



## Communicable Disease

# Respiratory Protection Program

### *Respirators FAQ*

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#### **What is the difference between a respirator and a facemask?**

Face masks offer protection by reducing the concentration of large infectious particles/droplets in an environment thus reducing the risk of infection. They however allow the flow of unfiltered air due to the lack of a tight air seal to the user's face. Facemasks do not have any regulations as to the type of materials used to manufacture thus their ability to filter is not standardized. Due to this, they do not provide protection against small airborne particles. Their benefits are twofold:

1. Protect the wearer from large infectious droplets that could be transmitted in the immediate environment (when around sick people).
2. Protect others from large infectious droplets that could be introduced into the immediate environment (when performing a sterile procedure).

Respirators offer protection by reducing the concentration of small and large infectious airborne particles inhaled through filtration and a tight air seal. The use of respirators requires medical evaluation and fit testing and all respirators used have to be NIOSH approved and regulated.

#### **What are the types of respirators?**

There are two types of respirators:

- Air-purifying respirators (APR) function by removing gases, vapors, aerosols and other contaminants from atmospheric air through the use of removable filters, cartridges, or canisters. Filters remove particles and droplets from the air while chemical cartridges/canisters remove gases and vapors. They should all have NIOSH-approved labeling and color coding to enable accurate selection of respirators per identified hazard. As they do not have a source providing clean breathing air, APRs cannot be used in an oxygen-deficient environment. APRs with filters have varying degrees of filtration efficiency summarized on the [NIOSH Respirator Filter Classes](#) infographic. APRs function through negative or positive pressure modes. Non-battery powered respirators are also called negative-pressure respirators because during inhalation, the pressure inside the respirator facepiece is negative compared to pressure outside the respirator. Examples of these respirators include N95s, elastomeric half-face, and elastomeric full-face respirators. Battery-powered respirators referred to as powered air-purifying respirators (PAPRs) are positive-pressure respirators. The blower generates positive pressure inside the facepiece when it pulls in atmospheric air through filters. This mechanism reduces the leakage of atmospheric air into the facepiece thus offering more protection than negative-pressure respirators.

- Air-supplying respirators provide clean breathing air from an independent source that is not atmospheric air. They do not require the use of filters or cartridges to protect the user and can use tight-fitting or loose-fitting facepieces. Due to their independent air supply, air-supplying respirators protect the user from all atmospheric contaminants and offer more protection than APRs. There are two main types: supplied air respirators that have an air source such as an independent air line that is not carried by the user and self-contained breathing apparatus respirators (SCBA) which require an air source carried by the user.

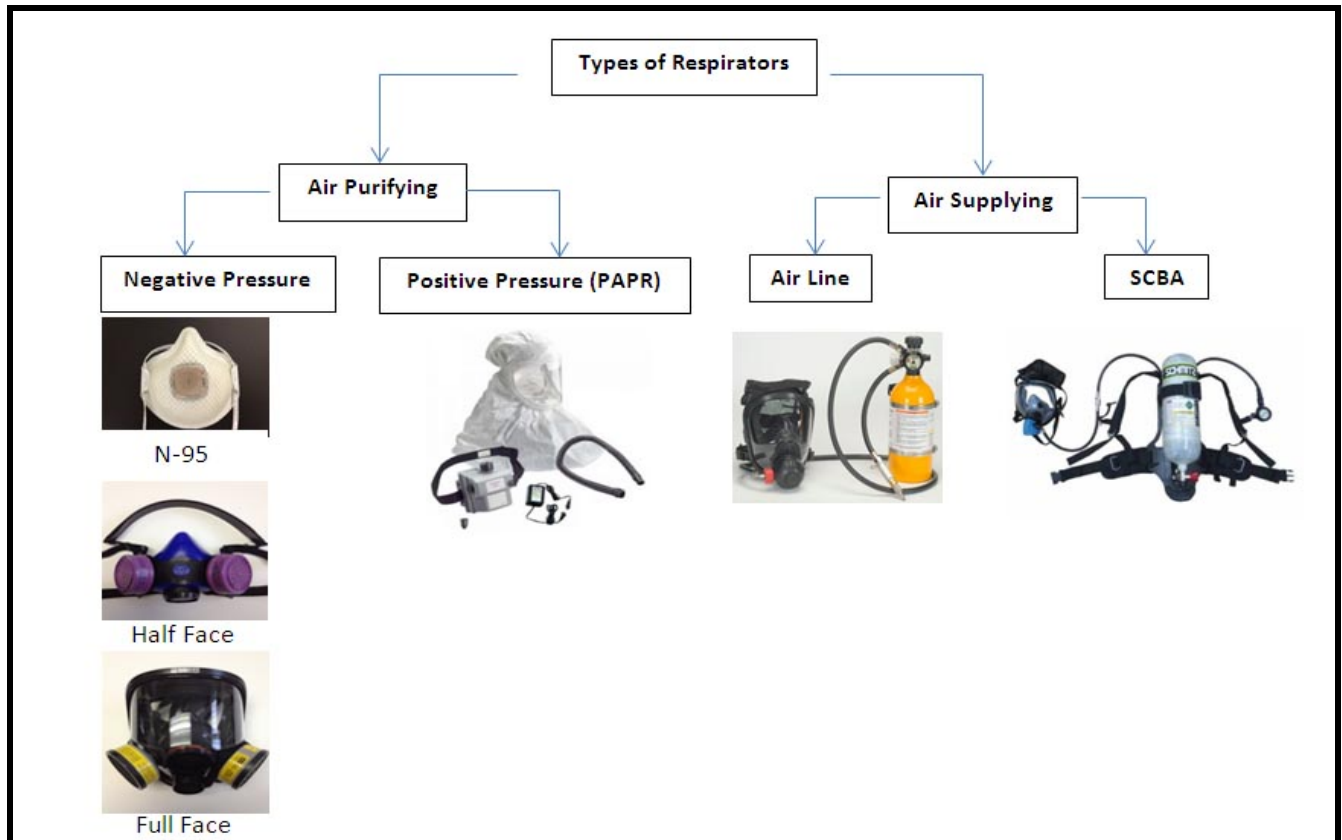


Image source: [UMass Amherst: Environmental Health and Safety](https://www.umass.edu/ehs)

### What is an APF?

An assigned protection factor (APF) is the level of respiratory protection a respirator is expected and required to provide the user. The OSHA APFs listing can be found on Table 1 of the OSHA standard [29 CFR 1910.134](https://www.federalregister.gov/documents/2011/07/26/29-cfr-1910-134) section 1910.134(d)(3)(i)(A).

### Are there different degrees of filtration efficiency assigned to respirators?

Yes. NIOSH provides classification based on resistance to oil and particle filtration efficiency. The oil resistance classification has a designation of “N”, “R”, or “P”. The particle filtration efficiency has a designation of “95”, “99” or “100”. These classifications listed below are summarized on the [NIOSH Respirator Filter Classes](https://www.niosh.gov/pdfs/NIOSH-OSHA-Respirator-Filter-Classification-Infographic.pdf) infographic.

<u>Oil Resistance</u>			<u>Filtration Efficiency</u>		
N	R	P	95	99	100
Not resistant to oil	Somewhat resistant to oil	Oil proof/Strongly resistant to oil	Filters at least 95% of airborne particles	Filters at least 99% of airborne particles	Filters at least 99.97% of airborne particles

**Where can we find a list of approved NIOSH respirators?**

The list of NIOSH-approved respirators can be found at [NIOSH-Approved Particulate Filtering Facepiece Respirators](#).

**What are the considerations to review when selecting a respirator?**

Some of the considerations the employer should review when selecting respirator models include:

- Results of the hazard assessment.
- Type of work performed while wearing a respirator.
- Level of exposure to and concentration of the respiratory hazard.
- Length of time spent wearing the respirator.
- The stress/strain experienced by the user wearing the respirator.

**Can we alter respirators?**

No. Respirators should never be altered outside of manufacturer specifications and this includes adding decorations or markings. Any modification to a respirator can compromise the integrity of the filtration mechanism thus diminishing the expected and required respiratory protection offered to the user.