3M™ Reusable Respirators

Comfort, Trust, Versatility

Respirators for Your Workplace

3M

3M™ Ultimate FX Full Facepiece Reusable Respirator FF-400 Series

FF 401 (Small)
FF 402 (Medium)
FF 403 (Large)

Comfortable, durable protection for demanding, X-treme conditions

The lightweight Ultimate FX FF-400 was developed to provide maximum comfort and durability with unique features that make it the optimal choice for a variety of industrial applications:

Large Lens Featuring Scotchgard™ Protector

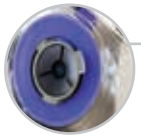
- Paint and stain-resistant lens—3M's exclusive Scotchgard™ coating causes some paints and stains to bead up on the surface so they can be wiped off easily
- Helps lens stay clearer during some spray applications
- Provides a wide field of view

Passive Speaking Diaphragm

- Optimally positioned for clearer and easier communications

Bonded Silicone Gaskets

- Eliminates loose gaskets that can be lost



Easy to Use

- Respirator attachments twist on and off easily for quick assembly and disassembly

Durable, Long-lasting Head Harness

- Features a six-strap configuration for a secure fit
- Harness straps pulled over one million times in development durability testing

Comfort Cradle

- Positions the respirator more comfortably on the head

Soft, Silicone Nose Cup and Faceseal

- Engineered for maximum durability, comfort and resilience
- Three sizes help the respirator fit a broad range of face shapes and sizes

Cool Flow™ Valve

- Allows for easier breathing
- Reduces heat and moisture buildup for cool, dry comfort

3M Reusable Respirators
Technology Innovations Over the Years

1977 — 3M offers the first reusable "Maintenance-Free" Half Facepiece Respirator

1989 — 3M designs and develops the "bayonet-style" cartridge connection

1992 — 3M develops first disc filters with loaded web filter media—the first non-woven, non-fiberglass filters

1987 — 3M manufactures a "swept-back" designed cartridge for its 5000 Series Facepiece for better peripheral vision and weight distribution

1991 — 3M develops and incorporates a new integral filter technology in its 4000 Series Facepiece, creating a lighter weight respirator

1996 — 3M launches its 6000 Series Full Facepiece Respirator offering best-in-class field of view and lightweight characteristics

3M™ Full Facepiece Reusable Respirator 6000 Series

6700 (Small)
6800 (Medium)
6900 (Large)

Reliable, convenient, compatible protection

- Unique center adapter directs exhaled breath and moisture downward, and helps reduce debris from depositing in the valve. Smooth surface allows for quick and easy cleaning
- Large lens provides wide field of view and excellent visibility
- 3M™ Cool Flow™ Valve helps provide cool, dry comfort
- Meets requirements of ANSI Z87.1-2010 for high impact (Z87+)
- Lightweight, well-balanced design with silicone faceseal for enhanced comfort and durability
- Available in air purifying respirator (APR), supplied air and powered air purifying respirator (PAPR) modes

3M™ Full Facepiece Reusable Respirator 7800S Series

7800S-S (Small)
7800S-M (Medium)
7800S-L (Large)

Designed for durability and protection

- Silicone facepiece enhances fit and improves durability
- Double-flange faceseal and six adjustable straps help provide a secure fit
- Can be used with a passive or electronic clip-on welding lens
- Available in air purifying respirator (APR), supplied air and powered air purifying respirator (PAPR) modes
- FR-7800B (First Responder) version available
  - Butyl rubber seal to minimize permeation
  - CBRN approved with FR-15-CBRN

2002 — 3M develops first rectangular filter with unique seal-check capabilities

2007 — 3M develops first HF P100 nuisance OV filter. Offers lowest breathing resistance on the market

2010 — 3M develops first Full Facepiece Respirator with Scotchgard™ coating, overmolded gaskets, and comfort head cradle

2002 — 3M introduces Cool Flow™ Valve for reduced heat and moisture in the 7500 Half Facepiece Respirator

2009 — 3M develops easier breathing, longer lasting 2000 Series disc filters

2013 — 3M introduces the 6500 Half Facepiece Respirator, our lightest silicone half facepiece

3M™ Half Facepiece Reusable Respirator 7500 Series

7501 (Small)
7502 (Medium)
7503 (Large)

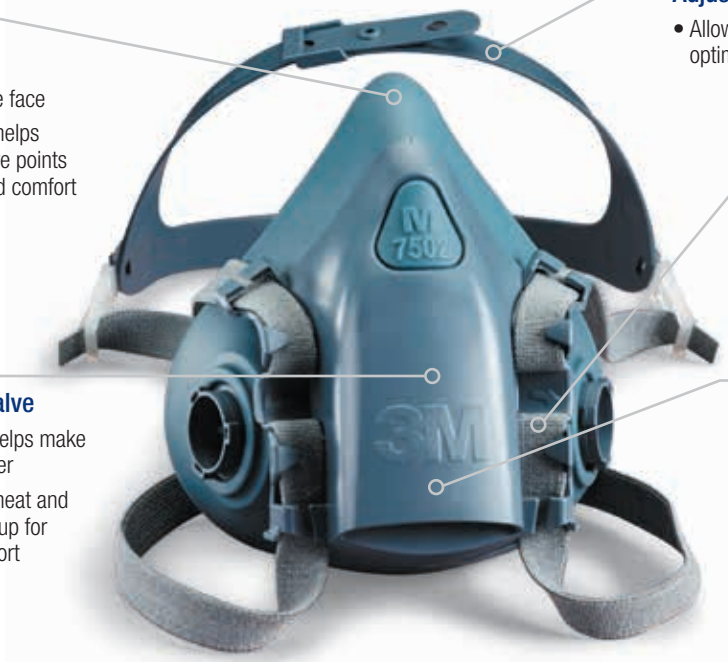
Easy breathing, comfort and durability

Soft Seal Design
- Advanced silicone material provides a softer feel on the face
- Unique adjustment design helps reduce tension and pressure points on the face for unsurpassed comfort

Adjustable Head Cradle
- Allows wearer to adjust for optimum fit and comfort

Dual-mode Head Harness
- Adjusts easily so user has the option of wearing respirator in either traditional or drop-down mode

Cool Flow™ Valve
- Valve design helps make breathing easier
- Helps reduce heat and moisture buildup for cool, dry comfort



Unique Exhalation Valve Cover
- Directs exhaled breath and moisture downward
- Smooth surface allows for quick and easy cleaning
- Helps reduce debris from depositing in valve area

3M™ Rugged Comfort Half Facepiece Reusable Respirator 6500 Series

6501 (Small)
6502 (Medium)
6503 (Large)

Rugged comfort, durability, and slim profile design

6501QL (Small)
6502QL (Medium)
6503QL (Large)

Adjustable Head Harness Assembly
- Optimum fit and comfort with three-size adjustable head cradle
- Long-lasting polyester/spandex straps

Silicone Faceseal
- Provides comfort and stability with a soft but firm faceseal
- Extended product life due to resilient silicone material
- Our lightest silicone facepiece
- Keeps its shape in high-heat environments

3M™ Bayonet Connection
- Compatible with all 3M™ bayonet-style cartridges and filters

Quick Latch Drop-Down Mechanism*
- Easy on and off as you move in and out of contaminated areas
- No need to remove your hard hat or faceshield when lowering or raising your respirator

*Available on models 6501QL, 6502QL and 6503QL.

Valve Cover Design
- Directs exhaled breath and moisture downward
- Easy positive pressure seal check

Cool Flow™ Valve
- Enhanced comfort by reducing heat and moisture
- Easier breathing with unique valve design

3M™ Half Facepiece Reusable Respirator 6000 Series

Compatible, convenient respiratory protection

- Facepiece is made from soft, lightweight material
- Available with a standard or drop-down head harness option. Drop-down model allows wearers to lower the respirator without removing hard hat or faceshield
- Head harness assembly and spare parts are available

Standard

6100 (Small)
6200 (Medium)
6300 (Large)

Drop-down

6100DD (Small)
6200DD (Medium)
6300DD (Large)

3M™ Half Facepiece Disposable Respirator 5000 Series

Balanced design, disposable convenience

- Easy to use and convenient
- Pre-assembled with permanently attached cartridges; no maintenance necessary
- Facepiece is made from soft, lightweight material
- Ideally suited for:
  - Intermittent respirator use
  - Plant shutdowns and turnarounds
  - Dirty applications where respirators wear out or become difficult to clean in a short time

5101 Organic Vapor Respirator (Small)
5201 Organic Vapor Respirator (Medium)
5301 Organic Vapor Respirator (Large)

5103 Organic Vapor/Acid Gas Respirator (Small)
5203 Organic Vapor/Acid Gas Respirator (Medium)
5303 Organic Vapor/Acid Gas Respirator (Large)

51P71 P95 Paint Spray/Pesticide Assembly (Small)
52P71 P95 Paint Spray/Pesticide Assembly (Medium)
53P71 P95 Paint Spray/Pesticide Assembly (Large)

Identify the Hazards

Applications and Industries	Potential Hazards	Cartridge/Filter Options*
Spray Painting, Varnishing, Staining & Coating	Solvent-based	OV/P95
	Water-based Latex	Nuisance OV**/P95
Sanding & Grinding	Particulate	N95
Welding	Weld Fume	N95
	Stainless Steel & Galvanized	Nuisance OV**/P95
Abatement	Lead & Asbestos	P100
	Mold	N95 - P100/ Nuisance OV**
Cement Work	Silica/Dust	N95
Cleaning & Janitorial	Bleach	AG/P95
	Ammonia	AM/MA/P95
	General Cleaning Products	OV/P95
Agriculture	Pesticides & Insecticides	OV/AG/P95 - P100
Construction	Particulate	N95
Manufacturing	Solvents	OV
	Particulate	N95
Pharmaceutical Manufacturing	Particulate	N95/P100
Chemical Manufacturing	Sulfur Dioxide, Chlorine	AG/P95
	Ammonia	AM/MA/P95

*Respirator facepiece or system must be chosen based on the contaminant, airborne concentration and the necessary assigned protection factor.
**Nuisance level refers to concentrations below the Occupational Exposure Limit (OEL) or other applicable government regulations, whichever is lower.

Select the Right Respirator

	5000	6000 HF	6500	7500	6000 FF	FF-400	7800S
Enhanced Durability			●	●		●	●
Maintenance Free	●						
Enhanced Comfort			●	●	●	●	
Drop-down Feature		●*	●**	●			
3M™ Cool Flow™ Valve			●	●	●	●	
Compatible with 3M™ Supplied Air System		●	●	●	●	●	●
Compatible with 3M™ PAPR Systems					●		●
Eye Protection					●	●	●
Speaking Diaphragm						●	●
Accessories					●	●	●
Spare Parts		●	●	●	●	●	●
Six-point Head Harness						●	●
Silicone Faceseal			●	●	●	●	●
Compatible with Welding Shield		●	●				
Clip-on Welding Shield							●

*6000DD Version.
**6500QL Version.

Find a Combination that Works Best for You

6000 Series

6500 Series

7500 Series

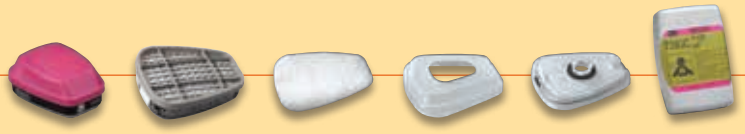
6000 Series

Ultimate FX
FF-400

7800 Series

Particulate Protection

Gas and Vapor Protection

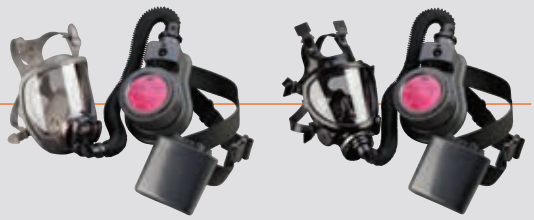


Combines Particulate and Gas and Vapor Protection

Dual Airline Supplied Air Respirator

For all 6000, 7000 and FF-400 Series Respirators

Face-mounted PAPR†
(available for 6000 FF only)



Belt-mounted PAPR†

For 6000 and 7000* Series Full Facepiece Respirators

†Powered Air Purifying Respirator
*Belt-mounted PAPR only

3M™ Particulate Filters and Gas/Vapor Cartridges

All 3M Particulate Filters and Gas/Vapor Cartridges can be used interchangeably with 3M™ Reusable Respirators 6000, 6500, 7000 and FF-400 Series.

3M™ Particulate Filters 2000 Series

- Lightweight and easy to breathe through
- Assortment of filters available for a wide range of applications
- Easier breathing through new 3-layer advanced Electret Filter Media in 2200 Series Filters

Part Number	Description
2071	Particulate Filter, P95
2076HF	Particulate Filter, Hydrogen Fluoride/P95, with Nuisance Level Acid Gas Relief*
2078	Particulate Filter, P95, with Nuisance Level Organic Vapor/Acid Gas Relief*
2091	Particulate Filter, P100
2096	Particulate Filter, P100, with Nuisance Level Acid Gas Relief*
2097	Particulate Filter, P100, with Nuisance Level Organic Vapor Relief*
2291	Advanced Particulate Filter, P100
2296	Advanced Particulate Filter, P100, with Nuisance Level Acid Gas Relief*
2297	Advanced Particulate Filter, P100, with Nuisance Level Organic Vapor Relief*

3M™ Particulate Filter 7093, P100

- Unique, spring-loaded filter cover design simplifies negative pressure user seal checks
- Swept-back design provides enhanced field of view and greater comfort
- 7093C offers a lightweight, low profile design that combines P100 filtration with carbon-loaded features found in heavier combination cartridge products

7093	Particulate Filter, P100
7093B	Particulate Filter, P100, Bulk
7093C	Cartridge/Filter, Hydrogen Fluoride, P100 with Nuisance Level Organic Vapor and Acid Gas Relief*

3M™ Gas/Vapor Cartridges 6000 Series

- Low-profile design helps maintain good field of vision
- Full range of cartridges to meet your needs

6001	Cartridge, Organic Vapor
6002	Cartridge, Acid Gas**
6003	Cartridge, Organic Vapor/Acid Gas**
6004	Cartridge, Ammonia/Methylamine
6005	Cartridge, Formaldehyde/Organic Vapor
6006	Cartridge, Multi Gas/Vapor**
6009	Cartridge, Mercury Vapor or Chlorine

3M™ Combination Cartridges/P100 Particulate Filters 6000 Series

- Particulate filter is permanently attached to cartridge for easy, one-step assembly
- Unique design for enhanced comfort and visibility

60921	Cartridge/Filter, Organic Vapor/P100
60922	Cartridge/Filter, Acid Gas/P100**
60923	Cartridge/Filter, Organic Vapor/Acid Gas/P100**
60924	Cartridge/Filter, Ammonia/Methylamine/P100
60925	Cartridge/Filter, Formaldehyde/Organic Vapor/P100
60926	Cartridge/Filter, Multi-Gas/Vapor/P100**
60928	Cartridge/Filter, Organic Vapor/Acid Gas/P100**†
60929	Cartridge/Filter, Mercury Vapor/Chlorine Gas/P100

* 3M recommended for relief against nuisance levels of organic vapors and acid gases. Nuisance level organic vapor and acid gas refers to concentrations not exceeding OSHA PEL or applicable government occupational exposure limits, whichever is lower. Do not use for respiratory protection against acid gases or organic vapors (except hydrogen fluoride).

** Reminder: These cartridges are approved for respiratory protection from hydrogen sulfide gas up to 10 times the permissible exposure limit (PEL) with half facepiece respirators and full facepiece respirators when qualitatively fit tested, or up to less than 300 parts per million (ppm) with full facepiece respirators when quantitatively fit tested or according to specific OSHA standards or applicable government regulations, whichever is lower. 300 ppm is the concentration considered Immediately Dangerous to Life or Health (IDLH) for hydrogen sulfide.

† As recommended by the California Department of Pesticide Regulation No. 01-009-Methyl Bromide Field Fumigation. 3M recommended for use against radioiodine and methylbromide. Note: not NIOSH approved for methylbromide or radioiodine.

3M

Technical Data Bulletin

#137, December, 1997

Understanding P-Series Particulate Filters

SUMMARY

42 CFR 84 incorporated "worst case" test parameters for P-series filters to ensure that the filters would perform at least as well in the workplace as they do in the laboratory. Subsequent laboratory testing by NIOSH has revealed that **all** P-series filters will eventually experience a decrease in filter efficiency when subjected to DOP oil testing beyond the current NIOSH loading requirements. Since a reduction in filter efficiency may not always be accompanied by an increase in breathing resistance, NIOSH requested each manufacturer of P-series filters to establish service time recommendations.

NIOSH DOP test concentrations are 50 to 100 times greater than oil mist concentrations typically found in the workplace. Therefore, it is not appropriate to assume the time a P-series filter lasts under NIOSH laboratory testing conditions will reasonably predict filter service life in the workplace. In addition, most workplace environments that contain oil aerosols also contain solid contaminants. Solid aerosols tend to build up and form a "cake" on the filter, which increases both filter efficiency and breathing resistance. Taking these "real world" issues into account, the following time use limitation is recommended for 3M P-series filters:

If filter becomes damaged, soiled, or breathing becomes difficult, leave the contaminated area and dispose of the filter. If used in environments containing only oil aerosols, dispose of filter after 40 hours of use or 30 days, whichever is first.

Filters changed according to the 3M P-series filter time use limitation will perform at or above their certified efficiency.

INTRODUCTION

Protection provided by respirators used to reduce worker exposure to particulate contaminants is determined by a combination of wear time, face seal leakage, and filter efficiency. Wear time can be maximized through training about the need for proper respirator use, coupled with selecting respirators that are comfortable and easy to breathe through. Face seal leakage can be minimized through training on proper fitting methods and application of fit tests. The optimal filter efficiency is selected based on the contaminants found in the workplace.

NIOSH has implemented new negative pressure air purifying particulate filter certification tests which address filter efficiency. 42 CFR Part 84 created three new series of respirators: N, R, and P. Each series is offered in three efficiency levels: 95%, 99%, and 99.97%.[1] By incorporating "worst case" testing parameters the new test procedures were intended to ensure that filter efficiency in workplace settings would always meet or exceed certified efficiency levels, provided that users followed recommended use instructions.

Subsequent NIOSH laboratory testing has revealed that **all** P-series filters can eventually experience at least some decrease in filter efficiency when loaded with sufficient amounts of dioctyl phthalate oil. In light of this new information NIOSH requested all manufacturers of P-series filters to include service time recommendations as part of the use instructions.

42 CFR PART 84 CERTIFICATION TESTS

When NIOSH implemented the 42 CFR Part 84 particulate filter testing methods they incorporated test parameters which, based on current knowledge, presented "worst case" conditions for filters. These parameters include using the most penetrating particle size, challenging test agents, and high filter loading requirements. "Worst case" test conditions were desired to ensure that the filters would perform at least as well in the workplace as they do in the laboratory.

In the past NIOSH tested certain classes of filters against typical workplace contaminants, such as silica dust and lead fume. Under 42 CFR 84 all filters are challenged with laboratory generated aerosols, which are the most difficult size to capture: particles with approximately 0.3 μm mass median aerodynamic diameter (MMAD). Particles both smaller and larger than this size are captured at a higher efficiency, and most aerosols found in the workplace are larger than 0.3 μm MMAD.[2] By testing with the most penetrating particle size it can be reliably predicted that filters will perform at their certified efficiency level (95%, 99%, or 99.97%) or better when used against aerosols present in the workplace.

Under 42 CFR 84 the test aerosol used depends on the filter classification: the N-series filters are tested with solid sodium chloride (NaCl) particles, and R- and P-series filters with dioctyl phthalate (DOP), an oil. Solid aerosols tend to build up and form a "cake" on the filter which increases both the filter's efficiency and its breathing resistance, indicating when the filter needs to be changed. In contrast, it is thought that DOP oil droplets tend to spread out across the filter fibers or "wet" the fibers. With certain electrostatic filters this may mask some of the electrostatic charge on the filter fibers and potentially result in a decrease in filter efficiency.

The DOP test is made more challenging by use of a particularly high concentration (100 mg/m^3) for an oil mist. As a result, from a filter efficiency perspective, the DOP loading test is more discriminating than the NaCl test. Therefore, N-series filters are approved for protection against non-oil aerosols only, and R- and P-series filters are approved for both oil and non-oil aerosols.

Another important aspect of 42 CFR 84 is that all filters now undergo heavy loading with the NaCl and DOP test aerosols during certification testing. N- and R-series filters are loaded to 200 mg. Filter performance must exceed the efficiency level desired for certification (95%, 99%, or 99.97%) at all times during the test. P-series filters are loaded to at least 200 mg. If the efficiency of the filter is decreasing at 200 mg then the test continues until the filter efficiency stabilizes. At the end of the certification test the filter efficiency for **all** NIOSH certified P-series filters is stable and exceeds the filter efficiency category.

NIOSH USER'S GUIDE

In addition to subjecting filters to severe testing requirements, NIOSH has recommended time use restrictions for filters in "NIOSH Guide to the Selection and Use of Particulate Respirators Certified under 42 CFR Part 84."[3] In this guide, NIOSH states that "all filters should be replaced whenever they are damaged, soiled, or causing noticeably increased breathing resistance." Additional limitations, specific to the filter series, may also apply. For example, if oil aerosols are present, R-series filters must be changed after 8 hours of use or after loaded with 200 mg of aerosol.

The User's Guide states that "Use and reuse of the P-series filters would be subject only to considerations of hygiene, damage, and increased breathing resistance." While the NIOSH test conditions represent "worst case," later NIOSH laboratory testing revealed that **all** P-series filters, both electrostatic and mechanical filters, will eventually experience a decrease in filter efficiency when subjected to DOP testing beyond the current NIOSH loading requirements. The mechanism believed to cause a decrease in efficiency for electrostatic filters is discussed above. The mechanism by which filter efficiency decreases for mechanical filters is not known at this time.

NIOSH testing has also indicated that a reduction in filter efficiency may not always be accompanied by an increase in breathing resistance. In light of this new information, NIOSH published a "Respirator User Notice"[4] to notify end users that time use restrictions would be recommended for P-series filters. In the "Respirator User Notice" NIOSH stated that "This reduction in filter efficiency varies significantly from model to model and NIOSH can not make a single filter change recommendation that is appropriate for all models. Therefore, NIOSH has requested each manufacturer of P-series filters to establish service time recommendations as part of their instructions."

P-SERIES TIME USE LIMITATION

In response to NIOSH's request, the following time use limitation is recommended for all 3M P-series filters:

If filter becomes damaged, soiled, or breathing becomes difficult, leave the contaminated area and dispose of the filter. If used in environments containing only oil aerosols, dispose of filter after 40 hours of use or 30 days, whichever is first.

As discussed above, if a filter is used in environments containing non-oil aerosols, the filter will cake and efficiency will increase. This increase in efficiency is accompanied by an increase in breathing resistance which can help signal the wearer to change the filter. Atmospheres that contain both oil and non-oil aerosols will most likely result in filter caking from the non-oil aerosol. Therefore, the P-series time use limitation reverts to *dispose of the filter when it becomes damaged, soiled, or difficult to breathe through* if the filter is used in environments that contain no oil aerosols, or if the filter is used in environments that contain a mixture of oil and non-oil aerosols. Only if a P-series filter is used in an environment that contains only oil aerosols does the full time use limitation apply.

THE "REAL WORLD" PERSPECTIVE

By creating N-, R-, and P-series filters, NIOSH has compelled end users to consider the presence of oil aerosols in the environment when selecting a respirator. The NIOSH User's Guide states that R- or P- series respirators are to be used if oil aerosols are present. (For guidance on which contaminants may be considered to be an oil, see Technical Data Bulletin #129.[5]) In most atmospheres containing oil aerosols respirators are worn for protection from contaminants other than oil. For example, in the textile industry oil aerosols may be generated from looming machines, but respirators may be used to reduce exposures to cotton dust. In foundries where parting oils are sprayed on molds, respirators are worn to protect workers from silica dust. And in the food processing industry where food grade oils are aerosolized, grain dust may be the primary exposure for which respirators are being worn.

All of these environments contain oil and, according to wording in NIOSH approvals, would necessitate using an R- or P-series filter. They would also be environments where solid particles are likely to cause filter caking, increasing filter efficiency and breathing resistance, which would indicate when the filter or respirator should be changed. Following the NIOSH time restrictions, R-series filters should be disposed of if they become damaged, soiled, or difficult to breathe through. Additionally, they should be changed after no more than 8 hours of use or after 200 mg loading. Based on the 3M P-series time use limitation P-series filters should be changed when the filter becomes damaged, soiled, or difficult to breathe through.

Because oil aerosols are seldom the primary contaminant in the environment there has been limited documentation of oil concentrations in the workplace. However, recent concern over the health effects of metal working fluids, many of which would be considered oils, has prompted an extensive survey of oil exposures at three auto parts manufacturing facilities.[6] Each of the facilities had thousands of metal working machines. Investigators collected 403 personal, 6 to 8

hour time averaged samples of workers exposed to metal working fluids. The mean total exposure was 0.7 mg/m^3 with average particle sizes ranging from 3.6 to 8.2 μm MMAD (well above the most penetrating particle size of 0.3 μm MMAD) by operation for exposed workers.

Based on the above metal working fluid survey, a typical oil mist exposure is unlikely to exceed 2 mg/m^3 as compared to the DOP aerosol concentration of 100 mg/m^3 (50 to 100 times greater than oil mist concentrations typically found in the workplace) used by NIOSH. Therefore, it is not appropriate to assume the time a P-series filter lasts under NIOSH laboratory testing conditions will reasonably predict filter service life in the workplace. A more meaningful interpretation would be to assume a worker is continuously exposed to 2 mg/m^3 of oil while working at a moderate rate. This worker would breathe about 10 m^3 of air over an eight-hour day. Under these circumstances it would take 10 days of continuous use to reach 200 mg loading of oil. This is the **minimum** filter loading used by NIOSH in certification tests for P-series filters. By following the 3M time use limitation on P-series filters, the worker would have replaced his filters after no more than 5 days (40 hours) - well before any potential decrease in filter efficiency.

There are few, if any, workplace environments that contain oil aerosols with no other contaminants. Neither 3M nor NIOSH has been able to locate an oil-only environment. Therefore, in most industrial environments it is expected that non-oil particles will cake the filter and increase filter efficiency keeping it well above the certified level. In oil-only environments, a potential for a gradual drop in filter efficiency may exist, but filters changed according to the 3M P-series filter time use limitation will perform at or above their certified efficiency.

Filters 2000 Series

Issue Date 9/1/09

The 3M™ Filters 2000 Series have been developed with your respiratory protection needs in mind. Specially designed carbon layers and advanced filtration technology provide comfort and convenience.

When you're interested in performance as well as simplicity of use and comfort, the 2000 Series filters are just what you're looking for. Used in conjunction with 3M™ 5000, 6000, 7000 and Ultimate FX FF-400 Series Facepieces, these filters help provide respiratory protection in a variety of industrial settings. Depending on the conditions and contaminants in your work area, one of these filters should suit your needs.

Each of the 2000 Series filters can be used as stand-alone filters with 3M™ 6000, 7500, 7800 and Ultimate FX FF-400 Series Facepieces or as prefilters with 3M™ 5000 Series Respirators and 6000 Series Cartridges (use with 502 adapter).

Features/Benefits

- **Comfort.** 3M's Advanced Electret Media (AEM) provides a lightweight protection not found in filters containing fiberglass.[1]
- **Approved protection.** All of the 2000 Series filters are NIOSH approved.
- **Versatile protection.** The 2000 Series filters are well suited for a wide range of particulate contaminants found in oil and non-oil environments.
- **Simplicity.** The versatility of these filters reduces your inventory and training requirements.
- **Compatibility.** The 2000 Series filters can be used with 3M's wide variety of half and full facepiece designs.[2]
- **Durability.** Unique flexible filter material enables the product to be worn in close quarters. Its rugged construction resists abrasion and wetting. Filters are flame and water resistant.
- **Economy.** The 2000 Series filters are economical to use compared to traditional filters and cartridges.

⚠ WARNING

These filters help protect against certain particles. **Misuse may result in sickness or death.** Before use, the wearer must read and understand *User Instructions* provided as a part of product packaging. Time use limitations may apply.

Additional use instructions, product limitations, approval labels, and warnings are included with each facepiece and filter package.

References:

1. The 2000 Series filters contain no components made from fiberglass.

2. The 2000 Series filters can be used as a stand-alone filter with 3M™ 6000, 7500, 7800 and Ultimate FX FF-400 Series Facepieces or as a prefilter with 3M™ 5000 Series Respirators and 6000 Series Cartridges (use with 502 adapter).

3M™ Filters 2000 Series

Selection

Filter	Use with Respirator Series	Use for these Contaminants	Suggested Applications
 **2071** Rating: P95	5000 Series 6000 Series 7000 Series Ultimate FX FF-400	Certain particles. Certain paint and pesticide mists (when used as a prefilter with the 3M™ 5000 or 6000 Series OV cartridge).	Grinding, welding, sanding, sawing, sweeping, bagging, torch cutting, brazing, soldering and other dusty, oily operations.
 **2076HF** Rating: P95	6000 Series 7000 Series Ultimate FX FF-400	Certain particles and hydrogen fluoride gas. 3M recommended for nuisance level relief of acid gases.*	Aluminum smelting, glass etching and chemical manufacturing.
 **2078** Rating: P95	6000 Series 7000 Series Ultimate FX FF-400	Certain particles. 3M recommended for nuisance level relief of organic vapors and acid gases.** 3M recommended for ozone.***	Utilities operations, chemical manufacturing, welding, torch cutting, brazing, soldering and aluminum smelting.
 **2091** Rating: P100	5000 Series 6000 Series 7000 Series Ultimate FX FF-400	Dusts, fumes, mists and radionuclides. Paint and pesticide mists (when used as a prefilter with the 5000 or 6000 Series OV cartridge).	Welding, brazing, torch cutting, metal pouring, soldering, and pharmaceutical manufacturing and OSHA substance specific particle exposures.1
 **2096** Rating: P100	6000 Series 7000 Series Ultimate FX FF-400	Dusts, fumes, mists and radionuclides. 3M recommended for nuisance level relief of acid gases.*	Utility operations, chemical manufacturing, aluminum smelting, pharmaceutical manufacturing, welding, brazing, soldering, torch cutting, and metal pouring and OSHA substance specific particle exposures.1
 **2097** Rating: P100	6000 Series 7000 Series Ultimate FX FF-400	Dusts, fumes, mists and radionuclides. 3M recommended for nuisance level relief of organic vapors.****	Chemical manufacturing, undercoating, welding, brazing, soldering, torch cutting, metal pouring, and pharmaceutical manufacturing and OSHA substance specific particle exposures.1

***3M recommended** for relief against nuisance levels of acid gases. Nuisance level refers to concentrations not exceeding OSHA PEL or applicable exposure limits, whichever is lower. Do not use for respiratory protection against acid gases.

****3M recommended** for relief against nuisance levels of certain organic vapors and acid gases. Nuisance level refers to concentrations not exceeding OSHA PEL or applicable exposure limits, whichever is lower. Do not use for respiratory protection against organic vapors or acid gases.

*****3M recommended** for ozone protection up to 10 x OSHA PEL. Not NIOSH approved for ozone.

******3M recommended** for relief against nuisance levels of certain organic vapors. Nuisance level refers to concentrations not exceeding OSHA PEL or applicable exposure limits, whichever is lower. Do not use for respiratory protection against organic vapors.

1. OSHA substance specific particle exposures: -Lead, -Asbestos, -Cadmium, -Arsenic, 4,4'–Methylenedianiline (MDA).

IMPORTANT: Before using these filters, the user must read the instructions included with the 5000, 6000, 7000 and Ultimate FX FF-400 Series facepieces for use instructions and limitations, approval labels and warnings.

Filters Per Bag	Filters Per Case
2	100

Do Not Use For:

- Gases and vapors above the OSHA PEL, including those present in paint spraying operations, unless combined with approved chemical cartridges.
- Aerosol concentrations that exceed:
  - 10 times the permissible exposure limit (PEL) with half facepiece, or
  - 10 times the PEL with full facepiece qualitatively fit tested, or
  - 50 times the PEL with full facepiece quantitatively fit tested, or
  - applicable government regulations, whichever is lower.

Important

Before using these filters, you must determine the following:

1. The type of contaminant(s) for which the respirator is being selected.
2. The concentration level of contaminant(s).
3. Whether the respirator can be properly fitted on the wearer's face. Do not use with beards, on other facial hair, or other conditions that prevent a good seal between the face and the faceseal of the respirator.
4. Before use of these respirators, a written respiratory protection program must be implemented, meeting all the requirements of OSHA 29 CFR 1910.134, including training, medical evaluation and fit testing.

Time Use Limitation

If filter becomes damaged, soiled, or breathing becomes difficult, leave the contaminated area immediately and dispose of the filter. If used in environments containing only oil aerosols, dispose of filter after 40 hours of use or 30 days, whichever is first.

3M

3040

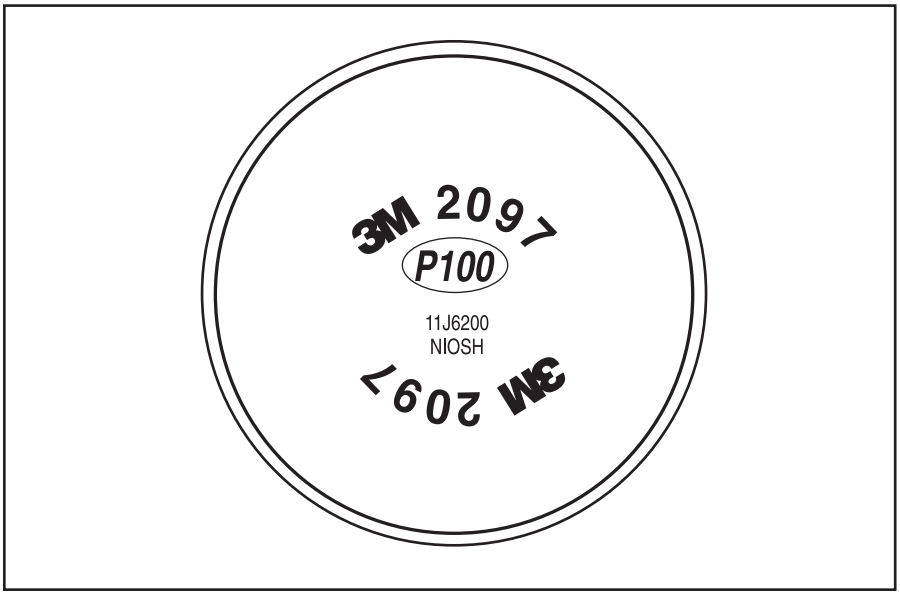
Particulate Filter 2097, P100 with Nuisance Level Organic Vapor Relief *

Issue Date 9/1/09

The 3M™ Particulate Filter 2097, P100 has been developed with your respiratory needs in mind. Specially designed carbon layers help provide relief against nuisance levels of organic vapors.*

The 2097 provides you and your workers:

- **Comfort.** 3M's Advanced Electret Media (AEM) provides a lightweight, easy breathing combination not found in fiberglass containing filters.[1]
- **Versatile protection.** The 2097 is well suited for a wide range of oil and non-oil based particulate contaminants and can be used as a prefilter for certain chemical exposures.
- **Simplicity.** The versatility of this filter reduces your inventory and training requirements.
- **Compatibility.** The 2097 can be used with 3M's wide variety of half and full facepiece designs.[2]
- **Exceptional filter efficiency.** Passing NIOSH's P-series test criteria, the 2097 P100 filter provides a minimum 99.97% filter efficiency.[3]
- **Durability.** The unique flexible filter material resists abrasion and wetting. Filters are flame and water resistant.



3M™ Particulate Filter 2097, P100

Suggested Applications:

- Chemical manufacturing
- Undercoating

- OSHA substance specific particle exposures:
  –Lead
  –Asbestos
  –Cadmium
  –Arsenic
  –4,4' Methylenedianiline (MDA)
- Pharmaceutical manufacturing

- Welding
- Brazing
- Soldering
- Torch cutting
- Metal pouring

⚠ WARNING

These filters help protect against certain particles. **Misuse may result in sickness or death.** Before use, the wearer must read and understand *User Instructions* provided as a part of product packaging. Time use limitations may apply.

Additional use instructions, product limitations, approval labels, and warnings are included with each facepiece and filter package.

***3M recommended** for relief against nuisance levels of organic vapors. Nuisance level organic vapor refers to concentrations not exceeding OSHA PEL or applicable exposure limits, whichever is lower. Do not use for respiratory protection against organic vapors.

References:

1. The 2097 filter contains no components made from fiberglass.
2. The 2097 filter can be used as a stand-alone filter with 3M™ 6000, 7000 and Ultimate FX FF-400 Series Facepieces or as a prefilter with 3M™ 5000 Series Respirators and 6000 Series Cartridges (use with 502 adapter).
3. Tested against particles approximately 0.3 micron in size (mass median aerodynamic diameter) per 42 CFR 84.

3M™ Particulate Filter 2097, P100 with Nuisance Level Organic Vapor Relief*

3040

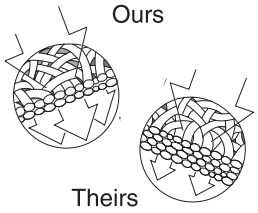
Use For:

- Solids such as those from processing minerals, coal, iron ore, cotton, flour and certain other substances.
- Liquid or oil based particles from sprays that do not also emit **harmful** vapors.
- Metal fumes produced from welding, brazing, cutting and other operations involving heating of metals.
- Radioactive particulate materials such as uranium and plutonium.
- Asbestos.
- Relief from nuisance levels of organic vapors* below the OSHA PEL or applicable government standards, whichever is lower. 3M recommended for ozone protection up to 10 times the OSHA PEL.**

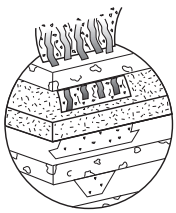
Do Not Use For:

- Gases and vapors above the OSHA PEL, including those present in paint spraying operations, unless combined with approved chemical cartridges.
- Sandblasting.
- Oxygen deficient atmospheres.
- Aerosol concentrations that exceed:
  - 10 times the permissible exposure limit (PEL) with half facepiece, or
  - 10 times the PEL with full facepiece qualitatively fit tested, or
  - 50 times the PEL with full facepiece quantitatively fit tested, or
  - applicable government regulations, whichever is lower.

Technologies



Advanced Electret Media
Advanced electrostatically charged microfibers make breathing easier and cooler.



Odor-Removing Filter Material
Carbon layers remove many nuisance level odors for greater comfort and productivity.

P-Series Filter
Featuring Advanced Electret Media, appropriate for prolonged use in both oil- and non-oil-containing environments.

Important
Before using these filters, you must determine the following:

1. The type of contaminant(s) for which the respirator is being selected.
2. The concentration level of contaminant(s).
3. Whether the respirator can be properly fitted on the wearer's face. Do not use with beards, other facial hair, or other conditions that prevent a good seal between the face and the faceseal of the respirator.
4. Before use of these respirators, a written respiratory protection program must be implemented, meeting all the requirements of OSHA 29 CFR 1910.134, including training, medical evaluation and fit testing.

Filters Per Bag	Filters Per Case
2	100

Time Use Limitation
If filter becomes damaged, soiled, or breathing becomes difficult, leave the contaminated area and dispose of the filter. If used in environments containing only oil aerosols, dispose of filter after 40 hours of use or 30 days, whichever is first.

***3M recommended** for relief against nuisance levels of organic vapors. Nuisance level organic vapor refers to concentrations not exceeding OSHA PEL or applicable exposure limits, whichever is lower. Do not use for respiratory protection against organic vapors.

****3M recommended** for ozone protection up to 10 times the OSHA PEL. Not NIOSH approved for ozone.