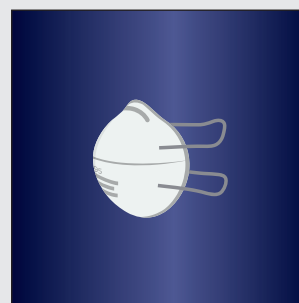
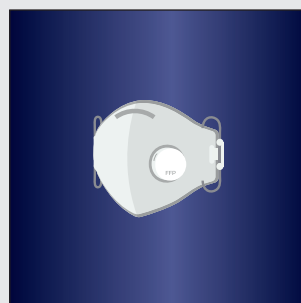
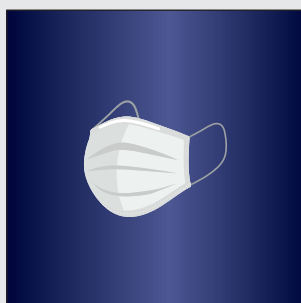
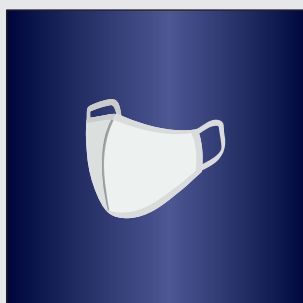




Sterilization of protective masks: a crisis capacity strategy



In case of supply bottlenecks of protective equipment: use existing possibilities.

Disposable filtering face piece respirators (FFRs) or so-called masks are regarded as disposables and therefore not approved for routine decontamination and reuse as standard of care.

During a pandemic outbreak limited supply of disposable FFP2 and FFP3 masks leads to a lack of personal protective equipment, **a crisis capacity strategy should be evolved to protect health care workers and medical personnel facing a possible infection without protective equipment.**



Therefore reprocessing of the disposable masks is currently a frequently addressed topic. Little has been reported seriously on possible decontamination to prevent running out of protective disposable equipment. In terms of shortage of the masks, the process of their decontamination may differ or may not be possible according to country specific regulations, guidance and recommendations. Our intent is to provide information for offices to consider the possibility of using a steam sterilizer for decontamination.

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Steam sterilization plays an important role in the reprocessing of medical devices.

Steam treatment may be a suitable approach for decontaminating FFRs amongst other methods and has been considered by CDC (1) and others (2,3,7,8) as a crisis capacity strategy. When information from the manufacturer or a third-party is available showing that respirators can be successfully decontaminated without impacting respirator performance, then FFRs decontaminated, following those recommendations, can be worn for any patient care activities (CDC (1)). Nevertheless, the functionality and efficacy of masks are not always ensured after different decontamination methods.

We are referring to a specified steam sterilization process presented in a publication of the Delft University of Technology (3,4), official recommendations of Austrian Authorities (2) and the Alberta Health Services (7,8).

- › The Delft University of Technology (English language) published a scientific article about sterilization of disposable facemasks by means of standardized dry and steam sterilization processes as an alternative in the fight against mask shortages due to COVID-19 shown with the mask model N95 1870+.
- › Alberta Health Services has started collecting N95 1870+ masks for the possibility of sterilizing and reusing them based on the information that the N95 1870 model could be sterilized without loss of functionality.
- › In addition, 3M who is producing the mask model N95 1870+ has released a technical paper, which describes the similarity of other masks to the used model in the publication (5).

According to the Delft University of Technology (3,4) after reprocessing FFP2 and FFP3 masks (for single use), the filter effect and respiratory capacity should be maintained during steam sterilization.

Based on the reported process for decontamination of masks (3) W&H tested the decontamination of FFP2 and FFP3 masks with W&H sterilizer in order to verify the correct handling, loading and the process of sterilization.

Steam sterilization with 121°C cycle is suitable for FFP2 and FFP3 masks with or without an exhalation valve.

All data concerning this decontamination process are currently under preparation for publication (6). The tested W&H decontamination process is only valid for the WH sterilizers.



Surgical Masks or fabric masks

The widely used surgical masks (multi-layer, close-fitting mouth and nose protection) serve to prevent the transmission of possibly released infectious droplets by the carrier to another person. The mask intends to protect other people from the mask user's spread droplets to be inhaled, or get on mucous membranes and wounds.

Surgical masks are disposables, in case of limited supply of these disposables, it is possible to reprocess them wrapped or pouched by steam sterilization with the 121°C cycle. Please also pay attention to the protective measures/handling as described below.

Note: Decontaminating surgical mask at 60°C with dry heat may lead to additional risks such as proliferation of other microbes and even, depending on the devices models diffusion of alive covid-19 in the ambient where the reprocessing device has been decontaminated. Cross contamination of 60°C-resistant germs could be possible (9). Please always refer to the manufacturer's instruction for use.

With optimal loading in a W&H Sterilizer, approx. 40 to 60 masks (surgical masks, fabric masks), can be reprocessed during one sterilization cycle (depending on mask size and loading scheme (see picture a, b, c). Decontamination of worn masks requires protective measures and special education for the involved personal.



Please observe the following protective measures when reprocessing the masks:

- › **Disinfect your hands** and put on fresh gloves, to remove and secure the mask (to avoid the risk of self-contamination through unconscious touching of the face).
- › **Check the mask** for intactness and cleanliness (visual inspection). Do not reprocess dirty masks.
- › **Pack the mask** in a sterilization/laminate pouch and observe the loading scheme:
 - › Place pouches paper side to paper side and plastic side to plastic side.
 - › Place pouches horizontally or vertically into the tray in order to optimize loading.The masks can be packed either in sterilization wrapping paper or in pouches (sterilization wrapping paper is less critical when overlapped).
- › **Note:** If the mask is not reprocessed immediately, please secure it in a suitable and well-marked container in a dry place only accessible to trained personnel.
- › **Complete** the required documentation to trace the reprocessing process.
- › **Remove** and dispose of the gloves properly. Then carry out a thorough hand disinfection.

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FFP2 and FFP3 masks (surgical also) and steam sterilization cycle at 121°C.

W&H sterilizers B Universal 121°C cycle is suitable for sterilization FFP2 and FFP3 masks (surgical) with or without an exhalation valve following the below recommendations:

- › The steam-sterilized masks can be reused one to five times thanks to the documentation of the sterilization cycles on the packaging.
- › Before using a reprocessed mask, check that the components of the mask, such as the straps, nose bridge, remain functional and the quality of the fit has not been affected.
- › Mask users shall perform a user seal check to ensure proper fit each time a mask is used.
- › Reprocessed sterile masks shall be separately stored from new masks. Wrap the masks prior to sterilization to maintain the sterility and avoid contamination during handling and transport.
- › Store only completely dried wrapped masks: moist masks may lead to proliferation of germs.

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More information about our products, solutions and tips:

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