

RESPIRATORY PROTECTION

FREQUENTLY ASKED QUESTIONS

How do I find out what contaminants are present in the atmosphere and at what levels?

It is relatively easy to be aware of particles in the atmosphere but identifying types and contaminants can be difficult. Gaseous contaminants are even more complicated. Chemical and derivative product manufacturers will publish datasheets which can be helpful. The HSE publishes HSG53 "The selection, use and maintenance of respiratory protective equipment - a practical guide" and EH40 which gives information on Workplace Exposure Limits. The maxim is - if in doubt, then seek professional help.

Which product should I use?

This is a big question posing difficult choices. After a risk assessment has been made, if employers opt for the cheapest product on offer then they may not be providing sufficient protection and could be breaking the law. On the other hand, by over specifying, they not only waste money but can leave employees too hopelessly encumbered to carry out their work.

The BSI's "Respiratory Protective devices - Recommendations for selection, use, care and maintenance" is a useful starting point. It is also very important to remember that RPE should not only be suitable for the task in hand but also for the comfort of the wearer, taking into account such factors as whether the employee has spectacles or facial hair which may interfere with the seal. Centurion Safety Products technical team is also available to offer advice on the right RPE equipment to use, following a range of information provided on the working environment.

What is COSHH?

COSHH is the Control of Substances Hazardous to Health Regulations 2002. It sets out a specific hierarchy of control measures to reduce the risk of exposure to hazardous substances. COSHH defines what is a hazardous substance and the use of WELs are used to comply with the requirements of COSHH.

WEL (Workplace Exposure Limit) is the maximum concentration of an airborne substance, averaged over a reference period, to which employees may be exposed by inhalation.

What does oxygen deficiency mean?

Oxygen deficiency means that there is insufficient oxygen in the atmosphere to sustain human life ie less than 20% oxygen, in which case appropriate breathing apparatus should be used.

What is a confined space?

The HSE booklet "Safe Work in Confined Spaces" defines a confined space as "any space of an enclosed nature where there is a risk of death or serious injury from hazardous substances or dangerous conditions (e.g. lack of oxygen)." The booklet also makes the important point that "some spaces may become confined spaces when work is carried out, or during their construction, fabrication or subsequent modification."

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What are protection factors?

There are two main classifications:

1. Nominal Protection Factor (NPF)

Minimal level of protection the equipment has to demonstrate under laboratory conditions to gain approval to the appropriate class of the performance standard.

2. Assigned Protection Factor (APF)

BSEN 529 acknowledges that laboratory performance may not be achievable in real use. Figures are taken from BSEN 529 and are the minimum level of protection calculated for 95% of trained wearers using the equipment in the workplace. The Assigned Protection Factor may vary from country to country. Figures quoted by Centurion are for the UK.

To calculate the workplace required protection factor (APF):

$$\text{Required Workplace Protection factor} = \frac{\text{Workplace concentration outside the headpiece}}{\text{Maximum allowable concentration inside the headpiece (using EH40 and WELs)}}$$

Each respiratory system has a defined APF/NPF, which can be selected for a specific application. Refer to Product Instructions or Martindale Price list for NPF/APFs. Refer to EH40 for WELs.

What does P1, P2 and P3 mean?

P ratings identify a product's protection against particles and in combination with Protection Factors Classification indicate RPE performance.

P3 offers the highest protection, but specifying only P3 can lead to downsides such as higher breathing resistance. Refer to the product user instructions for specific information on product classifications.

What do the letters ABEK stand for?

A,B,E and K denominations indicate the types of gaseous contaminants that respiratory filters are designed to protect against. The abbreviations stand for:

	Colour coded	Description
A	(Brown)	Organic vapours and gases with boiling points >65°C
B	(Grey)	Inorganic gases excluding carbon monoxide
E	(Yellow)	Sulphur dioxide and acidic gases
K	(Green)	Ammonia and organic ammonia derivatives

An ABEK P3 filter would therefore indicate one of the widest range of protection against both gases and particles available from a filter unit.

Other gas and vapour filters are:

AX	(Brown)	Organic vapours and gases with boiling points <65°C
Hg-P3		Mercury
NO-P3		Oxides of nitrogen

Are there guidelines for particular contaminants?

If there is any likelihood of being exposed to asbestos, lead, cadmium, coal dust and radioactivity the HSE should be contacted for further guidance as these are subject to specific legal requirements.

COSHH and packaging regulations dictate that manufacturers supplying products containing known hazards must supply a safety data sheet. Users should consult the manufacturer if in doubt.

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Martindale

Dust filter/gas canister duration

When should I change my dust filter and pre-filter within my powered system?

It is imperative that the dust filters are changed when the power units warning device advises of a blocked filter. This can be either via the regular use of a separate airflow indicator or via an electronic audible and/or visual alarm within the power unit. A recommendation of maximum working hours is given below and is to be used as guidance only, as the duration can vary considerably depending on the application and dust concentration.

Main filter changing

We recommend a maximum of 40 working hours for high dust environments and a maximum of 80 working hours for medium dust environments. Regular changing of filters will also protect and improve the life of the power unit.

Pre-filter changing

Regular changing of pre-filters will extend the life of the main filter. We recommend that the pre-filter should be changed a minimum of once per shift (8hrs). In a high dust environment it should be changed more often (2-3 times) per shift.

Note

Main & Pre-filters are disposable and once loaded must be discarded. Compressed air must not be used to "clean" filters.

When should I change my gas canister within my powered system?

It is very difficult to determine exactly when a gas canister has reached the end of its effective life. A strict control regime is required to ensure correct usage of gas canisters and the usage period can be affected by numerous issues, such as humidity, temperature, breathing rates, gas concentration, type of gas, class of canister (A1, A2) etc. Therefore it is not possible to give accurate general guidance regarding safe duration of gas filters. As a guideline, it is important to:

- determine the concentration of gases
- calculate the maximum time of exposure
- allow a safety margin for time and do not work beyond this period

For further information reference should be made to BSEN 529: Respiratory Protective devices - recommendations for selection, use, care and maintain - Guidance document or HSE booklet HSG53

Sources of further information

Contact the following for further information on PPE:

- Your PPE manufacturer, ie Centurion Safety Products Ltd
- Your PPE distributor
- The Health and Safety Executive (HSE)

The following informative documentation is available from them:

EH40/2005	Occupational Exposure Limits 2005
HSG 53	The selection, use and maintenance of Respiratory Protective Equipment
COSHH	The Control of Substances Hazardous to Health
	Safe Work in Confined Spaces booklet

- The British Safety Industry Federation (BSIF) Tel: 01745 585600
- British Standards Institute (BSI) – the following documentation is available:
BSEN 529 Respiratory Protective devices - Recommendations for selection, use, care and maintenance

Information is for guidance and reference only and may be subject to change.

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