

SCOTT[®]

PRO2000 FILTERS

FOR RESPIRATORY PROTECTIVE EQUIPMENT



SCOTT[®]
HEALTH & SAFETY

SCOTT PRO2000 FILTERS



The Scott Pro2000 canister filter range offers a wide choice of filters for specific respiratory challenges, providing high quality and cost efficient protection. Highest specification filter media and materials ensure durability and reliability in the most demanding applications.

Combining low weight and low resistance, Scott Pro2000 filters are manufactured using superior performance media, giving extended adsorption capacity for gas and combined filters and unrivalled efficiency for the particle element.

Pro2000 filters are fully EN approved to the latest standards, marked 'R' for re-usable (EN 143:2000/ A1:2006), CE certified, and connect via a 40 mm EN148-1 thread. CE approvals : EN143, EN14387. CE0121.

PRO2000 FILTERS

- Particle filters trap solid and liquid particles, e.g. dusts, smoke, welding fumes, mists, micro-organisms and radioactive particles.
- Gas filters protect against hazardous gases and vapours.
- Combined filters protect against both gaseous and particulate contaminants.

Features of the particle filter

- Scott particle filters use only microfibre 'paper' media and do not use any electrostatic filtering methods, marked 'R' for re-usable (EN 143:2000/A1:2006).
- PF10 P3 features a high capacity filter element; trapping even the smallest particles with an efficiency 99,999 %.
- The filter element is extremely water-repellent.
- The vast intake area reduces the likelihood of clogging and resistance.

Features of the gas filters

- Superior raw materials for best performance.
- The effective microporous structure of the carbon provides an extended area for adsorption.
- With a safe margin to EN requirements, Pro2000 gas filters perform effectively using only 220-320 ml of carbon.
- Less carbon provides low weight and less resistance – real benefits for the user.

HOW TO SELECT A FILTER?

- Will the atmosphere contain sufficient oxygen (18-23 vol-%) throughout the period of exposure?
- Which hazardous substances are likely to be present?
- Which forms do the airborne contaminants take? Are they particles, gases or vapour or indeed a mixture of these?
- What effects can these substances have on the respiratory organs? Special attention is needed if there are several substances that may interact, either by reacting chemically, or by having synergistic adverse health effects.
- What are the concentrations in the atmosphere?
- Which are the relevant occupational exposure limits (OEL) or safe exposure levels?

The level of protection required can be calculated as follows:

1. Divide the measured workplace concentration by the OEL-value of the substance
2. After that select the respirator, which has a protection factor superior to the required level of protection.

$$\text{Protection factor needed} = \frac{\text{Workplace concentration}}{\text{OEL value of the contaminant}}$$

Protection factor needed?

Contaminant:	harmful airborne dust
Measured concentration	5 mg/m ³ [time-weighted average]
OEL	0.2 mg/m ³

The minimum protection factor needed: $5/0.2 = 25$.

Protection factor 25 is needed and as the calculated value for multiples of the limit show that half mask with P3-filter will provide adequate protection.

What is the maximum permitted concentration of contaminant when using a full face mask with B2-gas filter?

Contaminant	Chlorine (Cl ₂)
OEL	1 ppm

Full face mask with a gas filter has a workplace protection factor of 400, which means that full face mask is allowed to use in multiples of 400 x OEL concentration.

The max concentration can be calculated: $400 \times 1 \text{ ppm (Cl}_2\text{)} = 400 \text{ ppm} = 0,04 \text{ vol.}\%$ of chlorine.



PARTICLES

Particle filter performance

The risk caused by particles depends on:

- The physical, biological and chemical properties of the contaminant
- Particle size and form
- Concentration in the ambient air, and exposure time
- Work pace; the more rapid respiration, the more particles are inhaled.

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Particle filter capacity EN 143

Class	Capacity	Max permitted penetration		Limits of use Max permitted exposure level
		NaCl (solid, dusts)	Paraffin oil (liquid, aerosols)	
P1	Low capacity (against coarse and minor solid particles)	20 %	20 %	4 x OEL-value
P2	Medium capacity (against solid and liquid hazardous particles)	6 %	6 %	12 x OEL-value
P3	High capacity (against solid and liquid toxic particles as well as radioactive particles and micro-organisms)	0.05 %	0.05 %	With a half mask 30 x OEL value. With a full face mask 400 x OEL value.

Particle filter operation life

Filter does not wear out but gets clogged with particles and moisture. A particle filter must be replaced when breathing resistance has increased.

- When used against radioactive substances and micro-organisms a particle filter is recommended for single use only.

GASES AND VAPOURS

Gaseous substances

Gaseous impurities have various effects on health:

- They can irritate the membranes of respiratory organs, the eyes and skin
- They can reach the lungs and cause damages
- They can be absorbed in the blood and cause temporary or permanent damage to various parts of the body
- They can cause irreparable damage to the nervous system
- The most hazardous gases can intoxicate or suffocate, and even destroy individual bodily organs
- They can be lethal

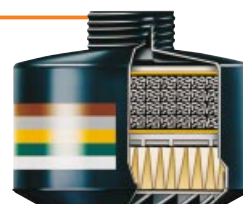
The consequences of the harmful gases depend on:

- The characteristics of the gas or vapour; its toxicity and substance
- The concentration of the contaminant in the air
- Duration of exposure to the contaminant
- The chemical compound of the contaminant
- The ability to react chemically with organic tissue as well as the propensity to be absorbed in the blood
- Personal characteristics e.g. rate of respiration, condition of the blood circulation and sensitivity of the person



COMBINED FILTERS

Combined filters remove hazardous gases and vapours as well as solid and liquid particles. The particle filter traps aerosol-based particles such as paint droplets. When spraying liquid substances (e.g. spray painting) a combined filter must be used.



Physiological effects of particulates on human body

Inert dusts	Minor effects of concentration: e.g. <math><5 \text{ mg/m}^3</math> slight irritation, > 30 mg/m ³ high irritation
Mineral dusts, e.g. silica dust, quartz	Detrimental, hazardous effects: changes in lung tissues
Metal fumes and dusts, e.g., lead, chromium, cadmium, mercury, poisonous particles	Pneumoconiosis, bronchitis, asthma, inflammation, cancer
Manufactured fibres, e.g. asbestos and other fibres	Pulmonary fibrosis, mesothelioma, cancer
Airborne radioactive substances	can cause severe damages, e.g. cancer
Micro-organisms, e.g. bacteria and viruses	biological agents can cause hazardous diseases, e.g. farmer's lung

How far particles penetrate depends on the particle size - the smaller size the more detrimental

Particle size	Pulmonary tract
> 10 µm	Membranes of nose and mouth
> 5 ... 10 µm	Cilia, nose, trachea, bronchi
< 5 µm	In the lungs, pleura
< 1 µm	Alveoli

Particle forms

- **Dusts** are airborne solid particles, which are generated during the processing of organic and inorganic substances. Solid particles can be mineral, metal, coal, wood, or crop dusts as well as various fibres.
- **Fumes**, evaporating metal creates fumes during cooling.
- **Smoke** consists of small coal and soot particles which include both liquid droplets and solid particles.
- **Mists** are airborne droplets which are created when a fluid disperses in air in form of small particles.
- **Micro-organisms**, e.g. bacteria and viruses.
- **Radioactive particles** are generated as a result of radiation.



Gas filter classification EN 14387:2004

Class	Capacity	Max gas concentration EN 14387. Negative pressure respirators	Max gas concentration. EN 12941 & 12942. Powered respirators
Class 1	Low capacity	1000 ppm (0.1 %)	500 ppm (0.05 %)
Class 2	Medium capacity	5000 ppm (0.5 %)	1000 ppm (0.1 %)
Class 3	High capacity	10 000 ppm (1%)*	5 000 ppm (0.5 %)

*) **NOTE!** Test gas concentration with A-filter in class 3. is 0.8 vol% (EN 14387).

Gas filter capacity EN 14387:2004

Filter type	Test gas	Minimum allowed breakthrough time for gases in different classes		
		1. class	2. class	3. class
A	Cyclohexane C ₆ H ₁₂	70 min	35 min	65 min (0.8 vol%)
B	Chlorine Cl ₂	20 min	20 min	30 min
	Hydrogen sulphide H ₂ S	40 min	40 min	60 min
	Hydrogen cyanide HCN	25 min	25 min	35 min
E	Sulphur dioxide SO ₂	20 min	20 min	30 min
K	Ammonia NH ₃	50 min	40 min	60 min

Special filters

Filter type	Test gas	Minimum allowed breakthrough time	Test gas concentration
AX	Dimethyl ether CH ₃ -O-CH ₃	50 min	0.05 vol %
Hg-P3	Isobutane C ₄ H ₁₀	50 min	0.25 vol %
[EN 14387]	Mercury, vapour Hg	100 hours	1.6 ml/mg

Gas filter capacity with powered air respirators EN 12941 and 12942

Filter type	Test gas	Minimum allowed breakthrough time for gas in different classes		
		1. class	2. class	3. class
A	Cyclohexane C ₆ H ₁₂	70 min	70 min	35 min
B	Chlorine Cl ₂	20 min	20 min	20 min
	Hydrogen sulphide H ₂ S	40 min	40 min	40 min
	Hydrogen cyanide HCN	25 min	25 min	25 min
E	Sulphur dioxide SO ₂	20 min	20 min	20 min
K	Ammonia NH ₃	50 min	50 min	40 min

NOTE! The test gas concentrations are different from those of EN 14387.

HOW LONG FILTER WORKS?

The service life of a filter depends on:

- Concentration and characteristics of the workplace contaminant
- Filter capacity, e.g. filter class, compare workplace concentrations to test values
- Breathing volume and work rate
- Humidity of the air
- Temperature of the atmosphere

Gas filter test performance

Gas filter lifetime is tested by directing the test gas through the filter at 30 l/min, which is equivalent to the volume of air per minute used by an average person carrying out medium heavy work. The filter lifetime can be roughly calculated by comparing the concentration at the workplace and the minimum breakthrough times required for the filter type.

How to calculate lifetime of a gas filter?

$$T = \frac{1\ 000\ 000 \times G}{V \times C}$$

T = Time in minutes

G = Capacity of the gas filter to absorb impurities (g)

V = Breathing rate (l/min)

C = Concentration of the contaminant in the ambient air

PRO2000 FILTERS



PF10 P3



GF 22 A2



GF 22 B2



GF 32 E2



GF 22 K2



GF 22 A2B2



GF 32 A2B2E2K2



GF 32 AX



CF 22 A2-P3



CF 22 B2-P3



CF 32 E2-P3



CF 22 K2-P3



CF 22 A2B2-P3



CF 22 A2B2E1-P3



CF 32 A2B2E2K2-P3



CFR 32 A2B2E2K2-P3



CF 32 AX-P3



CF 32 Reactor-Hg-P3



CF 22 A1E1Hg-P3



CF 32 A2B2E2K2-Hg-P3

Colour code	Filter	Main area of application	Weight g	Ref. nr	Storage time Years
	PF10 P3 R	Solid and liquid particles of toxic agents, radioactive substances and micro-organisms, e.g. bacteria and viruses.	74	052670	10
	*) PFR10 P3 R	Solid and liquid particles of toxic agents, radioactive substances and micro-organisms, e.g. bacteria and viruses.	90	052680	10
	GF22 A2	Gases and vapours from organic compounds (e.g. solvents) with a boiling point above 65°C.	190	042870	5
	GF22 B2	Inorganic gases and vapours, e.g. chlorine, hydrogen sulphide, hydrogen cyanide.	195	042871	5
	GF32 E2	Acid gases and vapours, e.g. sulphur dioxide.	305	042972	5
	GF22 K2	Ammonia and organic ammonia derivatives.	255	042873	5
	GF22 A2B2	Organic and inorganic gases and vapours.	195	042874	5
	GF32 A2B2E2K2	Organic, inorganic and acid gases and vapours as well as ammonia and organic ammonia derivatives.	320	042979	5
	GF32 AX	Gases and vapours from organic compounds with a boiling point below 65°C.	268	042970	5
	CF22 A2-P3 R	Gases and vapours from organic compounds with a boiling point above 65 °C, solid and liquid hazardous particles, e.g. radioactive and toxic substances and micro-organisms, e.g. bacteria and viruses.	230	042670	5
	CF32 A2-P3 R	Gases and vapours from organic compounds with a boiling point above 65 °C, solid and liquid hazardous particles, e.g. radioactive and toxic substances and micro-organisms, e.g. bacteria and viruses.	340	043070	5
	CF22 B2-P3 R	Inorganic gases and vapours, e.g. chlorine, hydrogen sulphide, hydrogen cyanide, solid and liquid hazardous particles, e.g. radioactive and toxic substances and micro-organisms, e.g. bacteria and viruses.	265	042671	5
	CF32 E2-P3 R	Acid gases and vapours e.g. sulphur dioxide, solid and liquid hazardous particles, e.g. radioactive and toxic substances and micro-organisms, e.g. bacteria and viruses.	265	043072	5
	CF22 K2-P3 R	Ammonia and organic ammonia derivatives, solid and liquid hazardous particles, e.g. radioactive and toxic substances and micro-organisms, e.g. bacteria and viruses.	370	042673	5
	CF22 A2B2-P3 R	Organic and inorganic gases and vapours, solid and liquid hazardous particles, e.g. radioactive and toxic substances and micro-organisms, e.g. bacteria and viruses.	265	042674	5
	CF22 A2B2E1-P3 R	Organic, inorganic and acid gases and vapours, solid and liquid hazardous particles, e.g. radioactive and toxic substances and micro-organisms, e.g. bacteria and viruses.	270	042678	5
	CF32 A2B2E2K2-P3 R	Organic, inorganic and acid gases and vapours as well as ammonia and organic ammonia derivatives, solid and liquid hazardous particles, e.g. radioactive and toxic substances and micro-organisms, e.g. bacteria and viruses.	370	042799	5 **)
	*) CFR32 A2B2E2K2-P3 R	Organic, inorganic and acid gases and vapours as well as ammonia and organic ammonia derivatives, solid and liquid hazardous particles, e.g. radioactive and toxic substances and micro-organisms, e.g. bacteria and viruses.	370	043699	5
	CF32 AX-P3 R	Gases and vapours from organic compounds with a boiling point below 65°C, solid and liquid hazardous particles, e.g. radioactive and toxic substances and micro-organisms, e.g. bacteria and viruses.	310	042770	5
	CF32 Reactor-Hg-P3 R	Mercury and mercury compounds, radioactive iodine and its organic compounds like methyl iodide, solid and liquid hazardous particles, e.g. radioactive and toxic substances and micro-organisms, e.g. bacteria and viruses.	307	042777	5
	*) CFR32 Reactor-Hg-P3 R	Mercury and mercury compounds, radioactive iodine and its organic compounds like methyl iodide, solid and liquid hazardous particles, e.g. radioactive and toxic substances and micro-organisms, e.g. bacteria and viruses.	328	043679	5
	CF22 A1E1Hg-P3 R	Organic and acid gases and vapours, mercury and mercury compounds plus ozone, solid and liquid hazardous particles, e.g. radioactive and toxic substances and micro-organisms, e.g. bacteria and viruses.	268	042778	5
	CF32 A2B2E2K2-Hg-P3 R	Organic, inorganic and acid gases and vapours, ammonia and organic ammonia derivatives, mercury and mercury compounds, solid and liquid hazardous particles, e.g. radioactive and toxic substances and micro-organisms, e.g. bacteria and viruses.	370	042798	5

*) PFR and CFR = Reduced opening

**) In aluminium foil package and/or plugged 10 y.

FILTER GUIDE

Explanations

Use **air-line** = compressed air-line is recommended

Use **SCBA** = due to the dangerous nature of the hazard use Self Contained Breathing Apparatus

Note!

This filter recommendation is applicable only to Scott Health & Safety filters and should not be used if other filters are used.

Before use of this guide the risk assessment must be done at the workplace. The substances must be identified and measured. Airborne con-

mination levels must be compared with acceptable limits. The maximum exposure limits must not be exceeded! The filtering device must not be used if the environment and contamination are unknown or if the composition of the atmosphere is likely to change disadvantageously. In case of doubt, insulating respirators which function independently from the atmosphere must be used. The filtering

device may be used only if the oxygen content of the air is 18-23 vol. %. Gas filters do not protect against particles. Similarly, particle filters do not provide protection against gases or vapour. In case of doubt, use combined filters. Normal filtering device do not protect against certain gases such as CO (carbon monoxide), CO₂ (carbon dioxide) and N₂ (nitrogen).

Substance	Filter recommendation	Substance	Filter recommendation	Substance	Filter recommendation	Substance	Filter recommendation
A		B		Camphor, synthetic	A-P3	Copper fume, dusts & mists (as Cu)	P3
Acetaldehyde	AX	BGE	A	e-Caprolactam	A-P3	Cotton dust, raw	P3
Acetic acid	A-P3	γ-BHC (ISO)	A-P3	Captafol (ISO)	A-P3	Cresols all isomers	A-P3
Acetic anhydride	A	Barium compounds	P3	Captan (ISO)	A-P3	Cristobalite	P3
Acetone	AX	Benomyl (ISO)	A-P3	Carbaryl (ISO)	A-P3	Crotonaldehyde	A
Acetonitrile	A	Benzene	A	Carbofuran (ISO)	A-P3	Cumene	A
Acetylene	Use air-line	Benzenethiol	A	Carbon black	P3	Cyanamide	B-P3
o-Acetylsalicylic acid	P3	Benzene -1,2,4-tri-carboxylic acid		Carbon dioxide	Use air-line	Cyanides, except hydrogen cyanide, cyanogens & cyanogenchloride, (as CN)	B-P3
Acrolein (2-propenal)	AX	1,2 anhydride	A-P3	Carbon disulfide	B-P3	Cyanogen	Use air-line
Acrylaldehyde	AX	Benzidene salts	A-P3	Carbon monoxide	Use air-line	Cyanogen chloride	Use air-line
Acrylamide	A-P3	Benzidine	A-P3	Carbon tetrabromide	A-P3	Cyclohexane	A
Acryl acid	A, E	p-Benzoquinone	A-P3	Carbon tetrachloride	A	Cyclohexanol	A
Acrylamide	A-P3	Benzoyl peroxide	A-P3	Carbonyl chloride (phosgene)	B-P3	Cyclohexanone	A
Acrylonitrile	A	Benzyl butyl phtalate	A-P3	Carbonyl fluoride	B	Cyclohexene	A
Aldrin	A-P3	Benzyl chloride	B-P3	Catechol (Pyrocatechol)	A-P3	Cyclohexylamine	A
Allyl alcohol	A	Beryllium compounds	Use SCBA	Cellulose	P3	Cyclonite (RDX)	B-P3
Allylamine	K	Biphenyl	A-P3	Chlorine	B	1,3 Cyclopentadiene	AX
Allylbromine	(B or AX)	Bismuthtelluride	P3	Chlorine dioxide	B	D	
Allyl 2,3-epoxypropyl ether	A	Bismuthtelluride, Se-doped	P3	Chlorine trifluoride	B	2,4-D (2,4-Dichlorophenoxy acetic acid)	A-P3
Allyl chloride	A	Borates, (Tetra) sodium salts	P3	Chloroacetaldehyde	A	DDT	
Allyl glycidyl ether (AGE)	A	Bornan-2-one	A-P3	a-Chloroacetophenone (Phenacyl chloride)		(Dichlorodiphenyl-trichloroethane)	A-P3
Allyl-isocyanate	A2B2-P3	Boron oxide	P3	(CN)	A-P3	DDVP, see Dichlorvos	A-P3
Allyl propyl disulfide	B	Boron tribromide	Use air-line	Chloroacetyl chloride	A-P3	Decaborane	B-P3
Aluminium alkyl compounds	P3	Boron trifluoride	Use air-line	Chlorobenzene		Demeton	A-P3
Aluminium chloride	AX	Bromacil (ISO)	A-P3	(Monochlorobenzene)	A	Diacetone alcohol	A
Aluminium metal and oxide	P3	Bromine	B-P3	o-Chlorobenzylidene malononitrile (CS)	A-P3	1,2-Diaminoethane	A, K
Aluminium welding fumes	P3	Bromine pentafluoride	Use air-line	2-Chlorobuta-1, 3-diene	AX-P3	Diazinon	A-P3
Aluminium, soluble salts	P3	Bromochloromethane	AX	Chlorodimethyl ether	AX	Diazomethane	B-P3
4-Aminoazobenzene	A-P3	Bromoethane	AX	1-Chloro-2, 3-epoxypropane (Epichlorohydrin)	A	Diborane	Use air-line
4-Aminodiphenyl salts	Use SCBA	Bromoethylene	AX	Chloroethane	AX	1,2-Dibromoethane	A
2-Aminoethanol	A	Bromoforn	A	2-Chloroethanol (Ethylene chlorohydrin)	A	2-n-Dibutylaminoethanol	A
2-Aminopyridine	A-P3	Bromomethane	AX	Chloroethylene	A	Dibutyl phosphate	A-P3
3-Amino-1,2,4-triazole	A	1,3-Butadiene	AX	Chloroform		Dibutyl phthalate	A-P3
Ammonia	K	Butane	AX	(Trichloromethane)	AX	Dichloracetylene	Use SCBA
Ammonium chloride fume	K-P3	Butanethiol	B	bis-Chloromethyl ether	B	1,2-Dichlorobenzene	A
Ammonium sulfamate (Ammate)	P3	2-Butanone	A	1-Chloro-1-nitropropane	B	1,4-Dichlorobenzene	A
n-Amyl acetate	A	2-Butoxyethanol (Butyl cellosolve)	A-P3	Chloropicrin (PS)	A	3,3'-Dichlorobenzidine	Use air-line
sec-Amyl acetate	A	Butyl acetate	A	β-Chloroprene	AX-P3	1,3-Dichloro-5, 5-dimethyl hydantoin	ABE-P3
Aniline & homologues	A	tert-Butyl acetate	A	o-Chlorostyrene	A	1,1-Dichloroethane	AX
Anisidine, o-, p-isomers	A-P3	Butyl acrylate	A	2-Chlorotoluene	B-P3	1,2-Dichloroethane	A
Antimony and compounds (as SB)	P3	n-Butyl alcohol	A	2-Chloro-6-(trichloromethyl) pyridine	A-P3	Dichloroethyl ether	A
Antimony trioxide	P3	sec-Butyl alcohol	A	Chlorpyrifos (ISO)	A-P3	Dichloromethane	AX
p-Aramid respirable fibres	P3	tert-Butyl alcohol	A	Chromates, certain insoluble forms	P3	1,1-Dichloro-1-nitroethane	A
Argon	Use air-line	N-Butylamine	A	Chromic acid and Chromates (as Cr)	P3	1,2-Dichloropropane	A
Arsenic & compounds (except Arsine)	P3	tert-Butyl chromate (as CrO ₃)	P3	Chromite (chromate) (as Cr)	P3	Dichloropropene	A
Arsenic trioxide	P3	n-Butylglycidyl ether	A	Chromium, sol. chromic, chromous salts (as Cr)	P3	2,2-Dichloropropionic acid	A
Arsine	Use air-line	n-Butyl lactate	A-P3	Coal dust in mines	A-P3	Dichlorvos (DDVP) (ISO)	A-P3
Asbestos	P3	2-sec Butylphenol	A	Coal tar pitch volatiles (as cyclohexane solubles)	A-P3	Dicyclohexyl phthalate	A-P3
Asphalt (petroleum fumes)	A-P3	p-tert Butyltoluene	A	Cobalt metal, dust and fume (as Co)	P3	Dicyclopentadiene	A-P3
Atrazine	P3	C				Dicyclopentadienyliiron	A-P3
Azinphos-methyl (ISO)	A-P3	Cadmium, dust & salts (as Cd)	P3			Dieldrin (ISO)	A-P3
Aziridine	ABEK	Cadmium oxide				Diethylamine	K
		Cadmium oxide fume (as Cd)	P3				
		Caesium hydroxide	P3				
		Calcium carbonate	P3				
		Calcium cyanamide	P3				
		Calcium hydroxide	P3				
		Calcium oxide	P3				

2-Diethylaminoethanol	K	Fluoride (as F)	P3	Lithium hydride	P3	Neon	Use air-line
Diethylene triamine	A-P3, K-P3	Fluorine	B	Lithium hydroxide	P3	Nickel and inorganic compounds	P3
Diethyl ether	AX	Formaldehyde	AX, B, E	M		Nickel and organic compounds (as Ni)	A-P3
Diethyl phthalate	A-P3	Formamide	A-P3	Magnesium oxide fume (as Mg)	P3	Nicotine	A-P3
Difluorodibromo- methane	AX	Formic acid	E-P3	Malathion	A-P3	Nitrapyrin	A-P3
Diglycidyl ether	A-P3	Fuel oils (various)	A-P3	Maleic anhydride	A-P3	Nitric acid	E-P3
o-Dihydroxybenzene	A-P3	Furfural	A	Manganese & compounds (as Mn)	P3	4-Nitroaniline	AB-P3
Diisobutyl ketone	A	Furfuryl alcohol	A	Manganese fume (as Mn)	P3	Nitrobenzene	A-P3
Diisopropylamine	K	G		Manganese cyclopentadienyl tricarbonyl	A-P3 P3	4-Nitrobiphenyl	P3
Dimethoxymethane	AX	Gasoline	A	Manganese tetraoxide	P3	Nitroethane	A-P3, (B-P3)
N,N-Dimethyl acetamide	A	Germanium	Use air-line	Mercury alkyls (as Hg)	Hg-P3	Nitrogen dioxide	BE
Dimethylamine	K	Glass, fibrous or dust	P3	Mercury & its inorganic divalent compounds	Hg-P3	Nitrogen trifluoride	Use air-line
Dimethylaminobenzene	A	Glutaraldehyde	A-P3	Mesitylene	A	Nitroglycerin	A-P3
N,N-Dimethylaniline	A	Glyserol, mist	A-P3	Mesityl oxide	A	Nitromethane	A-P3
Dimethylbenzene	A	Glyserol trinitrate	A-P3	Methacrylic acid	A-P3	1-Nitropropane	A-P3
Dimethylcarbonyl chloride	A-P3	Glycol ethers	A	Methacrylonitrile	AB-P3	2-Nitropropane	A-P3
Dimethyl ether	AX	H		Methane	Use air-line	n-Nitrosodimethylamine	A-P3
NN-Dimethylethylamine	K	Hafnium	P3	Methanethiol, see Methyl mercaptan	B	Nitrotoluene	A-P3
Dimethylformamide	A	Helium	Use air-line	Methanol	AX	Octachloronaphthalene	A-P3
1,2-Dimethyl- hydrazine	K	Heptan-2-one	A	Methomyl (ISO)	P3	n-Octane	A
Dimethyl phthalate	P3	Heptan-3-one	A	Methoxychlor (ISO)	P3	Oil mist, mineral	P3
Dimethyl sulphate	AP3	Hexachlorobenzene	A	2-Methoxyethanol (Methyl cellosolve)	A	Osmium tetroxide (as Os)	B-P3
Dinitrobenzene	A-P3	Hexachlorocyclo- pentadiene	A	Methyl acetate	AX	Oxalic acid	P3
Dinitro-o-cresol	B-P3	Hexachloroethane	A-P3	Methyl acrylate	A	Oxygen difluoride	B
1,4-Dioxane	A-P3	Hexamethyl diisocyanate	A2B2-P3	Methyl alcohol	A	Ozone	Reactor-Hg-P3 or A1E1Hg-P3
Dioxathion (ISO)	A-P3	Hexamethyl- phosphoramidate	A-P3	(Methanol)	AX	P	
Diphenylamine	A-P3	Hexane (n-hexane)	A	Methylamine	K	Paraffin wax fume	A-P3
Diphenylmethane diisocyanate (MDI)	A2B2-P3	2-Hexanone	A	Methyl amyl alcohol	A	Paraquat dichloride (ISO)	A-P3
Dipropylene glycol methyl ether	A	Hexone	A	Methyl n-amyl ketone (2-Heptanone)	A	Parathion (ISO)	A-P3
Diquat Dibromide (ISO)	P3	Hexylene glycol	A	Methyl bromide	AX	Pentachlorophenol	A-P3
Disulfoton	ABE-P3	Hydrazine	K-P3	Methyl t-butyl ether	AX	Pentane, all isomers	AX
2,6-Di-tert-butyl- para-cresol	P3	Hydrazine salts	K-P3	Methyl butyl ketone	A	Perchloroethylene	A
Diuron (ISO)	P3	Hydrazobenzene	ABEK-P3	Methyl chloroform (1,1,1-Trichloro- ethane)	A	Perchloromethyl mercaptan	B
Divinyl benzene	A	Hydrocarbon solvents	A-P3	Methyl cyclohexane	A	Perchloryl fluoride	B
E		Hydrogenated terphenyls	A-P3	Methylcyclohexanol	A	Phenyl chloride	A-P3
Emery	P3	Hydrogen bromide	B-P3	2-Methylcyclo- hexanone	A	Phenol	A-P3
Endosulfan (ISO)	P3	Hydrogen chloride	B-P3	Methylene bisphenyl diisocyanate (MDI)	A2B2-P3	n-Phenyl-β- Naphthylamine	A-P3
Endrin (ISO)	P3	Hydrogen cyanide	B-P3	4,4'-Methylene-bis (2-chloroaniline)	A2B2-P3	p-Phenylenediamine	P3
Epichlorohydrin	A	Hydrogen fluoride (as F)	E-P3	MbOCA	A2B2-P3	Phenyl ether (vapour)	A
1,2-Epoxypropane	AX	Hydrogen peroxide	B-P3	Methylene bis (4-cyclohexyliso- cyanate)	A2B2-P3	Phenyl ether-Diphenyl mixture (vapor)	A-P3
2,3-Epoxy-1-propanol	A	Hydrogen sulfide	B	4,4'-Methylene-bis (2-chloroaniline)	A2B2-P3	Phenyl glycidyl ether (PGE)	A
Ethanethiol	AX, B	Hydroquinone	A-P3	MbOCA	A2B2-P3	Phenyl hydrazine	A
2-Ethoxyethanol	A	2-Hydroxypropyl acrylate	A	Methylene bis (4-cyclohexyliso- cyanate)	A2B2-P3	Phenyl mercaptan	B
2-Ethoxyethyl acetate (Cellosolve acetate)	A	I		Methyl ethyl ketone peroxideS (MEKP)	A-P3	Phenyl phosphine	B
Ethyl acetate	A	IGE (2,3-Epoxypropyl isopropyl ether)	A	Methyl formate	AX	Phorate	A-P3
Ethyl acrylate	A	Indene	A	Methyl hydrazine	K	Phosdrin (Mevinphos)	A-P3
Ethyl alcohol (Ethanol)	A	Indium & Compounds (as In)	P3	Methyl iodide	AX	Phosgene (carbonyl chloride)	B-P3
Ethylamine	K	Iodine	B-P3	Methyl isomyl ketone	A	Phosphine	B
Ethyl amyl ketone (5-Methyl-3-heptanone)	A	Iodoform	A-P3	Methyl isobutyl ketone	A	Phosphoric acid	P3
Ethylbenzene	A	Iodomethane	AX	Methyl isocyanate	A2B2-P3	Phosphorous (yellow)	P3
Ethyl bromide	AX	Iron oxide, fume (as FE)	P3	Methyl methacrylate	A	Phosphorus pentachloride	B-P3
Ethyl butyl ketone (3-heptanone)	A	Iron pentacarbonyl	A-P3	Methyl parathion	A-P3	Phosphorus pentasulfide	B-P3
Ethyl chloride	AX	Iron salts	P3	Methyl propyl ketone	A	Phosphorus trichloride	B-P3
Ethylene chlorohydrin	A	Isoamyl acetate	A	Methyl silicate	A	Phthalic anhydride	A-P3
Ethylene glycol	A-P3	Isoamyl alcohol	A	a-Methylstyrene	A	Picloram (ISO)	AB-P3
Ethylene glycol dinitrate and/or Nitroglycerin	A	Isobutane	AX	Mevinphos (ISO)	A-P3	Picric acid	P3
Ethylene glycol mono- ethyl ether acetate	A	Isobutyl acetate	A	Molybdenum (as Mo)	P3	Platinum (Soluble salts) (as Pt)	P3
Ethylene oxide	AX	Isobutyl alcohol	A	Monochloroacetic acid	A-P3	Polychlorinated biphenyls (PCB's)	A-P3
Ethylenimine	K	Isophorone	A	Monomethyl aniline	A	Polyvinyl chloride (PVC)	P3
Ethyl ether	AX	Isophorone diisocyanate	A2B2-P3	Morpholine	A	Potassium hydroxide	P3
Ethyl formate	AX	Isopropyl acetate	A	N		n-Propanol	A
Ethyl mercaptan	AX	Isopropyl alcohol	A	Naphthalene	A-P3	Propargyl alcohol	A
4-Ethylmorpholine	A-P3	Isopropylamine	B	2-Naphthylamine	A-P3	Propiolactone	A-P3
Ethyl silicate	A	n-Isopropylaniline	A			Propionic acid	A-P3
F		Isopropyl benzene (as Cumene)	A			n-Propyl acetate	A
Fenchlorofoss (ISO)	A-P3	Isopropyl ether	A			Propyl alcohol	A
Ferbam (ISO)	P3	Isopropyl glycidyl ether	A			Propylene	Use air-line
Ferrocene (ISO)	A-P3	L					
Ferrovanadium dust	P3	Lead and compounds (except lead alkyls)	P3				
Flour dust	P3	Lead alkyls	A-P3				
		Lindane	A-P3				

Substance	Filter recommendation	Substance	Filter recommendation	Substance	Filter recommendation	Substance	Filter recommendation
Propylene glycol	A	Styrene	A	Tetryl (2,4,6-trinitro-phenyl-methyl-nitramine)	P3	V	
Propylene glycol dinitrate	A-P3	Subtilisins (Proteolytic enzymes)	P3	Thallium, soluble compounds (as TI)	P3	Vanadium pentoxide	P3
Propylene oxide	AX	Sulfur dioxide	E	4,4'-Thiobis (6-tert-butyl-m-cresol)	P3	Vinyl acetate	A
PyrethrINS (ISO)	P3	Sulfuric acid	E-P3	Thioglycolic acid	A-P3	Vinyl benzene	A
Pyridine	A-P3	Sulfur monochloride	B-P3	Toluene (Toluol)	A	Vinyl bromide	A
Pyrocatechol	A-P3	Sulfur pentafluoride	B-P3	Toluene-2, 4-diisocyanate (TDI)	A2B2-P3	Vinyl chloride	AX
Q		Sulfur tetrafluoride	Use	o-Toluidine	A-P3	Vinylidene chloride	AX-P3
Quartz	P3	Sulfuryl difluoride	Use	Tributyl phosphate	A-P3	Vinyl toluene	A
Quinone	A-P3	2,4,5-T (ISO)	air-line P3	1,2,4-Trichlorobenzene	A	VM & P Naphtha	A
R		T		1,1,1-Trichloroethane	A	VX	B-P3
Resorcinol	A-P3	Tabun (GA)	B-P3	Trichloroethylene	A-P3	W	
Rhodium (as RH) metal fume and dust	P3	Tantalum	P3	Trichloromethane	AX	Warfarin (ISO)	P3
Rosin core solder pyrolysis products (as formaldehyde)	B-P3	TEDP	AB-P3	1,2,3-Trichloropropane	A	White spirit	A
S		Tellurium & compounds (as Te)	P3	Tricyclohexyltin hydroxide	A-P3	X	
Sarin (GB)	ABE-P3	Tellurium hexafluoride (as Te)	Use SCBA	Triethylamine	A, K	Xylene (all isomers)	A
Selenium compounds (as Se)	P3	Terphenyls	A-P3	Trimethyl benzene	A	Xylidine, all isomers	AK
Silica dust	P3	1,1,1,2-Tetrachloro-2,2-difluoroethane	A	Trimethyl phosphite	A-P3	Y	
Silver, metal	P3	1,1,2,2,-Tetrachloro-1,2-difluoroethane	A	2,4,6-Trinitrotoluene (TNT)	P	Yttrium	P3
Silver soluble compounds (as Ag)	P3	1,1,2,2,-Tetrachloro, ethane	A	Tri-o-tolyl phosphate	A-P3	Z	
Sodium azide	P3	Tetrachloro-naphthalene	A-P3	Triphenylamine	A-P3	Zinc chloride, fume	P3
Sodium bisulfite	E-P3	Tetrahydrofuran	A	Triphenyl phosphate	A-P3	Zinc chromates (inc. zinc potassium chromate)	P3
Sodium fluoroacetate	P3	Tetramethyl lead (as Pb)	A-P3	Tungsten & compounds	P3	Zinc oxide fume	P3
Sodium hydroxide	P3	Tetramethyl succinonitrile	A-P3	Turpentine	A	Zirconium compounds (as Zr)	P3
Sodium metabisulfite	P3	Tetranitromethane	B	U			
Soman (GD)	B-P3	Tetrasodium pyrophosphate	P3	Uranium compounds, natural, soluble (as U)	P3		
Stibine	Use air-line			Urethane (INN)	A-P3		
Stoddard solvent	A						
Strychnine	P3						

Restrictions on use:

- Standard filtering respirators do not protect against certain gases, e.g. CO (carbon monoxide), CO₂ (carbon dioxide) or N₂ (nitrogen).
- The storage time (month and year) for a filter is marked on the filter label. The above-mentioned storage times for Pro2000 filters are for a factory sealed filter package. Filters are sealed in plastic or foil bags by the manufacturer. Manufacture recommends storage at -10 ... +50 °C temperature and relative humidity below 75 %.
- After use, an opened filter must be wrapped closely, if it is likely to be reused, and it must be replaced not later than within 6 months.
- If the user can identify the breakthrough of the gas by smell, taste or irritation factor the filter must be replaced.
- When a hazardous gas has an olfactory threshold higher than the occupational exposure limit it produces no clear breakthrough sign. In these cases special directions regarding the calculated lifetime are required.
- The filter must be changed if the breathing resistance has increased noticeably.
- Maximum permitted time for use of the mercury filter Hg-P3 (applies also to filters A2B2E2K2Hg-P3, A1E1Hg-P3, Reactor Hg-P3) is 50 hours (EN 14387:2004).
- AX-filter is for single use only, and should be replaced after each shift (prEN529:2003).
- Against radioactive substances and microorganisms a particle filter is recommended for single use only.

SEE FOR MORE DETAILED INFORMATION ON
FILTER CHOICE, USE, STORING, MAINTENANCE
AND DISPOSAL SCOTT INSTRUCTIONS FOR USE.

Accessories

052691	Prefilter Pro2000 (set of 20)
052692	Prefilter holder Pro2000 (2 pcs + prefilters (6 pcs)
052690	Spark protector Pro2000 (incl. 2 holders + 2 metal spark covers)
052693	Plastic cover Pro2000 (2 pcs)
052694	Screw cork 40 mm

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