spraying the facepiece according to the user instructions for the selected disinfectant, including usability, application and contact time. **NOTE:** Do not soak the HF-800 facepiece in disinfectant solution. The HF-800 facepiece has not been tested for compatibility with disinfection by soaking.
7) Rinse, wipe or spray the facepiece thoroughly with fresh warm water.
8) Air dry in a non-contaminated area.
9) Inspect and reassemble the respirator as described in the User Instructions.

Interim Wipe Cleaning of 3M Half and Full Facepieces

Wipe cleaning of the facepiece and hard case surrounding filter media can be considered as an interim cleaning method. This method is not to be the only method of cleaning. If gross contamination or facial oil is present, a cleaning step should be performed.

1) Follow the user instructions for the selected disinfectant, including usability, application and contact time. Wipe the interior and exterior of the facepiece including head harness as well as the hard case surrounding the filter media. Avoid getting the filter media wet.
2) Wipe all components with clean water to remove residual disinfectant.
3) Air dry or hand dry prior to next use in a non-contaminated area.
4) Inspect prior to use as described in the User Instructions.

Glossary of Terms

Below is a glossary of terms used in this document:

**Cleaning:** Removal of soil (organic and inorganic) and foreign material from objects and surfaces. This is typically accomplished with water and mechanical action. Detergents may be used to assist the process.

**Disinfection:** A process of inhibiting or destroying disease-producing microorganisms (but may not kill bacterial spores). It usually involves the use of chemicals, heat, and/or ultraviolet light and is divided into three categories: high, intermediate and low-level disinfection.

**NOTE:** Failure to remove foreign material (soil, face oils, etc.) from an object can make the disinfecting process ineffective.

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If you have any questions or concerns, please contact your local 3M representative or 3M Technical Service.

References


