

Strategies for N95 or KN95 Respirator

Basics of Reusing Masks: The CDC and NIOSH do not support the reuse of masks as the standard of care on a routine basis. This practice is only acceptable in times of crisis and shortages.

Various strategies have been suggested and are being used. Some are

- 1. Multiple respirator:** Issue one respirator per day of the week to each healthcare worker. The healthcare worker will wear one respirator each day and store it in a breathable paper bag at the end of that day. The order of respirator use should be repeated with a minimum of five days between each use. This will result in each worker requiring 3-5 respirators, based on the number of days worked in a week and providing that they put on, take off, care for them, and store them properly each day. Healthcare workers should treat the respirators as though they are still contaminated and follow the precautions outlined in the reuse recommendations.
- 2. Decontamination:** Some practical solutions are:
 - a. Moist Heat:**
 - i. Steam:** This is done by placing 1 liter of water in the oven and preheating to 150 degrees F. Once the temp of the water has stabilized, place the respirator in the oven for 20-30 minutes (need 160 degrees F and 80-85% relative humidity for at least 20 min)
 - ii. Sterilization.** A recent study in Netherlands showed that the filtration capacity and the fit were not greatly affected when the respirators were put thru a sterilization cycle for 15 min at 121 degrees C (250 degrees F).

- a. **Washing:** Respirator can be washed with an unscented liquid soap, or a mild detergent with Tri-Sodium Phosphate, then rinsed and drip dried. Once relatively dry, place in a clean, labeled, paper bag to let it finish drying and for storage until its next use. Do not reuse the paper bag if there is any potential of a contaminated mask or hand having touched it.
- b. **Microwave (Make sure that there is no metal nasal band):**
 - i. **Microwave generated steam:**
 1. Place a plastic box filled with 50 ml water and a perforated cover to allow for steam to penetrate the respirator (a single respirator at a time).
 2. Place the respirator with the convex surface pointed toward the steam source and irradiated for 2 min at full power using an 1100–1250W model with a rotating glass plate.
 - ii. **Microwave Steam bags** (designed for disinfecting infant feeding equipment):
 1. Place respirator in the bag with 2 ounces (60 ml) of water and seal bag tightly.
 2. Place a towel on the microwave turntable, put the bag on the towel in the center of the microwave and turn it on MAX power (5 min for 500-750W, 3 min for 800-1100W and 1.5 min for >1100W)
 3. Remove the bag from the Microwave and drain the water. Place the respirator in a clean, labeled, paper bag to dry overnight
- c. **Liquid Hydrogen Peroxide:** Soak the respirator in 3- 6% hydrogen peroxide for 30 min, rinse with clean water and Drip dry. Once it is relatively dry, place in a clean, labeled, paper bag to let it finish drying and for storage until its used again. Do not reuse the paper bag if a potentially contaminated mask or hand has touched it.

References:

<https://www.cdc.gov/niosh/topics/hcwcontrols/recommendedguidanceextuse.html>

<https://repository.tudelft.nl/islandora/object/uuid:f048c853-7e1d-4715-b73d-3b506b274a30?collection=research#>

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0186217>

<https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/decontamination-reuse-respirators.html>