

Substance	Scott filter	Substance	Scott filter	Substance	Scott filter	Substance	Scott filter
<b>R</b>		<b>T</b>		Tributyl phosphate	A-P3	- Fume	P3
Resorcinol	A-P3	2,4,5-T	P3	Trichloroacetic acid	B	Valeraldehyde	A
Rhodium, metal fume and dust (as Rh)	P3	Tabun (GA)	B-P3	1,2,4-Trichlorobenzene	A	Vinyl acetate	A
- Soluble salts (as Rh)	P3	Tantalum	P3	1,1,1-Trichloroethane, see Methyl chloroform	A	Vinyl benzene, see Styrene	A
Ronnel	A-P3	TEDP	A-P3	Trichloroethylene	A	Vinyl bromide	AX
Rotenone	A-P3	Tellurium & compounds (as Te)	P3	Trichlorofluoromethane (Freon-11)	A	Vinyl chloride	AX
Rouge	P3	Tellurium hexafluoride (as Te)	A	Trichloromethane, see Chloroform	AX	Vinyl cyclohexene dioxide	A
		TEPP	A-P3	Trichloronaphthalene	A-P3	Vinylidene chloride	AX-P3
		Terphenyls	A-P3	1,2,3-Trichloropropane	A	Vinyl toluene	A
<b>S</b>		1,1,1,2-Tetrachloro-1,2-difluoroethane	A	1,1,2-Trichloro, 1,2,2-trifluoroethane	A	VX	B-P3
Sarin (GB)	B-P3	1,1,2,2-Tetrachloro, ethane	A				
Selenium	P3	Tetrachloronaphthalene	P3	Breathing apparatus		Warfarin	P3
Selenium hexafluoride	Breathing apparatus	Tetraethyl lead (as Pb)	A-P3	Tricyclohexyltin hydroxide (Plictran®)	P3	White spirit	A
Silicon	P3	Tetrahydrofuran	A	Triethylamine	A	Wood dust	P3
Silicon tetrahydride (Silane)	Breathing apparatus	Tetramethyl lead (as Pb)	A-P3	Trifluorobromomethane			
Silver, metal	P3	Tetramethyl succinonitrile	A-P3	Use SCBA or air-line			
Sodium	P3	Trantranitromethane	B	Trimethyl benzene	A		
Sodium azide	P3	Tetrasodium pyrophosphate	P3	Trimethyl phosphite	A	Xylene (o-, m-, p-isomers)	A
Sodium bisulfite	E-P3	Tetryl (2,4,6-trinitrophenyl-methylinitramine)	P3	2,4,6-Trinitrotoluene (TNT)	B	Xylidine	A-P3
Sodium fluoroacetate (1080)	P3	Thallium	P3	Triorthocresyl phosphate	A-P3		
Sodium hydroxide	P3	4,4'-Thiobis (6-tert-butyl-m-cresol)	P3	Triphenylamine	A-P3		
Sodium metabisulfite	E-P3	Thiram®	P3	Triphenyl phosphate	P3		
Soman (GD)	B-P3	Tioglycolic acid	B	Tungsten	P3	<b>Y</b>	
Stibine	B2	Tin, inorganic compounds, except SnH <sub>4</sub> and SnO <sub>2</sub>	P3	Turpentine	A	Yttrium	P3
Stoddard solvent	A	Tin, organic compounds (as Sn)	A-P3				
Strychnine	P3	Tin oxide (as Sn)	P3				
Styrene monomer	A	Titanium dioxide (as Ti)	P3				
Sulfur dioxide	E	Toluene (Toluol)	A				
Sulfuric acid	E-P3	Toluene-2,4-diisocyanate (TDI)	Isocyanates	<b>V</b>			
Sulfur monochloride	B	o-Toluidine	A-P3	Vanadium, (V <sub>2</sub> O <sub>5</sub> ) (as V)	P3	Zinc chloride fume	P3
Sulfur hexafluoride	Breathing apparatus			Urethane	A-P3	Zinc chromates (as Cr) (incl. Zinc potassium chromate)	P3
						Zinc oxide fume	P3
						Zinc stearate	P3
Sulfur tetrafluoride	B2					Zirconium compounds (as Zr)	P3
Sulfuryl fluoride	B						

## RESTRICTIONS ON USE:

- Standard filtering respirators do not protect against certain gases, e.g. CO (carbon monoxide), CO<sub>2</sub> (carbon dioxide) or N<sub>2</sub>, NO/NO<sub>2</sub> (nitrogen and its oxides).
- 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 identifies 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).
- AX-filter is for single use only, and should be replaced after each shift (EN14387).
- Against radioactive substances and micro-organisms a particle filter is recommended for single use only.

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

## Accessories for Pro2000 filters

052691	Pre-filter discs Pro2000 (set of 20)
052692	Pre-filter and holder Pro2000 (incl. 2 holders + 6 pre-filters)
052690	Spark arrester Pro2000 (incl. 2 holders + 2 aluminium spark arresters)
052693	Seal cover Pro2000 LD polyethylene (2 covers)
052694	Shower cover Pro2000, EPDM

For more detailed ordering information please contact your distributor or Scott customer service:

**SCOTT**  
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SFS-EN ISO 9001:2000  
No. 1067-06  
SFS-EN ISO 14001:2001  
No. 5073-01

Distributor:

In accordance with our policy of continual product improvement, equipment supplied may differ from the specification detailed herein.

PRO2000 ENG. 11/2008.1000.

**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 breathing 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

#### Particle filters

- Scott particle filters use only microfibre 'paper' media and do not use any electrostatic filtering method. They are marked 'R' for "reusable" (EN 143/A1:2006)
- PF10 P3 features a high capacity filter element; it removes even the smallest particles with efficiency better than 99,99 %
- The filter element is extremely water-repellent (hydrophobic)

#### Gas filters

- Use the highest grade active carbon materials, additionally treated for best performance
- 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

#### Combined filters

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

## HOW TO SELECT A FILTER?

- Will the atmosphere contain sufficient oxygen throughout the period of exposure?
- Which hazardous substances are likely to be present? What are their physical and chemical properties?
- Which forms do the airborne contaminants take – dust, fibre, mist, fume, micro-organism, gas, vapour, radioactive particulates or gases?
- What health effects can these substances have on the body? 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?
- What are the relevant occupational exposure limit values or the safe exposure level?

A filtering device should have the correct type of filter matched to the substance(s) from which the wearer needs protection. The maximum mass of filter designated to be connected to a half mask is 300g and to a full face mask 500g. Filters are

colour coded, marked with type and class, as well as labelled with the shelf life as factory sealed. The filter label includes the "CE" mark and EN standard number(s), and markings relevant to particular types; if for a powered respirator, the device class.



## PARTICULATE CONTAMINANTS

### Particle filter classification and efficiency EN 143

Class	Efficiency	Max permitted penetration		Protection factor 1)
		NaCl (solid, dusts)	Paraffin oil (liquid, aerosols)	
P1	Low efficiency (against coarse and minor solid particles)	20 %	20 %	With a half mask 4. With a full face mask 4.
P2	Medium efficiency (against solid and liquid hazardous particles)	6 %	6 %	With a half mask 10. With a full face mask 10.
P3	High efficiency (against solid and liquid toxic particles, and radioactive particles and micro-organisms)	0.05 %	0.05 %	With a half mask 20. With a full face mask 40.

1) BS 4275

#### Particle filter operation life

- The filter does not wear out but gets clogged with particles and/or 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.
- Scott particle filters use only microfibre 'paper' media and do not use any electrostatic filtering methods. Pro2000 filters are fully EN approved to the latest standards, marked 'R' for re-usable and CE marked. Shelf life for Scott particle filters is 10 years.

#### 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

### Physiological effects of particulates on the human body

Inert dusts	Minor effects of concentration: e.g. <5 mg/m <sup>3</sup> slight irritation, > 30 mg/m <sup>3</sup> 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 diseases, e.g. farmer's lung.

How far the particles break through depends on the particle size – the smaller the size the more detrimental they are

Particle size	Respiratory tract
> 10 µm	Trachea
> 5 ... 10 µm	Bronchial tube
< 5 µm	Lungs, pleura
< 1 µm	Alveoli
< 0.1 µm	Bloodstream

1 µm = 0.001 mm

### 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 and potentially other partly incinerated materials. It can include both liquid droplets and solid particles.

**Mists** are airborne droplets which are created when a fluid disperses in air in the form of small particles.

**Micro-organisms**, e.g. bacteria and viruses.

**Radioactive particles** are generated from radioactive material.





# GASEOUS CONTAMINANTS

## GAS FILTER CLASSIFICATION

### Capacity

Class	Capacity	Max concentration of the test gas. EN 14387. Negative pressure respirators	Max concentration of the test gas. EN 12941 and 12942. Powered and power assisted respirators
1	Low capacity	1.000 ppm (0.1 %)	500 ppm (0.05 %)
2	Medium capacity	5.000 ppm (0.5 %)	1.000 ppm (0.1 %)
3	High capacity	10.000 ppm (1 %)*	5.000 ppm (0.5 %)

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

### Gas filter capacity EN 14387

Filter type	Test gas	Minimum allowed breakthrough time for the test gas. Class /test gas concentration		
		1. class	2. class	3. class
A	Cyclohexane C <sub>6</sub> H <sub>12</sub>	70 min	35 min	65 min
B	Chlorine Cl <sub>2</sub>	20 min	20 min	30 min
	Hydrogen sulphide H <sub>2</sub> S	40 min	40 min	60 min
E	Hydrogen cyanide HCN	25 min	25 min	35 min
	Sulphur dioxide SO <sub>2</sub>	20 min	20 min	30 min
K	Ammonia NH <sub>3</sub>	50 min	40 min	60 min

### Special filters

Filter type	Test gas	Minimum allowed breakthrough time	Test gas concentration
AX	Dimethyl ether CH <sub>3</sub> OCH <sub>3</sub> Isobutane C <sub>4</sub> H <sub>10</sub>	50 min	0.05 vol.-% 0.25 vol.-%
Hg-P3	Mercury, vapour Hg	100 hours	1.6 ml/mg

### Gas filter capacity with powered air respirators EN 12941 & EN 12942

Filter type	Test gas	Minimum allowed breakthrough time for the test gas. Class /test gas concentration		
		1. class	2. class	3. class
A	Cyclohexane C <sub>6</sub> H <sub>12</sub>	70 min	70 min	35 min
B	Chlorine Cl <sub>2</sub>	20 min	20 min	30 min
	Hydrogen sulphide H <sub>2</sub> S	40 min	40 min	40 min
E	Hydrogen cyanide HCN	25 min	25 min	35 min
	Sulphur dioxide SO <sub>2</sub>	20 min	20 min	20 min
K	Ammonia NH <sub>3</sub>	50 min	50 min	40 min

## COMBINED FILTERS

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



## PRO2000 FILTERS

Colour code	Filter	Main area of applications, protects against	Weight g	Code	Storage time, years
	PF10 P3 PSL R	Solid and liquid particles of toxic agents, radioactive substances and micro-organisms, e.g. bacteria and viruses.	96	052670	10
	PFR10 P3 R	Solid and liquid particles of toxic agents, radioactive substances and micro-organisms, e.g. bacteria and viruses.	96	052680	10
	GF22 A2	Gases and vapours from organic compounds (e.g. solvents) with a boiling point above 65°C.	195	042870	5
	GF22 B2	Inorganic gases and vapours, e.g. chlorine, hydrogen sulphide, hydrogen cyanide.	198	042871	5
	GF32 E2	Acid gases and vapours, e.g. sulphur dioxide.	306	042972	5
	GF22 K2	Ammonia and organic ammonia derivatives.	257	042873	5
	GF22 A2B2	Organic and inorganic gases and vapours.	198	042874	5
	GF32 A2B2E2K2	Organic, inorganic and acid gases and vapours as well as ammonia and organic ammonia derivatives.	322	042979	5
	GF32 AX	Gases and vapours from organic compounds with a boiling point below 65°C.	268	042970	5
	CF22 A2-P3 PSL 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.	241	042670	5
	CF32 A2-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.	342	043070	5
	CF22 B2-P3 PSL 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.	268	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.	385	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.	312	042673	5
	CF22 A2B2-P3/PSL R	Organic and inorganic gases and vapours, solid and liquid hazardous particles, e.g. radioactive and toxic substances and micro-organisms.	268	042674	5
	CF22 A2B2E1-P3/PSL R	Organic, inorganic and acid gases and vapours, solid and liquid hazardous particles, e.g. radioactive and toxic substances and micro-organisms.	268	042678	5
	CF22 A1E1Hg-P3 PSL R	Organic and acid gases and vapours, mercury and mercury compounds, solid and liquid hazardous particles, e.g. radioactive and toxic substances and micro-organisms.	270	042778	5
	CF32 A2B2E2K2-P3 PSL 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.	387	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.	387	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.	350	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.	331	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.	331	043679	5
	CF32 A2B2E2K2-Hg-P3 PSL 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.	371	042798	5

Key: R = Reusable for the particle filter element  
 PSL and CFR = Reduced opening  
 PSL = Approved with selected Scott powered air respirators  
 \*) In aluminium foil package and/or plugged 10 y.

