

3M™ Particulate Respirator 9923V

with added relief from nuisance levels of organic vapour*



Worker Protection and Safety Compliance

Introducing 3M™ Particulate Respirator 9923V – P2



3M™ 9923V
AS/NZS 1716:2012
Protection factor: 10 x Exposure Standard

The 9923V is a disposable specialty respirator with P2 rated filtration that offers protection from hazards such as coal dust, diesel particulate matter, other dusts, mists and fumes. The added carbon layer effectively reduces exposure to odours and unburned fuel vapours such as those from heavy machinery equipped with diesel engines.

With worker safety in mind, the 9923V specialty respirator has been designed with a non-aluminium nose-clip, allowing use in underground coal mines and other intrinsically safe environments.

The 9923V specialty respirator is backed with a high level of responsive sales support and access to technical personnel that a brand like 3M offers.



On 12th June 2012, the International Agency for Research for Cancer (IARC), which is part of the World Health Organisation (WHO), changed its classification of diesel exhaust from Class 2A (probably carcinogenic to humans) to Class 1 (carcinogenic to humans).

This classification was based on sufficient evidence that exposure is associated with an increased risk for lung cancer.

Diesel engines are widely used to power vehicles and equipment. The exhaust from these engines exposes workers to a complex mixture of airborne contaminants in both gaseous and particulate forms. This mixture can create a respiratory hazard for workers.

There are many gaseous components in diesel exhaust and some of these will be incorporated into the carbon soot particles created in the exhaust. However, the exhaust can also include significant levels of various gas/vapour components. The state of tune of the diesel engine can have a significant effect on the relative makeup of the exhaust – with cold, poorly tuned and worn engines releasing more unburned or partially combusted fuel as well as diesel particulates.

Health Effects

Acute

Symptoms associated with acute/short term exposures include headache, nausea, dizziness, cough, bronchitis, irritation of eyes, nose, throat as well as being a trigger for an asthma attack.

Chronic

Potential longer term effects include cardiovascular disease, stroke, high blood pressure, emphysema, lung and bladder cancer.

Reducing Exposure to Diesel Particulate

Suitable means and methods of reducing workplace exposure to the effects of diesel particulate in the work environment have evolved over time. These include improvements in engine technology (catalytic converters), exhaust filters and low sulphur fuels designed to reduce emissions and use of scrubbers to improve air quality and reduce respiratory hazards for workers.

Additionally, the wearing of a P2 rated respirator is an effective means of reducing worker exposure to diesel particulate. The selection of a respirator that includes an added carbon layer helps to remove odours associated with unburned fuel and other combustion components of the exhaust which can become breathable organic vapours.

What is diesel particulate matter?

Diesel particulate matter (DPM) is made from the carbon particles coming from the diesel engine combustion process. These ultrafine particles clump together and form a soot containing carbon, some organic vapours and metals from the fuel, the lubricants and the engine. All diesel engines create amounts of DPM depending on the design, age, wear, use patterns and state of maintenance of the motor.

What is coal dust?

Coal mining inevitably creates large amounts of fine coal dust during the cutting, transporting and handling of the coal. The normal operation of the mine can create airborne coal dust concentrations that can be a significant respiratory hazard for miners, especially in underground operations.

What is organic vapour?

In general, organic vapours are the evaporated component of hydrocarbon based compounds e.g. solvents, fuels and petrochemicals. 3M makes disposable respirators with capacity to capture amounts of these vapours to reduce wearer exposure.

What are unburned fuel vapours?

An engine that is old, worn or out of tune will be inefficient and will incompletely burn the fuel in the combustion process. This partially burned fuel component will be released in the engine exhaust stream and into the breathing air of workers with the other components of the engine exhaust.

How is a disposable respirator with organic vapour relief made?

The respirator is filled with a material called activated carbon. Activated carbon is typically made from coal or renewable resources like wood or coconut shells. It is "activated" by heating the material in nitrogen or steam at approximate temperatures of 800 – 900°C. The resulting material has a significant number of micro pores that help adsorb various organic vapours. These micro pores can be measured and optimized for specific product needs and performance.



Coal or renewable resources, such as coconut shells



Coal or renewable resources are heated without oxygen



High-temperature steam or nitrogen activation



High-grade activated carbon



Electron micrographs of activated carbon pores

* Nuisance levels are those levels below the Workplace Exposure Standard.

Protecting you against exposure to coal dust, diesel particulate matter, odours and unburned fuel



Non-aluminium Nose-clip

- + Specifically for use in intrinsically safe environments e.g. coal mines

3M™ Cool Flow™ Valve

- + Helps to release your hot, humid exhaled breath quickly
- + Helps to minimise unpleasant build-up of heat inside the respirator
- Provides a cooler, drier wear making it ideal for long periods of wear or when doing physically demanding tasks
- Minimises risk of misting eyewear

Nose Foam

- + Soft on the wearer's skin

Activated Carbon Filter

- + Provides relief from nuisance levels* of organic vapours and odours

Robust Shell and Cup Design

- + Resistant to collapse for durability

Dual Latex Free Straps

- + Even strap pressure improves comfort on the neck, face and head

3M™ High Performance Filter Media

- + For effective filtration of particles combined with low breathing resistance for consistent high performance



Packaging:
10 respirators / box
6 boxes / case

Applications

This respirator is suitable to use for the following suggested applications (but is not limited to):

- ✓ Mining – including underground coal mining and metalliferous
- ✓ Diesel particulate matter
- ✓ Lead fumes
- ✓ Work sites using machinery powered with diesel fuel
- ✓ Welding
- ✓ Workers exposed to odours and unburned fuel vapours

How does a disposable respirator with organic vapour* relief protect me from hazards?

The particulate filter removes the tiny droplets or particles in the air (e.g. dusts and mists). The activated carbon layer in an organic vapour disposable respirator adsorbs the contaminant that can otherwise be detected by smell or taste.

When should I replace my disposable respirator?

When in use, the respirator will be capturing the particulates and organic vapours* present in the breathing air. The respirator should be changed when:

- Breathing resistance has increased to an unacceptable level (this will vary depending on exposure level and time as well as between individuals).
- If irritation or odours are detected.
- If the respirator becomes too dirty or unhygienic or physical damage occurs e.g. torn strap or a hole in the respirator.

* Nuisance levels are those levels below the Workplace Exposure Standard.

The Importance of Fit

One of the biggest contributors to reduced respiratory protection is poor fit. Disposable respirators are most effective when there is a good seal between the edges of the respirator and your face. The instant this seal is broken, protection is compromised as contaminated air can leak in through any gaps.

The use of a disposable respirator should be implemented as part of a comprehensive respiratory protection program. As described in AS/NZS 1715:2009 that fit testing is mandatory for all users of tight fitting facepieces – workers who use these should be trained in correct use and maintenance, fit tested and clean shaven. To determine effective fit of disposable respirators, 3M has Qualitative Fit Test Kits.

Conduct a fit test to ensure that a respirator with a tight fitting facepiece provides an adequate seal to the wearer's face. Two main methods of fit testing available are:

- Qualitative fit testing
- Quantitative fit testing

Contact 3M for qualitative and quantitative fit testing advice.

3M™ Qualitative Fit Test Kits

The 3M Qualitative Fit Test apparatus FT-10 Sweet (Saccharin) and FT-30 Bitter (Bitrex) are designed for fit testing disposable and half face reusable respirators fitted with particulate or combination gas/vapour and particulate filters.



Each kit contains a hood and collar assembly, two nebulisers, sensitivity solution, test solution and detailed instructions. Training resources are available.

For more information about the respirator or fit testing, contact either your 3M Representative or TechAssist Helpline.

AUSTRALIA

TechAssist Helpline 1800 024 464
TechAssist Email techassist@mmm.com
Customer Service 1300 363 565
Website www.3m.com/au/PPESafety



View 3M's extensive disposable respirator range in Australia

NEW ZEALAND

TechAssist Helpline 0800 364 357
Customer Service 0800 252 627
Website www.3m.com/nz/PPESafety



View 3M's extensive disposable respirator range in New Zealand

Warning: Selection of the most appropriate respiratory protective equipment (RPE) will depend on the particular situation and should be made only by a competent person knowledgeable of the actual working conditions and the limitations of RPE. Details regarding performance and limitations are set out on the respirator package and user instructions. Before using any respirator, the wearer must read and understand the user instructions for the respirator. Specific legislation must be observed.



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