

COVID-19: CLEANSING OF PERSONAL PROTECTIVE EQUIPMENT (PPE) FOR RE-USE

While demand for PPE continues to increase as a result of the COVID-19 pandemic, Ansell recognizes that it is important to consider **temporary or alternate solutions** to mitigate subsequent critical supply shortages and support the global effort to reduce the spread of the virus.

Many PPE items, specified by global agencies, as suitable to be used for protection against viruses like COVID-19 are designated Single or Limited-use; and by definition are not intended to be cleaned for re-use. Recently, consideration is being given to alternate strategies whereby PPE for COVID-19 may be cleaned and re-used. Any alternative approach should be founded on scientific evidence and, where applicable, Regulatory Guidelines to avoid a false sense of security due to ineffective PPE.

Definition of Re-usable versus Limited or Single-use PPE

Re-usable*	Limited or Single-Use
PPE that is constructed from materials which allow it to be cleaned after repeated exposure to a hazard, such that it remains suitable for continued use.	PPE for limited duration of use. To be worn until hygienic cleaning becomes necessary or contamination of a hazard has occurred, and disposal is required.

*based on CENISO/TR 11610 Protective clothing vocabulary

Remember: Always inspect PPE for defects prior to use, especially after any cleansing activity has been undertaken. After removing PPE, including protective gloves, always wash your hands.

Based on current evidence, in consultation with international experts, WHO considered the following last-resort temporary measures¹ in crisis situations to be considered independently or in combination and only where there might be serious shortages of PPE or in areas where PPE may not be available:

- 1 Extended duration of use for PPE
- 2 **Reprocessing, followed by re-use (after cleaning or decontamination/sterilization) of PPE**
- 3 Considering alternative items compared with the standards recommended by WHO

How Clean is “Clean” and what methods are available?

If you are considering an adapted approach to that which is stated in the Instructions for use of the PPE, based on WHO Guidelines, there are various factors to consider. Our expert team has prepared the following advice for those who are considering how they could clean or ‘cleansed’ their PPE for re-use, taking into consideration the potential impacts on its protective and physical performance.

NOTE:

1. ATTENTION: WHO stresses that these temporary measures should be avoided as much as possible when caring for severe or critically ill COVID-19 patients, and for patients with known co-infections of multi-drug resistant or other organisms transmitted by contact (e.g. *Klebsiella pneumoniae*) or droplets (e.g. influenza virus).

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There are several ways in which cleansing can be undertaken, each requiring separate methods and having different considerations and degrees of effectiveness. Below are the 4 types in order of effectiveness:

- 1 Sterilization → 2 Disinfecting → 3 Sanitization → 4 Cleaning



Cleaning Method	CDC Definition	Requires	Process	Effectiveness	Associated Risks
Sterilization	Bombardment of gamma radiation or EtO gas to kill organic matter by the breaking down bacterial DNA, inhibiting bacterial replication	Irradiation chamber / Access to EtO gas	Per the CDC definition	6-log reduction in microbial contamination on the PPE - reduction up to 99.9%	<ul style="list-style-type: none"> PPE made from materials incompatible with Gamma / EtO will lose mechanical and chemical properties Repeated Sterility is not a viable method of cleaning as sterility assurance cannot be guaranteed and multiple exposure to gamma radiation or EtO gas will destroy the product

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2 Disinfecting



Cleaning Method	CDC Definition	Requires	Process	Effectiveness	Associated Risks
Disinfecting	Disinfecting kills germs on surfaces or objects. Disinfecting works by using chemicals to kill germs on surfaces or objects. This process does not necessarily clean dirty surfaces, but by killing germs on a surface after cleaning, it can further lower the risk of spreading infection	Requires disinfecting agent* containing chemicals such as Sodium Hypochlorite or Hydrogen peroxide	<p>Step 1: Remove PPE using proper doffing procedure</p> <p>Step 2: Apply disinfecting agent thoroughly by spray bottle on both front and back of the PPE and allow at least 10 seconds of exposure per side</p> <p>Step 3: Allow at least 30 minutes of drying time in a well-ventilated area before reusing PPE</p> <p>When dealing with body protection ensure the zipper is fully open</p>	Reduction of up to 99.9% of microbial contamination from the surface of the PPE	<ul style="list-style-type: none"> • Due to the stronger agents involved, degradation or visible changes of the PPE may occur • Rapid drying such as tumble drying may compromise the protective properties of the PPE • Ensure it is carried out in a ventilated area far away from a flame or spark as ingredients are flammable

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3 Sanitization



Cleaning Method	CDC Definition	Requires	Process	Effectiveness	Associated Risks
Sanitization	Sanitizing lowers the number of germs on surfaces or objects to a safe level, as judged by public health standards or requirements. This process works by either cleaning surfaces or objects to lower the risk of spreading infection	70-75% (minimum) isopropyl alcohol*	<p>Step 1: Remove PPE using proper doffing procedure</p> <p>Step 2: Apply 70-75% isopropyl alcohol thoroughly by spray bottle on both front and back of the PPE and allow at least 30 seconds of exposure per side</p> <p>Step 3: Allow at least 10 minutes of drying time before reusing PPE. When dealing with body protection ensure the zipper is fully open</p>	Reduction of up to 99.9% of microbial contamination from the surface of the PPE	<ul style="list-style-type: none"> Do not use 90% isopropyl alcohol as it evaporates too quickly for cleaning Ensure it is carried out in a ventilated area far away from a flame or spark as alcohol is flammable Rapid drying such as tumble drying may compromise the protective properties of the PPE

* Ansell recommends to use ethanol or isopropanol but not methanol

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4 Cleaning



Cleaning Method	CDC Definition	Requires	Process	Effectiveness	Associated Risks
Cleaning*	Cleaning removes germs, dirt, and impurities from surfaces or objects. Cleaning works by using soap (or detergent) and water to physically remove germs from surfaces	Warm soapy water	<p>Step 1: Remove PPE using proper doffing procedure</p> <p>Step 2: Introduce PPE to warm water</p> <p>Step 3: Perform light scrubbing</p>	Cleans surface dirt only and moves germs from or around the surface of the PPE.	<ul style="list-style-type: none"> • It can be challenging to ensure all surfaces of garments are correctly washed • Use of hot water (> 60°C/140°F) could cause physical stress to the PPE and affect its performance • Scrubbing too hard could compromise the physical properties of the PPE

* Some PPE items, e.g. mechanical protective gloves, can be laundered. Please refer to the laundering instruction in the packaging

Inspection prior to reuse:

PPE should be inspected thoroughly before use, to be sure they are in good condition with no degradation, tears, or wear that could affect performance. The re-use of any item without having completed a cleansing process is considered inadequate and unsafe. If you observe any discoloration or

other visually apparent defects on the PPE, it should not be re-used and disposed off in accordance with local guidelines.

Visual inspection

If any defect or malfunction is found, PPE must be taken out of service. Always dispose of potentially contaminated PPE carefully and in accordance with local guidelines.

- Some visual defects to look for will include:
 - Holes, snags, tears, punctures of frayed or broken yarns*
 - Discolouration of the inner or outer layer*
 - Other signs of wear and tear*
 - Change to the shape and fit of the product*

A more detailed guide on the inspection of Ansell PPE is available. Please contact customer service or visit www.ansell.com for more information.

Disclaimer:

1. This document is available in an effort to explain the different cleansing methods and their limits. Ansell cannot guarantee that the PPE items will be free from Covid-19 (or other virus contamination) post any cleaning/cleansing process.
2. Employers must ensure workers are trained on the hazards of the cleaning chemicals used in the workplace as well as the proper disposal of regulated waste and PPE. Since Ansell does not control the environment the PPE is stored or used, the reuse decisions of Ansell products, whether alone or in combination with additional PPE for an application is the final responsibility of the user.