RESPIRATORY PROTECTION

WITH THE EVER INCREASING DEMANDS FOR SAFETY AND HEALTH IN THE WORKPLACE, IT IS IMPERATIVE THAT TIME IS SPENT EVALUATING THE PROTECTION OFFERED WHEN AIRBORNE CONTAMINANTS ARE APPARENT.

The selection of respiratory protection follows the following process

- Identify the hazards - dust, metal fume, gas, vapour.
- Quantify the hazards - measure the hazard level.
- Select the appropriate respirator - disposable, half mask, full-face, powered, airline.

HAZARDS

There are 5 forms of hazard that are likely to be encountered in the workplace. They are;

Dusts – produced when solid materials are broken down into finer particles. In general the smaller the particle size the greater the hazard. Fine fibres are also treated as dust.

Mists – formed by the process of atomisation and spraying and consisting of tiny liquid droplets.

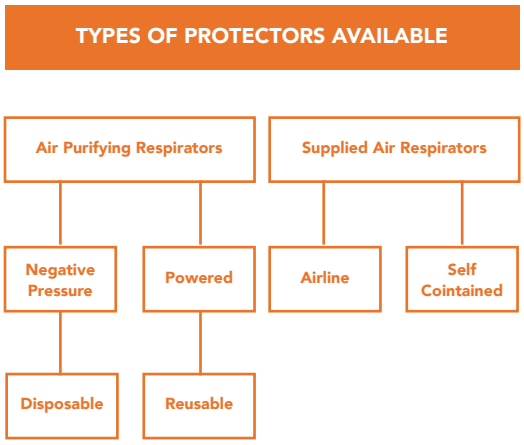
Metal Fumes – produced when metals are vaporised under high heat. The vapour is cooled quickly and condenses into very fine particles that float in the air.

Gases – airborne at room temperature. Able to diffuse or spread freely, gases can travel very far, and quickly.

Vapours – gaseous state of substances that are liquids or solids at room temperature and caused when substances evaporate.

TYPES OF PROTECTORS AVAILABLE

Each type of Respiratory Protective Equipment (RPE) has specific limitations which dictate the types of application for which it may be used. RPE is tested to relevant European Standards which determine the product performance



FILTERS Filter Markings: All filters sold within the EU must use the following colour coding system as part of their label.

FOR USE AGAINST	FILTER TYPE	COLOUR CODE	MAIN APPLICATIONS
Gas & Vapour (EN 141 & EN 405)	**A**	**Brown**	Organic Gases/Vapours with boiling point greater than 65°c
	B	**Grey**	Inorganic gases and vapours e.g. Chlorine (not Carbon Monoxide)
	E	**Yellow**	Acid gases and vapours, e.g. Sulphur Dioxide, Hydrogen Chloride
	K	**Green**	Ammonia and organic ammonia derivative
	I	**Orange**	Iodine
	CO	**Black**	Carbon Monoxide
	Hg	**Red**	Mercury Vapour
	Nox	**Blue**	Nitrogen Monoxide, Azote Oxide, Nitrous Vapour
Particles (EN 143 & EN 149)	**P1**	**White**	Protection against particulates in concentrations up to 4 x OEL
	P2	**White**	Protection against particulates in concentrations up to 10 x OEL
	P3	**White**	Protection against particulates in concentrations up to 20 x OEL
Gas & Vapour (EN 371)	**AX**	**Brown**	Certain organic compounds with boiling points less than 65°c

FILTERS

THE SERVICE LIFE OF A FILTER WILL DEPEND ON

- Concentration and characteristics of the workplace contaminant
- Filter capacity, i.e. filter class
- Breathing volume and work rate
- Air humidity
- Atmospheric temperature

The lifetime of a gas filter can be roughly calculated by comparing the concentration of workplace contaminant and the minimum breakthrough times permitted for the filter and extrapolating equipment. Particle filters do not wear-out, they get clogged with particles and moisture. This results in increased breathing resistance. A particle filter must be changed when breathing becomes burdensome.

MAIN STANDARDS

SINGLE USE RESPIRATORS

EN149	Filtering half-masks (single use) for protection against particulates. There are three protection classes: classes FFP1, FFP2 and FFP3.
EN405	Filtering half-masks with valves for protection against gases or against gases and particulates.

REUSABLE RESPIRATORS

EN140	Half and quarter masks, reusable, for use with filters and respiratory protection devices (SCBA with compressed supplied air, assisted ventilation, etc.)
EN136	Full-face masks, for use with filters and respiratory devices (SCBA and compressed air-line devices, powered assisted devices, etc.)
EN148	Face pieces connector threading requirements. This standard describes the different types of PPE connections and respirator filters. The most commonly used is standard EN148-1, which defines RD40 x 1/7” threading.
EN143	Particulate filters for negative pressure respiratory devices. They are effective against dust and fibres, and most types of smoke, liquid aerosols and bacteria. Suitable for half-masks in compliance with EN140 or full-face masks EN136. There are three classes: • P1: Low efficiency • P2: Medium efficiency • P3: High efficiency.

MAIN STANDARDS

REUSABLE RESPIRATORS

EN141 or EN14387	Gas/Vapour filters and combined filters for respiratory devices with negative pressure. They are classified according to their type and class (See chart on page 39). There are three classes that EN14387 correspond to a difference in the filter capacity and a maximum concentration of the toxic substance authorised in the polluted air. • Class 1:0.1% • Class 2:0.5% • Class 3:1%.
EN371 or EN14387	AX gas filters and combined filters against organic compounds with a low boiling point (<65°C). These cartridges are for single use.

POWER ASSISTED DEVICES

EN12941 (e.g EN146)	Powered assisted filtering devices incorporating helmets or hoods against particulates, gases and vapours. There are three classes for all the equipment: TH1, TH2, TH3. The particulate filtering cartridges are marked: TH1P, TH2P, TH3P.
EN12942 (e.g EN147)	Continuous flow compressed air-line breathing apparatus. Four light duty categories: 1A, 2A, 3A, 4A, four heavy duty categories: 1B, 2B, 3B, 4B.

COMPRESSED AIR-LINE DEVICES

EN1835	Light-duty construction compressed air-line breathing apparatus incorporating a hood or a helmet.Three protection levels: LDH1, LDH2, LDH3.
EN12419	Light-duty construction compressed air-line breathing apparatus incorporating a full face, half or quarter mask.Three protection levels: LDM1, LDM2, LDM3.
EN270	Compressed air-line apparatus with hoods. A single level of protection is required and a warning for a low flow must be provided.
EN139	Compressed air-line apparatus with full-face masks, half-masks or mouthpiece assembly.

SELF COMPRESSED AIR DEVICES

EN137	Self-contained open-circuit compressed air breathing apparatus.
EN145	Self-contained close-circuit breathing apparatus compressed oxygen or compressed oxygen-nitrogen type.
EN1146	Self-contained open-circuit compressed air breathing apparatus incorporating hoods.
EN402	Self-contained open-circuit compressed air breathing apparatus with full-face mask or mouthpiece assembly, for escape.

SELECTION CRITERIA

- Oxygen concentration
- Odour of the toxic substance
- Knowledge of the toxic substance
- Explosive Atmosphere (IS)

FILTER CATEGORIES

Protection against gas/vapours:

CLASS 1 for a gas content less than 0.1% in volume (cartridges)

CLASS 2 for a gas content between 0.1% and 0.5% in volume (cartridges)

CLASS 3 for a gas content between 0.5% and 1% in volume (canister of a large capacity worn at the waist or chest)

Protection against particulates, dust and aerosols:

CLASS 1 (P1 or FFP1) for protection against coarse, solid particulates (low toxicity)

CLASS 2 (P2 or FFP2) for protection against solid and /or liquid aerosols (low to average toxicity)

CLASS 3 (P3 or FFP3) for protection against solid and/orliquid aerosols (high toxicity)

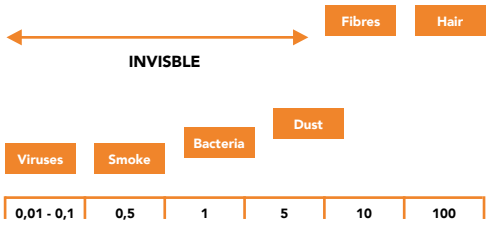
CLASSIFICATION OF TOXIC CONTAMINANTS

Solid and liquid aerosols may be of a different nature

▶ Unpleasant ▶ Causing allergies ▶ Causing lung damage

Whatever the size of the particulate, the hazards may be greater according to the time of exposure.The increasing use of liquid aerosols requires the use of suitable protection according to the nature of the aerosol used and the composition of the product applied.

The size of the aerosol is one of the factors which determines the choice of protection.



USING AN ISOLATING RESPIRATOR WHEN

- The concentration in oxygen is below 17%
- The concentration of contaminants is unknown
- Filtration is not suitable for the contaminants present
- The contaminant has insufficient self-warning properties (no odour)

FACE FIT TESTING

Where respiratory protection equipment is used as a control measure it is essential that all tight-fitting Respiratory Protective Equipment (RPE) fits the wearer's face well and correctly to provide the expected protection. As peoples faces come in all shapes and sizes, each wearer needs to be supplied with a face mask which matches their face shape. Fit testing demonstrates if the wearer is getting the required protection and is used to select a facemask which is a good match for them. HSE's relevant Approved Codes of Practice (ACOP) require that fit testing be carried out as part of the initial RPE selection process, to ensure that the wearer has the correct facepiece. Note: A tight-fitting facepiece is a full face mask, a half mask or a disposable mask.

QUANTITATIVE FACE FIT TEST

The HSE's approved code of practice (HSE 282/28) requires that all tight-fitting respirators i.e. full face masks, half masks and disposables are face fit tested. Respirators are designed to reduce the concentration of a pollutant. Respirators can leak and most leakages occur around the face seal. The Portacount fit test equipment measures how much leakage occurs during normal usage, thus highlighting poor wearing procedures or inappropriate equipment. MJ Scannell Safety can provide an on-site face fit service which can include basic respirator training. We employ a team to ensure that you choose the right level of protection. Alternatively, we can quote you for the supply of the Portacount apparatus and the required training.

HONEYWELL NORTH REUSABLE RESPIRATORS

N5400 HONEYWELL NORTH FULL FACE MASK (TWIN FILTER)
Standard **EN140**

The NORTH N5400 is a black high performance twin filter (Class 1) full-face mask respirator. Lightweight and low profile ergonomic design of the face piece gives high levels of user acceptance. Unique cradle head band and yoke piece gives ease of adjustment. Contoured revert seal gives an excellent face seal that will not cause discomfort. Size Medium/Large. Filters ordered separately.

RPN65754101M	Medium
RPN65754101L	Large

Honeywell

N5500 HONEYWELL NORTH HALF FACE MASK (TWIN FILTER)
Standard **EN140**

The NORTH N5500 is a high performance dual cartridge (Class 1) half mask respirator. Lightweight and low profile ergonomic design of the face piece gives high levels of user acceptance. Unique cradle head band and yoke piece for ease of adjustment. Contoured revert seal gives an excellent face seal that will not cause discomfort. EN140. Filters ordered separately.

RPN65550032S	Small
RPN65550032M	Medium
RPN65550032L	Large

Honeywell

HONEYWELL NORTH FILTERS

HONEYWELL NORTH P3 FILTER Standard
RPN06575008 **EN14387:2004+A1:2008**

P3 particle filter for NORTH N5500/N5400 masks against solid and liquid particles, radioactive and toxic particles.

Honeywell

P3

HONEYWELL NORTH ABE1 FILTER Standard
RPN06575003L **EN14387:2004+A1:2008**

A1B1E1 combined vapour filter for NORTH N5500/N5400 masks protecting against organic vapours and gases, inorganic and acid gases and vapours.

Honeywell

A1 B1 E1

HONEYWELL NORTH ABEK1 FILTER Standard
RPN06575009L **EN14387:2004+A1:2008**

A1B1E1K1 combined vapour filter for NORTH N5500/N5400 masks protecting against organic vapours and gases, inorganic and acid gases and vapours, ammonia vapours.

Honeywell

A1 B1 E1 K1

HONEYWELL NORTH A1B1E1K1P3 FILTER Standard
RPN06575089L **EN14387:2004+A1:2008**

A1B1E1K1P3 combined vapour particle filter for NORTH N5500/N5400 masks protecting against organic vapours and gases, inorganic and acid gases and vapours, ammonia vapours, solid and liquid particles, radioactive and toxic particles.

Honeywell

A1 B1 E1 K1 P3SL

HONEYWELL NORTH REUSABLE RESPIRATOR

N5400 HONEYWELL NORTH ELASTOMER FULL FACE RESPIRATOR
Standard **EN136**

High performance single filter (Class 2) full face mask respirator made of soft pliable elastomer.

RPN65754201	One Size	Honeywell

HONEYWELL A2B2E2K2P3 SINGLE FILTER
Standard **EN143**

A2 B2 E2 K2 P3SL

A2B2E2K2P3 combined filter for N5400 mask protecting against organic vapours and gases, inorganic and acid gases and vapours, ammonia vapours , solid and liquid particles, radioactive and toxic particles.

RP1788155	One size	Honeywell

HONEYWELL P3 SINGLE FILTER
Standard **EN143**

P3

A high efficiency particulate filter for use with any respirator with a DIN 40mm thread, protecting against solid and liquid aerosols, radioactive and toxic particles.

RP1786000	One size	Honeywell

3M 6000 FACE MASK RESPIRATORS

3M 6000 SERIES FULL FACE RESPIRATOR
Standard **EN136 Class1 | EN166 1:B**

Twin filter silicone facepiece designed for maximum comfort. Excellent protection against eye and facial impact. Range of filters sold separately.

RP6800	Medium	3M
RP6900	Large	

3M 6000 SERIES HALF FACE RESPIRATOR
Standard **EN140**

Twin filter facepiece designed for maximum comfort. Range of filters sold separately.

RP6200	Medium	3M
RP6300	Large	

All filters on the next page are compatible with these 3M masks

3M PARTICULATE / GAS AND VAPOUR CARTRIDGES

FILTER TYPE		CODE	HALF MASK RESPIRATOR	FULL MASK RESPIRATOR	
P3SL	P3SL PARTICULATE	RP2135	✓	✓	
P3SL	P3SL (Particulate/Nuisance level organic vapour/acid gas)	RP2138	✓	✓	
A2	A2 (Class 2 Organic Vapour)	RP6055	✓	✓	
A1 B1 E1	A B E 1 (Class 1 Organic/ Inorganic/Acid Vapour)	RP6057	✓	✓	
A1 B1 E1 K1	A B E K1 (Class 1 Organic/ Inorganic/Acid Vapour/ Ammonia)	RP6059	✓	✓	
P3SL	P3SL (Particulate – for use with 3M 501 retainer covers to combine with vapour filters)	RP5935	✓	✓	
	3M 501 Retainer Cover	RP501	✓	✓	
A2 B2 P3 E2 K2	A B E K2 (Class 2 Organic/ Inorganic/Acid Vapour/ Ammonia/Particulates)	RP6099	✗	✓	

REDBACK DISPOSABLE RESPIRATORS

REDBACK VALVED DUST MASK FFP3
RPP3VB

Cup Mask Respirator with adjustable straps protecting against very fine dusts, mists, solid/liquid aerosols. Exhalation valve for easier breathing. (Box 5)

Standard **EN149 | FFP3 | NR D** One Size

REDBACK VALVED DUST MASK FFP2
RPP2VB

Cup Mask Respirator protecting against dusts, mists, solid /liquid aerosols. Exhalation valve for easier breathing. (Box 10)

Standard **EN149 | FFP2 | NR** One Size

REDBACK FOLD FLAT DUST MASK
RPRFFP2VB

Vertical fold flat respirator protecting against dusts, mists, solid/liquid aerosols. Exhalation valve for easier breathing. Each mask is individually bagged. (Box 10)

Standard **EN149 | FFP2 | NR** One Size

REDBACK UNVALVED CUPMASK FFP1
RPP1B

Cup Mask Respirator protecting against dusts, mists, solid/liquid aerosols. (Box 20)

Standard **EN149 | FFP1 | NR** One Size

JSP FLEXINET RESPIRATORS

832 FLEXINET VALVED MASK FFP3
RPFP3VB

Flexinet cup mask respirator which ensures optimum shape retention for a secure seal. Protects against dusts, mists, solid/ liquid aerosols. Exhalation valve for easier breathing. (Box 5)

Standard **EN149:2001+A1:2009 FFP3 | NR D** **Size** S,L

822 FLEXINET VALVED MASK FFP2
RPFP2VB

Flexinet cup mask respirator which ensures optimum shape retention for a secure seal. Protects against dusts, mists, solid/ liquid aerosols. Exhalation valve for easier breathing. (Box 10)

Standard **EN149:2001+A1:2009 FFP2 | NR D** **Size** S,M,L

JSP TYPHOON FOLD FLAT RESPIRATORS

TYPHOON FFP3 VALVED DUST MASK
RPTFFP3VB

The Typhoon™ valve offers masks the ability to perform in a wide range of environments. A 4 point harness built into the mask creates a perfect fit. The silicone diaphragm installed inside the valves is not affected by moisture. The valves are fully shrouded to ensure optimum protection from dust. Typhoon™ valves also feature a class leading low breathing resistance when compared to competing valves. (Box of 10)

Standard **EN149:2001+A1:2009 | FFP3 | NR D** One Size

TYPHOON FFP2 VALVED DUST MASK
RPTFFP2VB

The Typhoon™ valve offers masks the ability to perform in a wide range of environments. The silicone diaphragm installed inside the valves is not affected by moisture. The valves are fully shrouded to ensure optimum protection from dust. Typhoon™ valves also feature a class leading low breathing resistance when compared to competing valves. (Box of 10)

Standard **EN149:2001+A1:2009 | FFP2 | NR D** One Size

HONEYWELL FOLD FLAT RESPIRATORS

4000 PREMIUM SERIES RESPIRATOR FFP3
RP1005630

4311 FFP3 Respirator with high efficiency exhalation valve for protection against high-toxicity dusts, fumes and water based mists. (Box 10)

Standard **EN149 | FFP3 | NR D** One Size Honeywell

2000 PREMIUM SERIES RESPIRATOR FFP3
RP1031594

2311 FFP3 P3 Respirator with high efficiency exhalation valve for protection against toxic dusts, fumes and water based mists. Double layer face seal provides comfort and protection. (Box 20)

Standard **EN149 | FFP3 | NR D** One Size Honeywell

3M FOLD FLAT RESPIRATORS

3M 9332+ VALVED FOLD FLAT MASK FFP3
RP9332

Fold Flat P3 Mask for use against higher levels of particulate dust and mists. Valved for additional comfort. Maximum usage level up to 50 x TLV. Suitable for use in a wide variety of industrial applications and other work situations requiring FFP3 protection. (Box 10)

Standard **EN149:2001+A1:2009 FFP2 NR D** One Size 3M

3M 9322+ VALVED FOLD FLAT MASK FFP2
RP9322

Fold Flat P2 Mask for use against particulate dust and mists. Valved for additional comfort. Maximum usage level up to 12 x TLV. (Box 10)

Standard **EN149:2001+A1:2009 FFP2 NR D** One Size 3M

3M MOULDED RESPIRATORS

3M 8822 VALVED CUP MASK
RP8822

For use against particulate dust and mists, Valved for additional comfort, Protection factor 10 x OEL (Nominal 12 x OEL), Suitable for sawmills, powdered chemicals. (Box 10)

Standard **EN149:2001+A1:2009 FFP2 NR D** One Size

3M 8835+ VALVED CUP MASK
RP8835

Protects against dust, mist & metal fumes, Recommended for swine flu, Valved for additional comfort, Suitable for welding, construction & pharma, Protection factor 20 x OEL (Nominal 50 x OEL). (Box 5)

Standard **EN149:2001+A1:2009 FFP3 R D** One Size

WELDING FUME RESPIRATOR

3M 9925 WELDING FUME RESPIRATOR
RP9925

Disposable P2 welding fume respirator offering reliable, effective protection against against fine dusts, mists, metal fume and Ozone. Specifically designed to offer respiratory protection in welding operations. Efficient particulate filter resists clogging for extended use against welding fumes. Activated carbon layer filters out Ozone generated by MIG, TIG and ARC welding operations. Flame retardant - the specially treated outer-shell offers increased flame retardancy. Maximum usage level: Up to 10 x TLV for Ozone, and 10 x TLV for Particulates. (Box 10)

Standard **EN 149:2001+A1:2009 FFP2 NR D** One Size

NUISANCE ODOUR RELIEF RESPIRATORS

B BRAND P2 CHARCOAL MASK VALVED
RPBBP2CV

Protects against toxic dusts, fumes and water based mists. Loaded with a high performance acid-resistant active carbon pre-filter to protect against nuisance organic vapour. Contour design ensures the compatibility of glasses/goggles and reduces fogging. (Box of 10)

Standard **EN 149:2001+A1:2009 FFP2 NR** One Size

MAINTENANCE FREE SEMI-DISPOSABLE RESPIRATORS

3M 4000 SERIES
Standard **EN 405:2001+A1:2009**

Ready to use maintenance free half mask designed for effective and comfortable protection. Effective protection against many gases, vapours and combination particulate hazards found through industry (water and oil based).

RP4251
Organic Vapour/Particulate Respirator FFA1 P2 RD

RP4255
Organic Vapour/Particulate Respirator FFA2 P3 RD

RP4277
Organic Vapour/Inorganic and Acid Gas Particulate Respirator FFABE1 P3 RD

RP4279
Organic/Inorganic/Acid Gases/Ammonia FFABEK1 P3 RD

Honeywell

HONEYWELL AIRVISOR 2 MV AIRFED RESPIRATOR

The Honeywell Airvisor 2 MV is a loose-fitting supplied air respirator which offers the very best in protection, comfort and quality.

Designed not only to protect the wearer's breathing, but also the eyes and face in the most demanding of working environments.

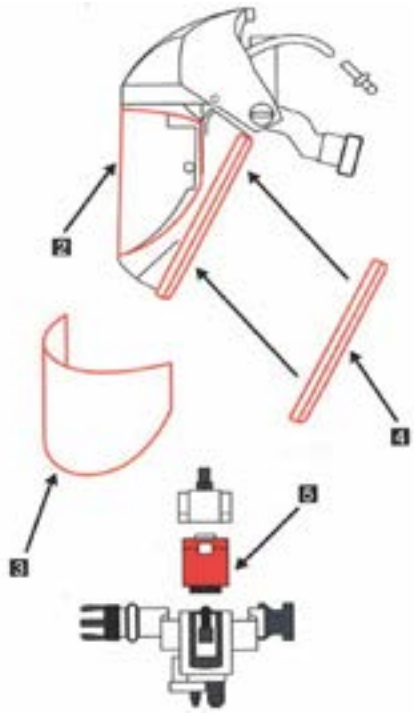
The Airvisor 2 MV protects against gases, vapours, dusts, mists and fumes. Especially suited for use in paint spraying environments where it offers excellent protection from contaminants containing isocyanates.

Its large visor provides a wide field of vision and is offered in a choice of materials; acetate for chemical and paint spray use or polycarbonate for general industry where greater impact resistance is required.

As a loose-fitting device the Airvisor 2 MV is exempt from Fit Test Regulations. The Airvisor 2 MV Chemical Kit can be supplied with an Acetate chemical resistant visor or a Polycarbonate impact resistant visor, one fabric face seal cassette, two disposable visor covers, head/neck cover, storage bag, waist belt complete, includes integral low flow warning device, tested and certified to EN14594:2005 Class 4A

Nominal Protection Factor 2,000
Assigned Protection Factor 40

RP1013939	Acetate
RP1013980	Polycarbonate



2 **HONEYWELL AIRVISOR 2 MV REPLACEMENT VISORS**

RP1001775	Acetate (Pack of 5)
RP1001774	Polycarbonate (Pack of 5)

4 **HONEYWELL AIRVISOR 2 MV FACE CASSETTES**

RP1013994	Fabric Cassette (Pack of 5)

3 **HONEYWELL AIRVISOR 2 MV VISOR COVERS**

RP1001778	(Pack of 10)
RP1001779	(Pack of 50)

5 **HONEYWELL AIRVISOR 2 CARBON CARTRIDGE**

RP1001672	Carbon Cartridge (1 unit)

6 **HONEYWELL BLUELINE AIR SUPPLY HOSES**

RP1001727	7.5 Metre Hose
RP1004716	10 Metre Hose

Honeywell

HONEYWELL AIRVISOR 2 MV AIRFED RESPIRATOR FILTER SYSTEMS

CLEARFLOW3 WALL MOUNTED UNIT

CLEARFLOW3 MOUNTED FILTER UNIT	
RP1763904	Stand Mounted
RP1763903	Wall Mounted

CLEARFLOW3 STANDARD MOUNTED UNIT