

Filtering Facepiece Respirators FAQ: Workplace

Introduction

This is a general document for non-healthcare workplaces that is not specific to any particular airborne contaminant, including viruses and bacteria.

During public health events – such as wildfires, times of high air pollution, airborne-transmissible disease outbreaks, etc. – employers may need to provide respiratory protection to workers who usually do not require respiratory protection. Examples include workers whose jobs keep them outdoors during air pollution events, or workers with prolonged or frequent exposure to large groups of people during disease outbreak events.

When respiratory protection is recommended for workers and the public, the recommendations focus on government approved respirators such as "FFP2, N95 or equivalent." When used correctly, respirators can help reduce wearers' exposures to airborne particulate hazards such as dusts, mists and fumes – including particles so small that they can't be seen. Respirators contain filter material and are designed to form a seal with the wearer's face, so that air passes through the filter (instead of around the edges) before it is inhaled. A common choice is a disposable filtering facepiece respirator (FFR), such as those shown below.



No matter how well a respirator seals to the face and how efficient the filter media is, wearers should expect a small amount of leakage inside any respirators. No respirator will eliminate exposures entirely. Please read the questions and answers below to give you a better understanding of how respirators work. If you have additional questions about the use of 3M respirators, please consult our website or your local 3M office. The following are generalized responses to some frequently asked questions, to help provide clarity around the following topics:

- 1) [Respirators vs. Masks and Face Coverings](#)
- 2) [Types of Respirators](#)
- 3) [How Respirators Work](#)
- 4) [How to Use Respirators](#)
- 5) [Comfort Considerations](#)
- 6) [Aesthetic Considerations](#)

7) [Other Questions](#)

For more information on many of these topics, see [3M Technical Bulletin - Respiratory Protection for Airborne Exposures to Biohazards](#).

It is important to note that guidance for non-healthcare workplaces from any applicable occupational health authority, the World Health Organization ([WHO](#)), European Centre for Disease Prevention and Control ([ECDC](#)), United States National Institute for Occupational Safety and Health ([NIOSH](#)), United States Centers for Disease Control and Prevention ([CDC](#)), or your local health authority should be followed in any health emergency and that this document is not a substitute for that guidance.

Respirators vs. Masks and Face Coverings

What should employers look for when selecting a respirator during pollution/health emergencies?

- 1) Check to confirm that the product you are considering is certified as a respirator (such as an FFP2, N95 or KN95). Certified respirators contain filtration material capable of capturing particles including ones that are too small to see with your eyes.
- 2) Be sure to select a respirator that can seal against your face without any gaps. To provide respiratory protection, a respirator must fit snugly on the users face to ensure there are no gaps between the face and the respirator seal. Even very small gaps between the face and the edge of the respirator allow air, and particles, to go around the filter media.

Medical (also known as surgical) face masks or uncertified “dust” masks typically do not have adequate filtration material and may not be designed to form a seal against the face and therefore may not provide the expected protection to your lungs. Note that some uncertified masks look very similar to certified respirators. It is important to carefully read the information printed on packaging before your purchase a product.

More information is given in [What is an N95 Respirator?](#) and [Respirators and Surgical Masks — A Comparison](#)

What is the difference between respiratory protection and source control?

Respirators, such as filtering facepiece respirators and other respirators types, are designed to help reduce the wearers’ inhalation exposure to particulate hazards when correctly used.

Source control involves the use of cloth face coverings or facemasks to cover a person’s mouth and nose to prevent spread of respiratory secretions when they are talking, sneezing, or coughing. ECDC in their guidance [Infection prevention and control and preparedness for COVID-19 in healthcare settings](#) recommend the use of medical facemasks as a means of source control.

Should respirators be worn by workers as source control?

Generally, no. During the COVID-19 pandemic, both WHO and [ECDC](#) have said that respirators should be reserved for healthcare workers and other medical first responders.

3M is not aware of any public health agency recommending that non-healthcare workers wear respirators to help slow the spread of Covid-19. [ECDC](#) and various European countries recommend the use of face coverings or non-surgical masks in public settings. In [Using face masks in the community - Reducing COVID-19 transmission from potentially asymptomatic or pre-symptomatic people through the use of face masks](#) ECDC notes that medical face masks and respirators are in critical supply and should continue to be prioritized for use by healthcare workers.

However, if both respiratory protection and source control are needed, an unvalved respirator could be considered. In their guidance [ECDC](#) recommend that in this case valved respirators are not appropriate as a means of source control.

In non-healthcare workplaces, [WHO](#) and the [European Agency for Safety and Health at Work \(EU-OSHA\)](#) provides guidance on the prevention and management of the risks associated with COVID-19 in the workplace. Engineering and administrative controls should be undertaken to allow workers to work at least 2 metres from each other. When that is not feasible, then other controls – such as PPE, including respirators – should be considered. In those situations, all workers in the area would wear particulate respirators which would filter any virus-containing particles, whether valved or unvalved.

There are instances where workers may require both respiratory protection and source control - for example, a fit tester performing a qualitative fit test, given that the fit test subject may not wear a respirator for the sensitivity test. The fit tester should wear an unvalved respirator, since they must be close to the subject in order to conduct fit testing.

Should masks be worn over filtering facepiece respirators?

Generally, no – as part of the EU certification process, respirators are tested for filtration efficiency and breathing resistance. Those evaluations are performed without anything covering the respirator. Therefore, wearing a covering such as a medical face mask over the respirator may impact the respirator's performance. 3M has not evaluated the practice of wearing surgical masks or other coverings over respirator exhalation valves. Due to variability in the design of source control masks and face coverings, it is not known how this practice might impact the respiratory protection performance of 3M respirators.

What is the difference between a certified respirator and a medical face mask?

Respirators and medical masks (when used to protect the wearer) are considered personal protective equipment (PPE) and are used by workers in healthcare and non-healthcare workplaces. In contrast, cloth face coverings are neither a respirator nor a medical mask and are not considered PPE.

Respirators are designed to help reduce the wearer's exposure to airborne particles. Tight-fitting respirators, such as FFP2s are designed to seal to the wearer's face and are tested to meet minimum filtration efficiency requirements and other government regulatory standards.

The primary purpose of a medical face mask is to help prevent biological particles (e.g. bacteria and viruses) from being expelled by the wearer into the environment. Medical face masks are not necessarily designed to seal tightly to the face, so air might leak around the edges.

Many medical face masks are also designed to be fluid-resistant to splash and splatter of blood and other bodily fluids. In most countries, medical masks must meet government regulatory standards.

Medical face masks may be provided to patients by healthcare organizations to help protect healthcare workers and other patients from particles being introduced into the room as a patient talks, sneezes or coughs.

Some certified respirators are designed to have the characteristics of both a respirator *and* a medical face mask. These products are often called "healthcare or medical respirators." In Europe, these products are tested to both EN 149:2001+A1:2009^a (filtering facepieces) and EN 14683:2019^b (medical face mask) standards and approved to both the Personal Protective Equipment Regulations and Medical Device Directive. In the U.S., surgical N95 respirators are both approved by the U.S. National Institute of Safety and Health (NIOSH) and cleared by the U.S. Food and Drug Administration (FDA) for use in surgery. In other countries, these products are often approved by two equivalent or similar agencies.

For more information, see the 3M Technical Bulletin - [Respirators and Surgical Masks — A Comparison](#) and view the video [Fluid Resistance Testing](#).

Face coverings, whether made at home out of fabric or purchased from the store, are intended to help protect other People - not the wearer. Cloth face coverings can help wearers remember not to touch their nose and mouth, and they may help contain large droplets, spit or phlegm expelled by the wearer, like covering a cough or sneeze with a face tissue. Unlike government-approved respirators, cloth face coverings are not designed and tested to reduce wearers' exposure to airborne particulates. They are not usually designed to seal to the user's face and likely are not made of materials that are tested and

proven to capture fine particles. They are also not also designed to be fluid-resistant to splash and splatter of blood and other bodily fluids. If respiratory protection for the wearer is needed, a face covering is not a substitute for a respirator.

Types of Respirators

Do I need a healthcare respirator?

Healthcare respirators are typically designed to be fluid-resistant to splash and splatter of blood and other bodily fluids. They are intended to be worn by healthcare professionals during procedures which might generate a high-pressure stream of liquid such as arterial spray during surgery.

In contrast, liquid droplet aerosols, such as those generated by coughs and sneezes, are capturable by the particulate filter in any certified filtering facepiece respirators (FFRs).

For more information, see the [3M Technical Bulletin - Healthcare filtering facepieces respirators and standard filtering facepieces respirator \(FFP2 and FFP3\) – Which to Consider?](#) and view the video [Fluid Resistance Testing](#).

What is the difference between different countries' respirator approvals? (FFP2 vs. N95 vs. KN95, etc.)

Regulatory standards often dictate the physical and performance properties that respirator products are required to have in order to obtain certification or approval in a particular country. Standards in different countries or regions may have slightly different requirements for certification or approval of respirators.

Most regulatory standards for FFRs have similar, but not identical, test methods and respirator classes. The most commonly used respirator class descriptor is filtration efficiency. This is the ability of a respirator to filter a specific particle in a controlled laboratory test. Because of similarities in standard requirements, the following respirator classes, from various countries and regions, all have approximately 94-95% filtration efficiency, are designed to form a seal with the face, and may be considered to be functionally similar for most uses against non-oil airborne particles:

- Australia/New Zealand - P2
- Brazil - P2
- China - KN95, KP95
- Europe - FFP2
- Japan - DS2, DL2
- India - BIS P2
- Korea - 1st class
- US NIOSH - N95, R95, P95

For more information, see 3M Technical Bulletin: [Comparison of FFP2, KN95, and N95 Filtering Facepiece Respirator Classes](#)

How Respirators Work

Can a respirator help protect against very small particles like PM2.5, smoke, soot, bacteria and viruses?

A certified FFR is one way to help reduce exposure to fine particles like PM2.5, smoke, soot, bacteria and viruses. However, local recommendations (such as from a local health agency) should be consulted and followed. Often, such guidance indicates exposure should be avoided by staying away from the source of the hazard - such as staying indoors, away from outdoor air pollution, and avoiding sick people - before relying on respiratory protection.

Can a medical face mask, microfiber cloth or wet handkerchief help protect against small particles?

Medical (or procedural) face masks are designed to help keep spit and mucous generated by the wearer from reaching a patient or medical equipment. They likely do not provide respiratory protection unless they are designed, tested, and certified as a respirator. To better understand the difference between respirators and surgical masks, see 3M Technical Bulletin - [Respirators and Surgical Masks - A Comparison](#).

Microfiber cloths, wet handkerchiefs or similar items have not been designed or tested to help filter out small particles and therefore should not be used for protection from particulate matter.

Will FFRs remove odors from wildfires, air pollution, etc.?

Particulate FFRs will filter out particles such as dust, soot, ash and PM2.5. Odours are not a particle; they are considered a gas or vapour. Some FFRs are available with a carbon layer that will provide relief against low levels of odours (also called “nuisance” odours). For higher concentration levels of gases and vapours or for areas with low oxygen, different types of respirators should be used. Contact your local health authority and hire a professional to deal with these types of situations, as they can be very dangerous.

Does 94% efficient mean that 6% of the particles get through the filter?

All respirators are designed to help reduce, not eliminate, exposures to airborne hazards. For example, FFP2 class of FFRs have a filtration efficiency of at least 94% against particles when tested according to the European Standard EN149^a. The particles used to test the filtration are in a size range that are considered the most penetrating.

It's important to remember that the filter efficiency alone does not determine the overall reduction in airborne hazards provided by a respirator. There are two other key determinants in reducing exposure: fit and wear time, both of which are addressed in the *How to Use Respirators* section of this document.

Can a respirator with a valve be effective against bioaerosols?

The purpose of a respirator's exhalation valve is to reduce the breathing resistance during exhalation. The exhalation valve does not impact a respirator's ability to provide respiratory protection. The valve is designed to open only during exhalation to allow exhaled air to exit the respirator and then close tightly during inhalation, so inhaled air is not permitted to enter the respirator through the valve.

While a valve does not change a respirator's ability to help reduce a wearer's exposure to airborne particles, including bioaerosols, decisions about respirator use and infection prevention should be made on a use- and user-specific basis in consultation with applicable requirements and guidance.

In summary, when properly selected and worn, both valved and unvalved respirators will help reduce the wearer's exposure to airborne particles, including potentially infectious aerosols.

For more information about filtration of bioaerosols by respirators, see the 3M Technical Bulletin - [Respiratory Protection for Airborne Exposures to Biohazards](#) and view the video [Filtering of Bioaerosols by Filtering Facepiece Respirators](#).

Does the respirator exhalation valve allow the release of potentially infectious droplets expelled by the wearer, if the wearer is infected with an infectious airborne-transmissible disease?

Respirators are designed to help reduce the wearer's exposure to airborne particles, including particles that may contain viruses. As the wearer breathes out or speaks some wearer-generated particles will be filtered by the respirator filter media and some unfiltered air may exit through the exhalation valve. During lower breathing rates, the valve on a respirator would not be expected to open very far during exhalation, which would create only a limited path for larger aerosols expelled by the wearer to navigate.

Currently 3M is not aware of any peer-reviewed studies on the risk of infectious material exhausting out of the exhalation valve of tight-fitting respirators.

Note that medical masks and other face coverings are not designed to fit tightly to the face and have gaps around the face. When the wearer breathes in and out, air will leak through those gaps, and exhaled air may potentially include expelled particles. So, particles may potentially be expelled from masks, face coverings, and valved respirators – although the direction of the exhaled airflow will vary depending on the design (downward/forward for exhalation valves, around the edges for masks).

In non-healthcare workplaces, [WHO](#) and the [European Agency for Safety and Health at Work \(EU-OSHA\)](#) provides guidance on the prevention and management of the risks associated with COVID-19 in the workplace. Engineering and administrative controls should be undertaken to allow workers to work at least 2 metres from each other. When that is not feasible, then other controls – such as PPE, including respirators – should be considered. In those situations, all workers in the area would wear particulate respirators which would filter any virus-containing particles, whether valved or unvalved.

Should tape be placed over the exhalation valve of respirators to help protect the surrounding environment from exhaled air?

3M does not recommend that tape be placed over the exhalation valve. A filtering facepiece respirator may become more difficult to breathe through when exhaling if the exhalation valve is taped shut.

3M respirators are intended to help protect the wearer. They do this by helping reduce the wearer's exposure to airborne contaminants. When properly selected and worn, 3M respirators are safe and effective for this use. This includes 3M respirators with valves.

Exhalation valves help reduce breathing resistance when the wearer exhales (breathes out). Those valves open only when the wearer exhales, helping air exit the respirator. Currently 3M is not aware of any peer-reviewed studies on the risk of infectious material exiting through the exhalation valve of tight-fitting respirators.

Other face coverings, such as homemade masks and procedure masks, are not designed to fit tightly to the face and have gaps around the face through which air will leak, both inward when the wearer inhales and outward when the wearer exhales, potentially including expelled particles. Air and particles will also travel through the mask material at different rates depending on its construction.

Can I wear a filtering facepiece respirator if I have facial hair?

Filtering facepiece respirators (FFRs) are considered tight-fitting respirators, meaning they must seal to wearer's skin to work correctly. Therefore, wearers should be clean-shaven if they will wear an FFR. If a worker prefers not to or is unable to shave, powered air purifying respirators (PAPRs) may be considered as an alternative to FFRs. Some PAPR headtops, called loose-fitting headtops, do not need to seal to the wearer's skin to work correctly; they instead are designed to cinch under the wearer's chin or at their neck. These loose-fitting headtops can accommodate some facial hair styles (see 3M Technical Bulletin - [3M™ Versaflo™ Loose Fitting Facepieces, Hoods, and Helmets: Use with Facial Hair](#)).

This [NIOSH infographic](#) can help clarify which facial hair styles are acceptable with many FFR respirators.

Will a filtering facepiece respirator still work if I am not fit tested?

Possibly. When worn correctly, government-certified respirators, such as FFP2 respirators, can help reduce the number of airborne particles you breathe. Fit testing is required in some countries and considered a best practice. If you do not receive formal training or a fit test, you may not receive the full benefit of the respirator. However, studies have shown that people can still receive a reduction in exposure if they do the following¹:

1. Williams et al. (2010) Physiological response to alterations in O₂ and CO₂ - relevance to RPD. J Intl Soc Respiratory Protection. 11: 269–281.

- Follow the instructions on how to put on the respirator
- Perform the user seal check (fit check) described in the user instructions
- Make sure that they are clean-shaven where the respirator touches the face
- Make sure no clothing or jewellery gets between the respirator and the face

It is important to remember that respirators cannot eliminate the breathing in of all particles in the air and cannot eliminate the possibility of becoming sick. For your respirator to help reduce the number of particles you breathe, you must read and follow the user instructions that come with each respirator.

Can respirators without fluid resistance testing help protect against sneezes and coughs?

Filtering facepiece respirators do help protect against liquid droplets that are generated due to sneezes and coughs. When such droplets strike the surface of a respirator, they will be captured like other airborne contaminants.

Fluid resistance testing for surgical respirators involve a high-pressure jet of liquid sprayed directly at the respirator. A droplet from a sneeze or cough has far less momentum than a jet of liquid.

How to Use Respirators

What should I do to become familiar with respirators and how to use them?

Occupational health and safety standards – and best practice – indicate that a complete and effective respiratory protection program should be in place whenever workers are required to wear respirators, including proper respirator selection, medical evaluations, fit testing, and training. It is the employer's responsibility to ensure that all regulatory requirements are met and that workers are prepared to use their respirators safely and effectively.

For more information about respiratory protection programmes, see the [3M Respiratory Safety Centre](#).

How important is the fit of the respirator?

It is very important that your respirator be able to seal completely to your face. Your respirator should be well-sized for your face, so no gaps or leaks are detectable around the edge of the respirator. If a respirator does not seal well to your face, airborne hazards can enter through the gaps between the faceseal and the face. If you cannot achieve a good seal with your respirator, you should try a different model until you find one that is well sized and seals well to your face. The respirator should not be so large that it is very close to your eyes or impacting your vision.

It is very important to always follow the user instructions and perform a user seal check (fit check) before entering a contaminated environment. Remember, the better the seal, the more of the air you breathe goes through the filter.

Your face should be cleanshaven in the area where the respirator seals to your skin. Beards, long moustaches, and stubble may cause leaks into the respirator.

How do I put on the respirator and check for an effective seal?

The user instructions for 3M respirators contain the model-specific procedures for putting on the respirator and checking for fit and seal. It is very important to read and follow the donning instructions carefully and to conduct a user seal check (or fit check) every time the respirator is put on. The instructions are provided with the original packaging of the respirator.

Is a fit test hood system subject to contamination during an infectious disease outbreak?

The fit test hood used in the 3M™ Qualitative Fit Test Apparatus FT-10 and 3M™ Qualitative Fit Test Apparatus FT-30 is a closed environment. The following precautions apply:

- 1) All individuals with suspected or confirmed illness (cold, influenza, etc.) should be eliminated from fit testing.
- 2) All subjects should thoroughly wash their hands.
- 3) The test administrator handles the placement of the hood. The subject should not touch the test hood with their hands and should wear protective gloves and/or practice proper hand hygiene following any contact with the fit test hood.
- 4) If the subject coughs or sneezes during the test, the hood should be disinfected with typical disinfectant, such as dilute solution of common bleach.

Can FFRs be washed?

No. Under no circumstances should an attempt be made to clean or wash a 3M filtering facepiece respirator. 3M has investigated methods for healthcare facilities to decontaminate FFRs; however, these methods are likely challenging to adopt in most workplaces. See the 3M Technical Bulletin - [Decontamination Methods for 3M Filtering Facepiece Respirators](#) for more information.

Can filtering facepiece respirators be reused?

FFRs are disposable, but not single use, so they can be used many times. If you suspect your FFR is contaminated with bioaerosols, care should be taken when handling the respirator. During use, particles containing viruses, bacteria, etc. get captured on the filter fibres and remain on the fibres. Therefore, after use, handling or storing the respirator might result in further spreading the disease.

CDC guidelines for reuse of respirators, written for healthcare workplaces, can be found on the web page [Recommended Guidance for Extended Use and Limited Reuse of N95 Filtering Facepiece Respirators in Healthcare Settings](#). WHO has also published guidance on the [Rational use of personal protective equipment for coronavirus disease \(COVID-19\) and considerations during server shortages](#).

Is there a time limitation for wearing an FFR?

There is no time limit to wearing an FFR. Respirators can be worn until they are dirty, damaged or difficult to breathe through. Note that if an FFR is used to filter bioaerosols, those potentially infectious particles will remain on the filter fibres, and therefore the respirator could become a potential source of contact contamination after use. When removing an FFR after use, take care not to touch the filter portion of the respirator, discard it with other potentially contaminated waste, and wash your hands immediately after handling the respirator.

To be effective, a respirator needs to be worn correctly and worn throughout the duration of the hazardous exposure. People using a respirator will need to go to an area with safe air to remove the respirator for any reason, including to eat and drink. Again, however, users should follow guidance from health authorities, which typically stresses the importance of avoiding prolonged exposure to hazardous air, such as by remaining indoors in clean environments when it is possible to do so.

Can FFRs be shared?

No. Disposable FFRs should never be shared, due to hygiene considerations.

How should I store my respirator before use?

FFRs are carefully designed to both filter particles and seal to the face. To help protect the condition of respirators so they can function correctly, it's important to store them according to the specified storage requirements.

Until they are needed for use, respirators must be stored:

- In the original packaging
- In a hazard-free environment (clean air)
- Away from direct sunlight
- In a climate-controlled area, with humidity and temperature within the acceptable range specified on the packaging

This means that respirators should be stored indoors, in their original packaging, in a structured storage space where they can't become crushed or distorted.

If a respirator will be stored between multiple uses, it should be stored similarly to a new FFR but should be placed in a breathable bag.

Do filtering facepiece respirators have a shelf life?

Yes, many filtering facepieces do have shelf lives. The shelf life and storage information is usually found on the side or bottom of the package. Shelf life is usually shown as a "use by" or "use before" date. Please refer to the respirator packaging, as shelf life is specific to each model.

For additional considerations in understanding shelf lives, these 3M resources may be helpful:

- [3M Blog Post: Why Do Disposable Respirators Have a Defined Shelf Life?](#)
- [3M Filtering Facepiece/Disposable Respirator Storage Conditions and Shelf Life - FAQs](#)

Should the respirator be disposed of after the shelf life has expired?

3M's recommendation is that the respirator be disposed of after the stated use by date has expired.

Are multiple sizes/models of respirators needed?

Multiple sizes or alternative facepiece designs can provide the individual with additional options for obtaining a good fit and seal. It is important that the respirator fit the wearer. In the U.S., UK and certain other countries, workers must pass a fit test prior to use of a respirator in a contaminated area. Where not required by law, 3M recommends that workers pass a fit test prior to use of a respirator in a contaminated area.

Comfort Considerations

I'm looking for a comfortable respirator – what should I know?

Many FFR models include a variety of comfort features, such as exhalation valves, nose foam, and small-sized options. You might take note of listed comfort features, in addition to whether a product holds a certification from an approval authority.

It may also be helpful to note that reusable elastomeric respirators offer a different wearer experience from FFRs, for those applications where an exhalation valve is acceptable. The sealing surfaces of elastomeric facepieces are rubber or silicone instead of the "nonwoven" materials that line the insides of FFRs. Due to the nature of elastomeric respirator design, exhaled air exits the facepiece through an exhalation valve opening, rather than through the filter material, as it does with unvalved FFRs. Some wearers may prefer this experience.

Aesthetic Considerations

I dislike the appearance of my respirator – what should I know?

It is important to be aware that many products that are marketed as fashionable and/or are available in a variety of bright colours and patterns are not certified or approved and may not provide effective exposure reduction. Check to confirm that the product you are considering is certified as a respirator. Certified respirators contain filtration material capable of capturing particles and are designed to seal against your face without any gaps.

Note that there are many different types of FFR designs available, including cup-style, pleated-style, two-panel flatfolds, and three-panel flatfolds, as well as both valved and unvalved versions of many styles.

Other Questions

How can I help determine whether a 3M respirator is authentic or a counterfeit?

3M recommends purchasing 3M respirators from 3M authorized distributors or dealers, which will increase the likelihood that you will receive authentic 3M products.

3M does not recommend purchasing respirators from unknown sellers on multi-party internet e-commerce platforms. Here are some tips to help avoid counterfeit products:

- 3M respirators will be sold in 3M packaging, with model-specific user instructions accompanying the product
- 3M respirators should not be sold individually, or without packaging (including User Instructions)
- 3M has strict quality standards, and therefore products that have missing straps, strange odours, blocked valves, misspelled words, etc. are likely not authentic 3M respirators

The [3M Safe Guard™ product authentication process](#) can be used to help ensure your 3M products are authentic. It is available only for the following models:

- 3M™ Particulate Respirator 8210
- 3M™ Particulate Respirator 8210Plus

Does carbon dioxide from exhaled breath affect health?

Carbon dioxide from exhaled breath inside of certified filtering facepiece respirator has not been shown to affect health. A 2010 study indicated that although CO₂ levels increase inside filtering facepieces during wear, health indicators do not change significantly, suggesting that there is no effect on health.¹

In addition, some regulatory standards – such as Europe EN 149, China GB2626, Korea KMEOL 2017-64, Australia/New Zealand standard 1716, and Japan JMHLW notification 299 – require CO₂ levels inside the respirators to be less than 1%.

References

- a) EN 149:2001 +A1:2009 Respiratory protective devices - Filtering half masks to protect against particles - Requirements, testing, Marking. European Committee for Standardization, Brussels
- b) EN 14683:2019 Medical face masks - Requirements and test methods. European Committee for Standardization, Brussels

1. Williams et al. (2010) Physiological response to alterations in O₂ and CO₂ - relevance to RPD. J Intl Soc Respiratory Protection. 11: 269–281

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3M PSD products are
occupational use only.

In United States of America

Technical Service: 1-800-243-4630

Customer Service: 1-800-328-1667
3M.com/workersafety

In Canada

Technical Service: 1-800-267-4414
Customer Service: 1-800-364-3577
3M.ca/Safety

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