SIGMA

FILTER SELECTION GUIDE

ENG

The SIGMA 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, SIGMA filters are manufactured using superior performance media, giving extended adsorption capacity for gas and combined filters and unrivalled efficiency for the particle element.

SIGMA filters are fully EN approved to the latest standards:

- marked 'R' for re-usable (EN 143:2000/ A1:2006),
- connected via a 40 mm EN148-1 thread as well as 40x4mm GOST 8762-75.
- CE approvals: EN 143:2000+A1:2006, EN 14387:2004+A1:2008, EN 12941:1998+A2:2008, EN 12942:1998+A2:2008..

SIGMA 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

- SIGMA particle filters use only microfibre 'paper' media and do not use any electrostatic filtering method. They are marked 'R' for "reusable"
- P3 R 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, SIGMA MOF-6 gas filters perform effectively using only 260 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, microorganism, 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 levels?

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.

PARTICLE FILTER CLASSIFICATION AND EFFICIENCY EN 143			
Class	efficiency	Max permitted penetration	
		NaCl (solid, dusts)	Paraffin oil (liquid, aerosols)
P1	**Low efficiency** (against coarse and minor solid particles)	20%	20%
P2	**Medium efficiency** (against solid and liquid hazardous particles)	6%	6%
P3	**High efficiency** (against solid and liquid toxic particles, and radioactive particles and microorganisms)	0,05%	0,05%

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.
- P3 R particle filters use only microfibre 'paper' media and do not use any electrostatic filtering methods. SIGMA P3 R filters are fully EN approved to the latest standards, marked 'R' for re-usable and CE marked. Shelf life for P3 R particle filters is 10 years.

PARTICULATE CONTAMINANTS

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/m³ slight irritation,> 30 mg/ m³ high irritation.
Mineral dusts, e.g., silica dust, quartz	Detrimental, hazardous effects; changes in lung tissues, cancer
Metal fumes and dusts, e.g., lead, chromium, cadmium, mercury, poi-sonous 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

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.

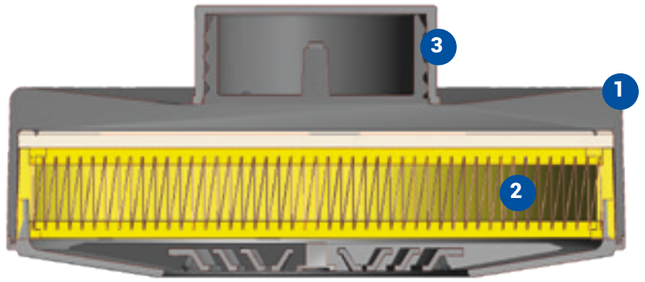
Fumes, evaporating metal creates fumes during cooling.

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.



1 – filter body; **2** – filter elemen; **3** – filter thread

EXPLOSIVE ENVIRONMENTS

It should be noted that the concentration of gases in potentially explosive atmospheres starts from 1% of the volume in the air, depending on the gas. In terms of concentration, it is 10,000 ppm, which corresponds to a class 3 filter – for collective protection. From this point of view, it can be deduced that classic small protective filters are unsuitable for this environment.

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%)

* 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**		
		Class 1	Class 2	Class 3
A	Cyclohexane (C_6H_{12})	70 min	35 min	65 min
B	Chlorine Cl_2	20 min	20 min	30 min
	Hydrogen sulphide H_2S	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

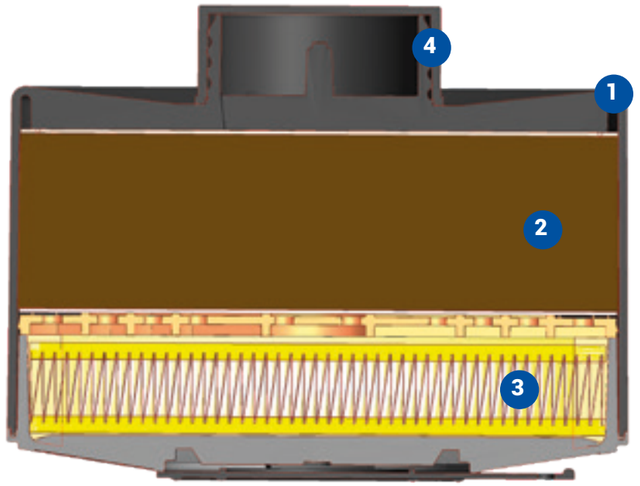
SPECIAL FILTERS			
Filter type	**Test gas**	**Minimum allowed breakthrough time**	**Test gas concentration**
AX	Dimethyl ether (CH_3COCH_3)	50 min	0,05%
	Isobutane (C_4H_{10})	50 min	0,25%
NO-P3	Nitric oxide (NO)	20 min	0,25%
	Nitrogen dioxide (NO_2)	20 min	0,25%
Hg-P3	Mercury, vapour (Hg)	100 hours	1,6 ml/m³

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**		
		Class 1	**Class 2**	**Class 3**
A	Cyclohexane ($C6H_{12}$)	70 min	70 min	35 min
B	Chlorine Cl_2	20 min	20 min	30 min
	Hydrogen sulphide H_2S	40 min	40 min	40 min
	Hydrogen cyanide HCN	25 min	25 min	35 min
E	Sulphur dioxide (SO_2)	20 min	20 min	20 min
K	Ammonia (NH_3)	50 min	50 min	40 min

GASEOUS CONTAMINANTS

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.



1 – filter body; **2** – active carbon; **3** – filter element; **4** – filter thread

THE SERVICE LIFE OF A GAS 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

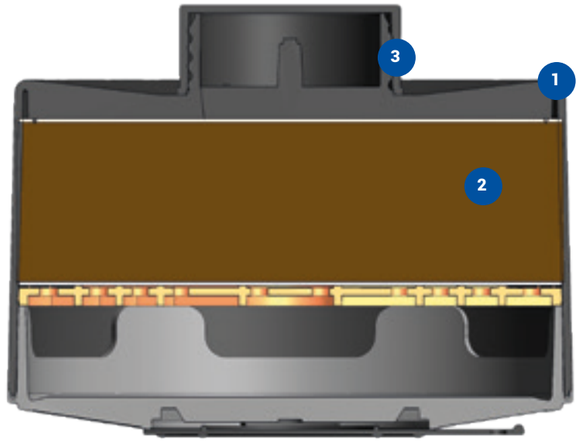
GASES AND VAPOURS HAVE VARIOUS EFFECTS ON HEALTH:

- They can irritate the membranes of respiratory organs, the eyes and skin
- They can reach the lungs and cause damage there
- 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

GASEOUS CONTAMINANTS

EFFECTS OF GASEOUS SUBSTANCES DEPEND ON:

- The characteristics of the gas or vapour; e.g., toxicity
- The concentration of the contaminant in the air
- Duration of exposure to the contaminant
- The chemical compound or mixture of substances making up 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, blood circulation and sensitivity



1 – filter body; **2** – active carbon; **3** – filter thread

Filter type	Colour code	Application
P3		Solid and liquid particles of toxic agents, radioactive substances and microorganisms, e.g., bacteria and viruses.
A2		Gases and vapours from organic compounds with a boiling point below 65ºC.
B2		Inorganic gases and vapours, e.g., chlorine, hydrogen sulphide and hydrogen cyanide.
E2		Acid gases and vapours e.g., sulphur dioxide.
K2		Ammonia and organic ammonia derivates.
ABEK2 – P3		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.
Hg – P3		Mercury and mercury compounds, radioactive and toxic dust, bacteria, viruses, fungus
Reaktor – P3		Radioactive iodine, Iodine and its organic compounds (e.g., methyl iodide), radioactive and toxic dust, bacteria, viruses, fungus

FILTER SELECTION GUIDE

P3 R

MOF-6 protiplynový

OF-90 NBC

MOF-6 kombinovaný

OF-02 CBRN

SIGMA

RECOMMENDED PROTECTION FOR ENVIRONMENT WITH CHEMICAL HAZARD

SORTED ALPHABETICALLY

NOTE: This filter selection guide is applicable only to SIGMA filters and does not offer guidance for other manufacturer's filters. This guide includes SIGMA's basic application data of filter types, and does not cover all potential airborne contaminants. While we are glad to provide guidance, responsibility for correct filter selection remains with the health and safety professionals in the workplace. Before choosing a filter, a risk assessment must be completed. Hazardous substances in the workplace air must be identified and measured. Airborne contaminant levels must be compared with the relevant occupational exposure limit values or the safe exposure levels (see national guidance). The required protection factor, the RPE to be used and the filter type should be specified with consideration to the properties of the hazardous substances and needs of the wearer, the work and the workplace conditions. A filtering device may be used only if the oxygen content of the air is >17 vol.-% and <23 vol.-%, and not if the airborne contaminants are unknown or if the composition of the atmosphere is likely to change disadvantageously. The recommended minimum oxygen level is 19.5%. In case of doubt, insulating respirators which function independently from the ambient atmosphere (e.g., SCBA or Airline) must be used. Gas filters do not protect against particles. Likewise, particle filters do not provide protection against gases or vapours. In case of doubt, use combined filters.

ENG

RECOMMENDED PROTECTION

Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
1,1,2,2-Tetrachlordiben-zo-p-dioxin	TCDD	1746-01-6							P3 R	
1,1-Dichloretan	Ethylidendichlo-ride	75-34-3						●		
1,1-Dichloreten		75-35-4						●		
1,1-Dichloro-1-nitro-ethane		594-72-9	●						P2 R	
1,1-Dimetoxymethane		534-15-6						●		
1,1-Dimetylhydrazine		57-14-7				●				
1,2,3-Trimetylbenzene		526-73-8	●							
1,2-Benzopyrene		50-32-8							P3 R	
1,2-Butadien	Methylallen	590-19-2						●		
1,2-Dibrommethane		74-95-3	●				●			
1,2-Dihydroxybenzene	Pyrocatechin	120-80-9							P3 R	
1,2-Dichloretane	Ethylendichloride	107-6-2	●				●			
1,2-Dichlorometoxy-ethane		41683-62-9	●						P2 R	
1,2-Dichloropropane		78-87-5	●							
1,2-Dimetylhydrazine		540-73-8				●				
1,2-Dinitrobenzene		528-29-0		●					P3 R	
1,2-Dinitrobenzene		99-65-0		●					P3 R	
1,2-Dinitrobenzene		100-25-4		●					P3 R	
1,2-Divinylbenzene		91-14-5	●							
1,2-Epoxypropan	Propylene oxide	75-56-9						●		
1,3-Butadien		106-99-0						●		
1,3-Cyclopentadiene		542-92-7						●		
1,3-Dihydroxybenzene	Resorcin	108-46-3							P3 R	
1,3-Dichlor-2-propane		96-23-1	●							
1,3-Dichlorpropen		542-75-6	●							
1,3-Dimetylbutyl alac-etate		108-84-9	●				●		P2 R	

Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
1,3-Divinylbenzene		108-57-6	●							
1,4-Dihydroxybenzene	Hydroquinone	123-31-9							P3 R	
1,4-Dichlor-2-buten		764-41-0	●						P3 R	
1,4-Dioxane		123-91-1	●							
1,5-Dinitronaftalen		605-71-0		●					P3 R	
1.1,2.2-Tetrachlor-1.2-difluoretane	FC-112	76-12-0	●						P2 R	
1.1,2-Trichloretan		79-00-5	●							
1.2,3-Trichloropropan		96-18-4	●							
1.2,4.5-Tetrametylben-zene		95-93-2							P2 R	
1.2,4-Trichlorbenzene		120-82-1	●							
1.2,4-Trimetylbenzene		95-63-6	●							
1.3,5-Trimetylbenzene	Mesitylene	108-67-8	●							
1.3,6.8-Tetranitro-pyrene		28767-61-5							P2 R	
1.3,6-Trinitropyrene		75321-19-6							P3 R	
1-Butanol		71-36-3	●							
1-Dekanol		112-30-1	●						P2 R	
1-Dimetylamino-pro-pane		108-16-7	●							
1-Hexen		592-41-6						●		
1-Chlorpropane		540-54-5						●		
1-Naphthylamine		134-32-7							P2 R	
1-Nitroftalen		86-57-7							P2 R	
1-Nitropropane		108-03-2	●				●			
1-Nitropyrene		5522-43-0							P3 R	
1-Octaol		111-87-5	●							
1-Octene		111-66-0	●							
1-Propanol		71-23-8	●						P2 R	
2,2-Dichlor-di-etyleter		111-44-4	●							

● Recommended protection, general classification | **BA** Breathing apparatus must be used | **P2, 3 R** Particle filters
● Tested in the SIGMA laboratory. For more detailed information, contact the filter manufacturer
● Tested and documented with certificates; accredited testing laboratory

RECOMMENDED PROTECTION

Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
2,2-Dichlordietylsulfide	Mustard gas	505-60-2	●						P3 R	
2,2-Dichloropropeonic acid		75-99-0	●						P2 R	
2,2-Dimetylbutan		75-83-2						●		
2,2-Dimetylpropan	Neopentan	463-82-1						●		
2,3-Dimetylbutan		79-29-8						●		
2,3-Dimetylfenol		526-75-0							P2 R	
2,3-Dinitrotoluene		602-01-7		●					P3 R	
2,4-Diaminoanisol		615-05-4							P3 R	
2,4-Diaminotoluene		95-80-7							P3 R	
2,4-Dichlorophenoxy-acetic acid		94-75-7	●						P3 R	
2,4-Dichlortoluen		95-73-8	●				●			
2,4-Dimetylfenol		105-67-9							P2 R	
2,4-Dinitrotoluene		121-14-2		●					P3 R	
2,4,5-Trichlorophenoxy-acetic acid		93-76-5					●		P2 R	
2,5-Dimetylfenol		95-87-4	●						P2 R	
2,5-Dinitrotoluene		619-15-8		●					P3 R	
2,6-Dimetylfenol		576-26-1							P2 R	
2,6-Dinitronaftalen		24824-26-8		●					P3 R	
2,6-Dinitrotoluene		606-20-2		●					P3 R	
2,6-Di-terc-butyl-p-kresol		128-37-0	●						P3 R	
2.3,4-Trichlorbuten		2431-50-7	●							
2.3,7.8-Tetrachlor-1.2-difluoretane	FC-112a	76-11-9	●						P2 R	
2.4,5-Trimetylaniline		137-17-7							P3 R	
2-Amino ethanol		141-43-5	●							
2-Aminopyridine		504-29-0				●			P3 R	
2-Butanol	Sec-butyl alcohol	78-92-2	●							

Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
2-Butanon	Methylylketone	78-93-3	●							
2-Butenal	Krotonaldehyde	4170-30-3	●							
2-Dietylaminoetanol		100-37-8	●			●				
2-Etoxyethanol	Cellosolve	110-80-5	●							
2-Heptanon	Methyl-n-amylk-etone	110-43-0	●							
2-Hexanon		591-78-6	●							
2-Hydroxypropylact		999-61-1	●						P3 R	
2-Chloracetophenone	Cn	532-27-4	●						P2 R	
2-Chlorethanol		107-07-3	●							
2-Chlorine-1,3-butadi-ene	Chloroprene	126-99-8						●		
2-Chlorpropane	Isopropyl chloride	75-29-6						●		
2-Methoxyetanol	Methyl glycol EGME	109-86-4	●							
2-Naphthylamine		91-59-8							P3 R	
2-Nitro-1,4-phenylend-iamine		5307-14-2							P2 R	
2-Nitro-4-aminophenol		119-34-6							P2 R	
2-Nitroftalen		581-89-5							P2 R	
2-Nitropropan		79-46-9	●				●			
2-Nitropyrene		789-07-1							P2 R	
2-Nitrotoluene		88-72-2	●				●			
2-Picolyn	2-Methyllpyridine	109-06-8	●							
2-Propanol	isopropanol	67-63-0	●							
2-Pyridylamin	α-Aminopyridine	504-29-0								BA
3,3-Diaminobenzidine		91-95-2							P3 R	
3,3-Dichlorbenzidine		91-94-1							P3 R	
3,3-Dimethyllbenzidin	Toluidine	119-93-7							P3 R	
3,4-Dimetylfenol		95-65-8	●						P2 R	
3,4-Dinitrotoluene		610-39-9		●					P3 R	

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RECOMMENDED PROTECTION

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			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
3,5-Dimetylfenol		108-68-9							P2 R	
3,5-Dinitrotoluene		618-85-9		●					P3 R	
3-Amino-9-ethylkarba-zole		132-32-1							P2 R	
3-Heptanon		106-35-4	●							
3-Methylcyclicexanol		591-23-1	●							
3-Nitrotoluene		99-08-1	●				●		P3 R	
3-Picolyn	3-Methyllpyridine	108-99-6								BA
4,6-Dinitro-o-cresol		534-52-1		●					P3 R	
4-Aminodiphenyl		92-67-1							P3 R	
4-Etylmorfolin		100-74-3	●							
4-Heptanon		123-19-3	●							
4-Chlorine-o-toluidine		95-69-2	●						P3 R	
4-Nitroaniline		100-01-6							P2 R	
4-Nitrobiphenyl		92-93-3							P3 R	
4-Nitropyrene		57835-92-4							P3 R	
4-Nitrotoluene		99-99-0							P2 R	
4-Picolyn	4-Methyllpyridine	108-89-4								BA
5-Chlorine-o-toluidine		95-79-4	●						P2 R	
5-Nitroacenaftene		602-87-9							P3 R	
5-Nitro-o-toluidine		99-55-8							P3 R	

Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
α -Methylstyrene		98-83-9	●							
Acetaldehyde		75-07-0						●		
Acetamide		60-35-6							P3 R	
Acetanhydride		108-24-7		●						
Acetic acid		64-19-7		●	●				P3 R	
Acetone		67-64-1	●							
Acetonitrile		75-05-8	●							
Acetonkyanhydrin		75-86-5	●				●			
Acetyl bromed		506-96-7	●							
Acetyl chloride		75-36-5		●				●		
Acetylene	Acetylene	74-86-2								BA
Acetylsalicyl acid.		50-78-2							P3 R	
Acrolein		107-02-8						●		
Acrylamide		79-06-1	●						P3 R	
Acrylic acid		79-10-7	●		●					
Acrylic acid		79-10-7	●				●		P3 R	
Acrylonitrile	Vinyl cyanide	107-13-1	●							
Aldrin		309-00-2	●						P3 R	
Allyl alcohol		107-18-6	●							
Allyl chloride		107-05-1						●		
Allylamide		107-11-9				●		●		
Allylbromed		106-95-6	●							
Allylglycil eter	AGE	106-82-3	●							
Allylisocyanate		1476-23-9	●				●		P2 R	
Allylpropyldisulfide		2179-59-1		●					P2 R	
Alumina		1344-28-1							P2 R	
Aluminium fluoride		7784-18-1							P3 R	
Aluminium chloride		7446-70-0							P3 R	
Aluminiumalkyl com-pounds		-	●						P3 R	

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			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
Aluminum carbide		1299-86-1								BA
Aluminum metal dust		7429-90-5							P3 R	
Amid lith		7782-89-0				●			P3 R	
ammonia		7664-41-7				●				
Ammonium chloride smoke		12125-02-9							P3 R	
Ammonium sulfamate		7773-06-0							P3 R	
Ammonia	Ammonia	7664-41-7				●			P3 R	
Ammonium chloride smoke		12125-02-9							P2 R	
Ammonium chlorite		7790-98-9							P3 R	
Ammonium peroxide		7727-54-0							P2 R	
Ammonium sulphate		7783-20-2							P2 R	
Anil		62-53-3	●				●			
anthracene		120-12-7							P2 R	
Antimony	Stiban	7803-52-3								BA
Antimony chloride		7347-18-9					●		P3 R	
Antimony oxide		1309-64-4							P3 R	
Antimony oxide		1309-64-4							P3 R	
Antimonyand scheming		7440-36-0		●					P3 R	
ANTU	Naphthylthiomovin	86-88-4	●						P3 R	
Argon		7440-37-1								BA
Arsenic	Arsin	7784-42-1		●						BA
Arsenic (5+) inorganic compounds		7440-38-2							P3 R	
Arsenic acid and salts		7778-39-4							P3 R	
Arsenic acid and salts		13464-58-9							P3 R	
Arsenic fluoride		7784-36-3								BA
Arsenic fluoride		7784-35-2								BA
Arsenic oxide		1303-28-2							P3 R	
Arsenic oxide		1327-53-3							P3 R	

Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
Asbestos, all forms		-							P3 R	
Asphalt, smoke		8052-42-4	●						P3 R	
Atrazine		1912-24-9							P3 R	
Auramin		492-80-8							P3 R	
Azifos-methyl	Guthion	86-50-0	●						P3 R	
Azoimide	Hydrogen azide	7782-79-8					●			

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Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
β -Propiolactone		57-57-8								BA
Barium chlorate		13477-00-4							P2 R	
Barium, compounds		7440-39-3							P3 R	
Benomyl		17804-35-2	●						P3 R	
Benzaldehyde		100-52-7	●							
Benzene		71-43-2	●							
Benzidine		92-87-5	●						P3 R	
Benzyl chloride		100-44-7		●					P3 R	
Benzylamine		100-46-9	●			●				
Benzylbutyl alphatate		85-68-7	●							
Beryllium and compounds		7440-41-7							P3 R	
Biphenyl		92-52-4	●						P3 R	
Bis-Chlormetyl methylleter		107-30-2	●					●	P3 R	
Bis-Chlormetyleter		542-88-1	●						P3 R	
bBorax		1330-43-4							P3 R	
Boric acid		10043-35-3							P3 R	
Boric bromide		10294-33-4		●					P3 R	
Boric oxide		1303-86-2							P2 R	
Bromacil		314-40-9							P3 R	
Brombenzylkyanid	BBC, CA	5798-79-8		●					P3 R	
Brombutan		78-76-2	●							
Bromethane	Ethyl bromed	74-96-4						●		
Bromethylene	Vinyl bromide	593-60-2						●		
Bromchloromethane		74-97-5						●		
bromine		7726-95-6	●						P3 R	
Bromine fluoride		7789-30-2		●						
Bromkyan		506-68-3		●					P3 R	
Brommethane	Methyl bromed	74-83-9						●		

Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
Bromobenzene		108-86-1	●							
Bromoform		75-25-2	●							
Butens		106-98-9						●		
		590-18-1								
		624-64-6								
		115-11-7								
Butylformiate		592-84-7	●							
Butylstearate		123-95-5	●						P2 R	

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Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
Cadmium oxide fumes		1306-19-0							P3 R	
Cadmium, salts and dust		7440-43-9							P3 R	
Calcium carbide		75-20-7								BA
Calcium cyanamide		156-62-7		●					P3 R	
Calcium hydroxide		1305-62-0							P3 R	
Calcium chlorate		10137-74-3							P2 R	
Calcium chlorite		13477-36-6							P3 R	
Calcium oxide		1305-78-8							P2 R	
Calcium phosphide		1305-99-3								BA
Camphor		76-22-2							P3 R	
Captafol	Difolatan	2425-06-1	●						P3 R	
Captan		133-06-2							P3 R	
Carbaryl		63-25-2							P2 R	
Carbofuran		1563-66-2							P3 R	
Carbofuran		1563-66-2							P3 R	
Carbon bromide	Tetrabrommeth-ane	558-13-4	●						P3 R	
Carbon dioxide	Tetrafluormethane	75-73-0								BA
Carbon dioxide		124-38-9								BA
Carbon disulphide		75-15-0		●						
Carbon monoxide		630-08-0								BA, NOx
Carbon tetrachloride	Tetrachlorometh-ane	56-23-5	●							
Carbonyl chloride		75-44-5		●						
Carbonyl sulluored		353-50-4		●						
Cellulose		9004-34-6							P2 R	
Cement		-							P3 R	
Chlor brommethane		74-97-5	●				●			
Chloracetaldehyde		107-20-0	●				●			

Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
Chlorbenzene		108-90-7	●				●			
Chlorbenzylidenmalo-ndinitril	Cs	2698-41-4					●			
Chlordane		57-74-9							P3 R	
Chlordecone		143-50-0	●				●		P3 R	
Chloretanal	Chloracetaldehyde	107-20-0	●							
Chloric acid		7601-90-3		●					P3 R	
Chloride		7790-91-2								BA
Chlorine		7782-50-5		●						
Chlorine dioxide		7791-21-1					●			
Chlorine dioxide		10049-04-4					●			
Chlorinedifluorethane	Freon 142	75-45-6								BA
Chlormethane	Methyl chloride	74-87-3						●		
Chloroacetic acid		79-11-8	●						P3 R	
Chloroform	Trichloromethane	67-66-3	●							
Chloropicrin	Trichloronitro-methane	76-06-2	●							
Chlorpyrifos	ISO	2921-88-2	●						P3 R	
Chlortrifluormethane	Freon 13	75-72-9								BA
Chromcarbonyl		13007-92-6								BA
Chrome(6+) inorgani-cally soluble in water		-							P3 R	
Chrome(6+) inorgani-cally insoluble in water		-							P3 R	
Chromic acid		7738-94-5					●		P3 R	
Chromic acid and chro-mates		7738-94-5							P3 R	
Chromites		-							P3 R	
Chromium anorg.com-pounds		7440-47-3							P3 R	
Chromium oxide		1308-38-9							P2 R	
Chromium oxide		1333-82-0							P3 R	

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Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
Chromyl chloride		14977-61-8					●			
Chrysen	Benzo-a-phen-antrene	218-01-9							P3 R	
Cis-1,2-Dichloreten		156-59-2						●		
Cis-2-Hexen		7688-21-2	●							
Coal soath		-							P2 R	
Coal tar		-							P3 R	
Coal tar, fumes		-							P2 R	
Cobalt, fumes, dust		7440-48-4							P3 R	
Copper sulphate penta-hydrate		7758-99-8							P2 R	
Cotton dust		-							P3 R	
Cyanamide		420-04-2		●					P3 R	
Cyanides, salts		-		●			●		P3 R	
Cyanogen	Carbon nitride	460-19-5		●			●			
Cyanogen chloride	Chlorocyan	506-77-4		●						
Cyanur chloride		108-77-0		●					P3 R	
Cyclohexane		110-82-7	●							
Cyclohexanone		108-94-1	●							
Cyclohexene		110-83-8	●							
Cyclone	Rdx	121-82-4							P2 R	
Cyclopentanone		1220-92-3	●				●			
cyclopropane		75-19-4								BA
Cyclyhexanol		108-93-0	●							
Cyclyhexylamine		108-91-8	●			●				

Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
D(-)-Tartaric acid		526-83-0							P2 R	
DDT		50-29-3							P3 R	
Dekaboran		17702-41-9		●					P3 R	
Dekalin	Decahydronaph-thalen	91-17-8	●						P2 R	
Demeton-S		126-75-0								BA
Diacetonalcohol		123-42-2	●							
Diacetyl peroxide		110-22-5							P3 R	
Diazinon		333-41-5	●						P3 R	
Diazomethane		334-88-3								BA
Di-Benzoyl peroxide		94-36-0	●						P3 R	
Dibenzylamin		103-49-1	●			●				
Dibenzyleter		103-50-4	●						P2 R	
Diboran		19287-45-7		●						BA
Dibromdifluormethane		75-61-6								BA
Dibutyl phosphate		107-66-4	●						P3 R	
Dibutyleter		142-96-1	●							
Dibutylphtate	DBP	84-74-2	●						P3 R	
Dieldrin		60-57-1	●						P3 R	
Dietanolamine		111-42-2	●			●			P3 R	
Dietyl glycol		111-46-6	●							
Dietyl sulfate		64-67-5	●				●			
Dietylamine		109-89-7						●		
Dietylcarbonate		105-58-8	●							
Dietylenglykolmonobu-tyleter	DEGBE	112-34-5	●							
Dietylenglykolmonom-etyleter	DEGME	111-77-3	●							
Dietylentriamin		111-40-0	●			●				
Dietylentriamin		111-40-0	●			●				
Dietylentriamine		111-40-0	●			●				

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Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
Dietyleter		60-29-7						●		
Di-Etyleter		60-29-7						●		
Dietyloxalate		95-92-1	●							
Dietylphthalate		84-66-2	●						P3 R	
Dietylsebate		110-40-7	●						P2 R	
Dietylsulfide		352-93-2					●			
Di-Fenyleter		101-84-8	●							
Difluordibrommethane		75-61-6						●		
Difluordichloromethane	Freon 12	75-71-8								BA
Di-Fluorid oxygen	Fluorine dioxide	7783-41-7								BA
Diglycidyleter	DGE	2238-07-5	●							
Dichloracetylene		7572-29-4								BA
Dichlor-di-isopropyleter		108-60-1	●							
Dichloromethyl methyl ether		4885-02-3	●						P2 R	
Dichlorofuormethane		75-43-4								BA
Dichloromethane	DCM	75-09-2	●							
Dichlortetrafluoretane		76-14-2						●		
Dichlorvos	DDVP	62-73-7	●						P3 R	
Diisobutylketon		108-83-8	●							
Diisopropylamin		108-18-9	●			●				
Diisopropyleter	Ipe	108-20-3	●							
Dimethylamine	Dma	124-40-3				●				
Dimethyllkarbamoyl chloride		79-44-7		●					P3 R	
Dimethylrtut		593-74-8							Hg-P3	
Dimetyldisulfide		624-92-0					●			
Dimetyleter		115-10-6						●		
Dimetylsulfid		75-18-3	●				●			
Dinitropyrene		78432-19-6		●					P3 R	

Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
Dioxathion		78-34-2							P3 R	
Dipenten		138-86-3	●							
Diphenylamin		122-39-4							P3 R	
Diphenyleter		101-84-8	●						P3 R	
Diphenylmetandiiso-cyanate	Mdi	101-68-8	●				●		P3 R	
Diphenylmetandiiso-cyanate polymer		9016-87-9	●				●		P3 R	
Diphosfan		13445-50-6								BA
Dipropylamin		142-84-7	●				●			
Dipropyleneglycol-methylleter		34590-94-8	●				●			
Dipropyleter		111-43-3	●				●			
Disulfiram		97-77-8							P3 R	
Di-terc-butyl peroxide		110-05-4	●							
Diuron		330-54-1	●						P3 R	
Diyyl sulfate		77-78-1	●						P3 R	
Diyylphtate		131-11-3	●							
d-Limonene		138-86-3	●						P2 R	
Dodecylbenzene		123-01-3	●							

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Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
Eight-face oxide		20816-12-0	●						P3 R	
Emery		-							P2 R	
Endosulfan	Thiodan	115-29-7							P3 R	
Endrin		72-20-8							P3 R	
Enfluran		13838-16-9						●	P2 R	
Epichlorhydrin		106-89-8	●							
Etanthiol	Ethylmerkkaptan	75-08-1						●		
Ethanol		64-17-5	●							
Ethyl acetate		141-78-6	●							
Ethyl bromed		74-96-4						●		
Ethyl chloride	Chlorethane	75-00-3						●		
Ethyl chloro-acetate	"Chloroacetic acid ethyl ester"	105-39-5	●							
Ethylacrylate		140-88-5	●							
Ethylamin		75-04-7				●		●		
Ethylbenzene		100-41-4	●							
Ethylbutylketone	3-Heptanon	106-35-4	●							
Ethylendibromed	Edb	106-93-6	●							
Ethylendichloride	Edc	107-06-2	●							
Ethylene glycol		107-21-7							P3 R	
Ethylene glycol mono-butyleter	2-Butoxyetanol	111-76-2	●							
Ethylene glycoldinitrate	EGDN	628-96-6		●						
Ethylene chlorhydrin	Chlorethanol	107-7-3		●			●			
Ethylene oxide	Oxirane	75-21-8						●		
Ethylenediamine		107-15-3	●				●		P2 R	
Ethyleneimin	Aziridine	151-56-4				●				
Ethylilylate		78-10-4	●							
Ethylkarbamate	urethane	51-79-6	●						P3 R	
Ethylmerkaptan		75-08-1						●		

Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
Ethylpropionate		105-37-3	●							
Ethylylomiate		109-94-4						●		
Etylamylketone		541-85-5	●							

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Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
Fenantren		85-01-8							P3 R	
Fenchorofos		299-84-3	●						P2 R	
Fenthion		55-38-9	●						P3 R	
Ferbam		14484-64-1							P3 R	
Ferovanad dust		12604-58-9							P2 R	
Ferrocen		102-54-5	●						P3 R	
Ferrous chloride . 6 aq		10025-77-1							P3 R	
Ferrous sulphate hepta-hydrate		7782-63-0							P2 R	
Ferrous sulphate nona-hydrate		10028-22-5							P2 R	
Flour dust		-							P2 R	
Fluorbenzene		464-06-6	●				●			
Fluorid boric		7637-07-2		●					P3 R	
Fluorine		7782-41-4								BA
Fluorine dioxide		7783-41-7								BA
Fluoroacetic acid	Mfa	144-49-0	●						P3 R	
Fluoroform	Trifluormethane	75-46-7								BA
Fluosulphuric rid		2551-62-4								BA
Formaldehyde		50-00-0		●						
Formamide		75-12-7	●						P3 R	
Formic acid		64-18-6		●	●				P3 R	
Fray fluoride		7783-61-1								BA
Fuel oils aerosol, smoke		-	●				●		P2 R	
Furan		110-00-9						●		
Furfural		98-01-1	●							
Furfurylalocohol		98-00-0	●							

Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
Gelatine		9000-70-8							P2 R	
Germaniumtetrahydride	Hydrogen germa-nium	7782-65-2		●					P3 R	BA
Glass fiber, dust		-							P3 R	
Glutaraldehyde		111-30-8	●						P3 R	
Glycerin fumes		56-81-5	●						P3 R	
Glycidol		556-52-5	●				●			
Glyoxal		107-22-2						●	P3 R	

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Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
Hafnium and compounds		7440-58-6							P3 R	
Halotan		151-67-7						●		
Helium		7440-59-7								BA
Hexafluoractone		684-16-2						●		
Hexachlorobenzene	Hcb	118-74-1							P3 R	
Hexachlorocycline	lindane	58-89-9	●						P3 R	
Hexachloroethane		67-72-1	●						P3 R	
Hexametylendiisocyanate		822-06-0	●						P2 R	
Hexametylenediamine		129-09-4	●						P2 R	
Hexametylenetetramin		100-97-0	●						P2 R	
Hexametylfosphamade		680-31-9	●						P3 R	
Hexogen		121-82-4					●		P3 R	
Hexylamine		111-26-2	●			●				
Hexylenglycol		107-41-5	●							
Hydantoin		461-72-3							P3 R	
Hydrazine		302-01-2				●			P3 R	
Hydrazobenzene	1,2Difenylhydrazine	122-66-7							P2 R	
Hydrazobenzene	1,2Diphenylhydrazine	122-66-7							P2 R	
Hydride		7580-67-8							P3 R	
Hydrofluoric acid		7664-3-39			●				P2 R	
Hydrogen bromide		10035-10-6			●		●		P2 R	
Hydrogen fluoride gaseous		7664-39-3			●		●			
Hydrogen gaseous		1333-74-6								BA
Hydrogen chloride		7647-01-0			●		●		P2 R	
Hydrogen iodide		10034-85-2			●		●		P3 R	
Hydrogen peroxide	Hydrogen peroxide	7722-84-1					●		P3 R	

Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
Hydrogen Sulfide		7783-06-4		●						
Hydrochloric acid		7647-01-0			●				P3 R	
Hydroquinone		123-31-9	●						P3 R	
Hydroxide cessive hydrate		35103-79-8							P3 R	
Hydroxylamine		7803-49-8					●			

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Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
Inden		95-13-6	●				●			
Indium and compounds		7440-74-6							P3 R	
Iodine		7553-56-2		●					P2 R	
Iodmethane	Methyl yododide	74-88-4						●		
Iodoform		75-47-8	●						P3 R	
Iron dust		7439-89-6							P2 R	
Iron oxide, fumes		1309-37-1							P2 R	
Isopropyl acetate		108-21-4	●							
Isopropyl glycidyl ether	IGE	4016-14-2	●							
Isopropylbenzene	Kumen	98-82-8	●							
Isoamyl acetate		123-92-2	●							
Isoamyl alcohol		123-51-3	●							
IIsobutane		75-28-5						●		
Isobutyl alacetate		110-19-0	●							
Isobutyl alcohol		78-83-1	●							
Isobutylamin		78-81-9	●							
Isobutylene mixture of isomers		25167-67-3						●		
Isobutylformiate		542-55-2	●							
Isobutyraldehyde		78-84-2						●		
Isoforon		78-59-1	●							
Isohexan	2-methylpentane	107-83-5						●		
Isokyanatees in general		-	See product-specific safety data sheet							
Isopropylamine	2-propylamine	75-31-0				●		●		
Isopropyl alcohol	2-propane	67-63-0	●					●		
Isopropyleter	di-iso-propyleter	108-20-3	●							
Isopropyl glycidyl ether		4016-14-2	●				●		P2 R	
Isopropyl nitrate		1712-64-7		●						

Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
Kaolin		-							P3 R	
Kaprolaktam		105-60-2	●						P3 R	
Kerosene		-	●				●			
Keten		763-51-4								BA
Krotonaldehyde		4170-30-3	●							

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RECOMMENDED PROTECTION

Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
Laccoal gasoline		-	●							
Lactic acid		50-21-5					●		P3 R	
Lead alkyls		75-74-1, 78-00-2	●						P3 R	
Lead and compounds		7439-92-1							P3 R	
Lewisit	Chlorineldichlor-arsin	541-25-3		●					P3 R	
Ligroin	Petroleum gaso-line	8032-32-4	●						P2 R	
Lithium aluminum hydride	Lithium aluminum tetrahydride	16853-67-9							P3 R	
Lithium		7439-93-2							P2 R	

Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
Magnesium chlorite		10034-81-8							P3 R	
Magnesium oxide fumes		1309-48-4							P2 R	
Malathion		121-75-5	●						P3 R	
Maleinanhydride		108-31-6	●						P3 R	
Manganese dust		7439-96-5							P3 R	
Manganese oxide		1313-13-9							P2 R	
Manganeseoxide -man-ganese		1317-35-7							P2 R	
m-Cresol		108-39-4	●						P3 R	
m-Dichlorbenzene		541-7-1	●							
Melamine		108-78-1				●				BA
Mercury alkyl com-pound		-							Hg/P3	
Mercury anorg. com-pounds		-							P3	
Mercury steam		7439-97-6							Hg/P3	
Mesityl oxide		141-79-7	●							
Metacrylic acid		79-41-4	●						P3 R	
Metal fumes during welding		-							P3 R	
Methane		74-82-8								BA
Methanol	Methyl alcohol	67-56-1	●							
Methomyl		16752-77-5							P2 R	
Methoxychlor		72-43-5							P2 R	
Methyl a metalylacet		79-20-9						●		
Methyl bromed	Dibrommethane	74-95-3	●							
Methyl chloroform	1.1,1-Trichloretan	71-55-6	●							
Methyl yododide		74-88-4							"Hg-P3 Ax"	

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Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
Methyl yododide CH3 131J		-							reac-tor	
Methyl-2-cyanoacrylate		137-05-3		●				●	P3 R	
Methylacrylate		96-33-3	●				●			
Methylamine		74-89-5				●		●		
Methylatrylonitril		126-98-7	●						P3 R	
Methylbutylketon		591-78-6	●							
Methylcyclicexane		108-87-2	●							
Methylene-bis-(cycethylyliscoyanate)	HMDI	5124-30-1		●					P3 R	
Methylenebisphenyl di-isocyanate	Dmi	26447-40-5		●					P3 R	
Methylenebisphenyl di-isocyanate - polymer	PDMI	9016-87-9		●					P3 R	
Methylenendifenylis-coyanate	Mdi	9016-87-9		●					P3 R	
Methylethylethylene	Propyne	74-99-7								BA
Methylformiat		107-31-3						●		
Methylhydrazine		60-34-4				●				
Methyl-isoamylketon		110-12-3	●							
Methylketonperoxide	MEKP	1338-23-4	●							
Methyllfluorid	Fluormethane	593-53-3								BA
Methyllpropionate		554-12-1	●							
Methylmerkaptan		74-93-1						●		(BA)
Methyl-n-amylketone	2-Heptanon	110-43-0	●							
Methylparathion		298-00-0	●						P3 R	
Methyl-S-demeton		919-86-8							P3 R	
Methylsilikate		681-84-5	●							
Methylsobutylketon		108-10-1	●							
Methylsocyanate		624-83-9								BA
Methyltarylate		80-62-6	●							

Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
Methyl-terc-bytyleter	MTBE	1634-04-4						●		
Methylvinyleter		107-25-5						●		
Methylyl alcohol		108-11-2	●							
Methylylketone	MEK	78-93-3	●							
Mevinphos		7786-34-7	●						P3 R	
Mineral oil - fog		-							P2 R	
Molybdenum salts		7439-98-7							P3 R	
Monometylaniline		100-61-8	●							
Morpholin		110-91-8	●							
Motor gasoline		-	●							
m-Phenylendiamine	1,3-diaminoben-zene	108-45-2	●						P2 R	For fumes
m-Toluidin		108-44-1	●						P3 R	

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Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
N,N-Dimethylamine		598-56-1						●		
N,N-Dimethylaniline		121-69-7	●						P3 R	
N,N-Dimetylcyclineyl-amin		98-94-2	●				●			
N,N-Dimetylformamide		68-12-2	●				●			
N,N-Dimetylisopropyl-amine		996-35-0	●				●			
N,N-Diethylhydroxyl-amine	DEHA	3710-84-7	●			●			P2 R	
N,N-Dimethylacetamide		127-19-5	●							
n-Amylacetates		6298-63-7	●							
n-Amylalcohol	n-Pentanol	71-41-0	●							
n-Amylamine		110-58-7	●			●			P3 R	
Naphthalene		91-20-3							P3 R	
Natural graphite		7782-42-5							P2 R	
n-Butan		106-97-8						●		
n-Butanal	Butyraldehyde	123-72-8	●							
n-Butyl metakrylate		97-88-1	●						P2 R	
n-Butylacete		123-86-4	●							
n-Butylacrylate		141-32-2	●							
n-Butylamin		109-73-9		●		●				
n-Butylglycidyleter		06.08.2426	●							
n-Butyllacte		138-22-7	●						P2 R	
n-Butylmerkaptan		109-79-5					●			
n-Dekan		124-18-5	●							
Neon		7440-01-9								BA
n-Heptan		142-82-5	●							
n-Hexan		110-54-3								BA
n-Hexanol		11-27-3	●							
Nickel		7440-02-0							P3 R	
Nicotine		54-11-5	●				●			

Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
Nikel sulphide		16812-54-7							P3 R	
Nitrapyrin		1929-82-4							P2 R	
nitric acid		7697-37-2			●		●		P3 R	
Nitric fluoride		7783-54-2								BA
Nitric oxide N_2O_3		10102-44-9		●			●			
Nitric oxide N_5O_5		10102-03-1		●			●			
Nitric oxide NO		10102-43-9								BA, NOx
Nitrobenzene		98-95-3	●				●		P3 R	
Nitroethane		79-24-3	●				●			
Nitrogen dioxide N_2O_4		10102-44-0		●			●			
nitroglycerine		55-63-0	●	●					P2 R	
Nitromethane		75-52-5	●				●		P2 R	
Nitrous oxide N_2O		10024-97-2								BA, NOx
N-Nitrosodiethanol-amine		1116-54-7							P3 R	
N-Nitrosodiethylamine		55-18-5	●				●		P3 R	
N-Nitrosodiisopropyl-amin		601-77-4							P2 R	
N-Nitrosodimethyl-amine		62-75-9	●				●		P2 R	
N-Nitrosodi-n-butyla-min		924-16-3	●				●		P3 R	
N-Nitrosodi-n-propyl-amine		621-64-7	●				●		P3 R	
N-Nitrosoethylphenyl-amine		612-64-6							P2 R	
N-Nitrosomethylethyl-amine		10595-95-6	●				●		P3 R	
N-Nitrosomethylphe-nylamine		614-00-6	●				●		P2 R	
N-Nitrosomorfolin		59-89-2	●				●		P3 R	

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Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
N-Nitrosopiperidine		100-75-4	●				●		P3 R	
N-Nitrosopyrrolidine		930-55-2	●				●		P3 R	
n-Octane		111-65-9	●							
N-NONANE		111-84-2	●				●			
n-Propyl nitrate		627-13-4								BA

Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
O-Aminoazotoluene		97-56-3							P3 R	
o-Anisidine		90-04-0	●				●			
o-Dichlorbenzene		95-50-1	●							
o-Chlorstyrene		2039-87-4	●							
o-Chlortoluene		95-49-8	●							
o-kresol		95-48-7	●						P3 R	
Oleum		-			●				P2 R	
o-Methylcyclicexanon		589-92-4	●							
o-Phenylendiamine	1,2-Diaminoben-zene	615-28-1	●						P2 R	BA
Osalic acid		144-62-7							P3 R	
o-sec-Butylphenol		89-72-5	●						P2 R	
o-Toluidin		95-53-4	●						P3 R	
Ozone		10028-15-6	Reactor, Hg-P3, AX, A2, [ABEK2 Hg-P3 DR], [ABEK2 SX-P3DR]							

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Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
p-Aminoazobenzene		60-09-3	●						P3 R	
p-Anisidine		104-94-9	●							
Paracetamol dust		103-90-2							P2 R	
Paraffinoil, smoke		8002-74-2							P2 R	
p-Benzoquinone		106-51-4	●						P3 R	
p-cresol		106-44-5	●						P3 R	
p-Dichlorbenzene		106-46-7	●						P3 R	
Pentaboran		19624-22-7								BA
Pentacarbonyl iron		13463-40-6								BA
Pentachlorbenzene		608-93-5							P2 R	
Pentan-2-on	Methyl propyl ketone	107-87-9	●							
Pentan-3-on		96-22-0	●							
pentane		109-66-0						●		
Perfluor-isobutylene	PFIB	382-21-8								BA
Perchlormetylmerkap-tan		594-42-3	●							
Perchloryl fluoride		7619-94-6								BA
Peroxyocetic acid		79-21-0	●						P3 R	
Petroleum		8002-05-9	●						P2 R	
phenol	Methylbenzene	108-95-5	●						P2 R	
Phenyl phenosfin		638-21-1								BA
Phenylhydrazine	Hydrazobenzene	100-63-0								BA
Phenylmerkaptan		108-98-5		●			●			
Phosgene		75-44-5					● - SX		P3 R	
Phospholyle chloride		10025-87-3	●				●			BA
Phosphoric acid		7664-38-2							P3 R	
Phosphorus	Phosphine	7803-51-2								BA
Phosphorus pentachlo-ride		10026-13-8				●			P3 R	

Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
Phosphorus pentafluo-ride		7647-19-0								BA
Phosphorus trifluoride		7783-55-3								BA
Phosphorus trichloride		7719-12-2								BA
Phosphorpentasulfide		1314-80-3							P3 R	
Phosphorus yellow modification		7723-14-0								BA
Phthalic anhydride	PAN	85-44-9	●						P2 R	
Picric acid		88-89-1							P3 R	
Piperazine dichloride		142-64-3							P3 R	
Piperidine	Hexahydropyridine	110-89-4								BA
Polyethylene glycol	Peg	25322-68-3							P2 R	
Polychlorinated biphe-nyls	PCB	1336-36-3	●						P3 R	
polyvinyl chloride	PVC	9002-86-2							P2 R	
Portland Cement		65997-15-1							P2 R	
Potassium amide		17242-52-3				●			P3 R	
Potassium bromide		7758-02-3							P2 R	
Potassium chlorate		3811-04-0							P2 R	
Potassium chloride		7447-40-7							P2 R	
Potassium chlorite		7778-74-7							P3 R	
Potassium hydride		7693-26-7							P3 R	
Potassium hydroxide		1310-58-3							P3 R	
Potassium manganese		7722-64-7							P2 R	
Potassium peroxide		7727-21-1							P2 R	
Potassium sulcrite		7778-80-5							P2 R	
p-Phenylendiamine	1,4-Diaminoben-zene	106-50-3							P3 R	
Propane	Dimethylmethane	74-98-6								BA
Propargylalkohol	2-Propyl-1-ol	107-19-7								BA
Propionic acid		79-09-4	●						P3 R	

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Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
Propyl acetate		109-60-4	●							
Propylene dinitrate	"Propylene glycoldinitrate"	6423-43-4								BA
Propylene glycol		57-55-6	●							
Propylene oxide	1,2-Epoxypropan	75-56-9								BA
Propyleneimin		75-55-8						●		
p-Toluenesulfonyl chloride	Tosyl chloride	98-59-9			●				P3 R	
p-Toluidin		106-49-0	●						P3 R	
Pyridine	Azabenzene	110-86-1	●							
Pyrocatechin	1,2-Dihydroxyben-zene	120-80-9	●						P3 R	

Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
Quartz dust		-							P3 R	
Quinolin	1-Benzazine	91-22-5							P3 R	

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Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
Radon		10043-92-2								BA
Resorcin	m-Dihydroxyben-zene	108-46-3	●						P2 R	
Rosin		-		●					P3 R	
Rubber dust, smoke		9006-04-6							P3 R	
Rust dust		-							P2 R	

Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
Salicylic acid		69-72-7							P2 R	
Sarin	Gb	107-44-8	●						P3 R	
sec-Amylacetates		626-38-0	●							
sec-Butylacetete		105-46-4	●							
sec-Butylamin		13952-84-6		●		●				
Selenium hydride	Selan	7783-07-5		●					P2 R	
Selenium and com-pounds		7782-49-2		●					P3 R	
Selenium fluoride		7783-79-1								BA
Silane	Hydride	7803-62-5								BA
Silicon		7440-21-3							P3 R	
Silicon carbide, smoke, dust		409-21-2							P3 R	
Silicon dioxide		7631-86-9							P3 R	
Silver chlorate		7783-92-8							P2 R	
Silver metal, dissip. compounds		7440-22-4							P3 R	
Sodium amide		7782-92-5				●			P3 R	
Sodium Azide		26628-22-8							P3 R	
sodium benzoate		532-32-1							P2 R	
Sodium bicarbonate		144-55-8							P2 R	
Sodium dissiphites	Pyrosulphite	7681-57-4							P2 R	
Sodium dithionite		7775-14-6							P3 R	
Sodium fluoracetate		62-74-8							P3 R	
Sodium hydride		7646-69-7							P3 R	
Sodium hydrogen sul-phite		7631-90-5							P2 R	
Sodium hydroxide		1310-73-2							P3 R	
Sodium hydroxide hy-drate		1310-66-3							P3 R	
Sodium chlorate		7775-09-9							P2 R	

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Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
Sodium chloride		7647-14-5							P2 R	
Sodium chlorite		7601-89-0							P3 R	
Sodium peoroxulsulte		7775-27-1							P2 R	
Sodium sulfide nonahy-drate		1313-84-4							P3 R	
Sodium sulphate		7757-82-6							P2 R	
Sodium thiosulphate pentahydrate	Sodium sirnate	7772-98-7							P2 R	
Soman	Gd	96-64-0	●						P3 R	
Stearic acid		57-11-4							P2 R	
Stiban	Antimony	7803-52-3								BA
Strychnine		57-24-9							P3 R	
Stucco		-							P2 R	
Styren monomer	Vinylbenzen	100-42-5	●						P3 R	
Sulfur dioxide		7446-09-5			●					
Sulfuric acid		7664-93-9			●				P3 R	
Sulfuryl chloride		7791-25-5					●			
Sulfurylfluorid		2699-79-8								BA
Sulphubic chloride		10025-67-9	●				●			
Sulfur trioxide		7446-11-9			●				P2 R	

Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
Tabun	Ga	77-81-6	●						P3 R	
Talc		-							P2 R	
Tannin		1401-55-4							P2 R	
Telur and compounds		13494-80-9							P3 R	
Telur fluoride		7783-80-4								BA
Teluric acid		7803-68-1							P3 R	
terc- Butylglycidyleter		7665-72-7	●							
terc-Butylacetete		540-88-5	●							
terc-Butylperoxide		75-91-2					●			
terc-Butylperoxoacetate		107-71-1							P2 R	
terc-Butyltoluen		98-51-1	●							
Terphenyl o-, m-, p-		26140-60-3							P2 R	
Tertaetylplumban	Tel	78-00-2	●							
Tetrabromethane		79-27-6	●							
Tetracarbonylnikl		13463-39-3								BA
Tetraethyllsilikate		78-10-4	●							
Tetraetylpyrophosphate	TEPP	107-49-3	●						P3 R	
Tetrafluoretylene		116-14-3								BA
Tetrafluormethane	Freon 14	75-73-0								BA
Tetrahydrofuran		109-99-9	●							
Tetrahydrothiofen	THT	110-01-0					●			
Tetrachloretylene	Perchloroethylene	127-18-4	●							
Tetranitromethane		509-14-8		●						
Tetryl	Ce	479-45-8							P2 R	
Thallium andspread compounds		7440-28-0		●					P3 R	
Thioglycol	2-Thioetanol	60-24-2								BA
Thioglycolic acid		68-11-1		●						
Thiomochovina		62-56-6							P2 R	
Thionyl chloride		7719-09-7			●				P3 R	

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Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
Thionylfluorid		7783-42-8			●				P3 R	
Thiram		137-26-8							P3 R	
Titanium dioxide		13463-67-7							P3 R	
Titanium chloride		7646-78-8							P3 R	
Toluene	Methyl-benzen	108-88-3	●							
Toluene-2,4-diisocyanate		584-84-9	●						P3 R	
Toluene-2,6-diisocyanate		91-08-7	●						P3 R	
trans-1,2-Dichloreten		156-60-5						●		
trans-2-Hexen		4050-45-7	●							
Tributyl phosphate		126-73-8	●						P3 R	
Tridymit		15468-32-3							P3 R	
Trietanolamine		102-71-6	●							
Triethylamine		121-44-8	●							
Triethylenediamine	TEDA	280-57-9	●						P2 R	
Trichloroacetic acid		76-03-9	●		●				P3 R	
Trichloretylene		79-01-6	●							
Trimetylamin		75-50-3						●		
Trimetylfosfit		121-45-9	●							
Trimetylfosphate		512-56-1	●							
Trinitrofenylmetylnitrosamine	Tetryl	479-45-8							P3 R	
Trinitroglycerin		55-63-0	●				●			
Trinitrotoluene	Tnt	118-96-7					●			
Triphenyl phosphate		115-86-6							P3 R	
Triphenylamine		603-34-9							P3 R	
Tris(clorisopropyl) phosphate	"TCIPP, TCPP, Burn slower"	13674-84-5	●				●			
Tungsten and compounds		7440-33-7							P2 R	
Turpentine		8006-64-2	●							

Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
Undekan		1120-21-4	●							
Uranium and soluble compounds		7440-61-1							P3 R	
Urea		57-13-6							P2 R	
Urethane		-	●						P3 R	

● Recommended protection, general classification | **BA** Breathing apparatus must be used | **P2, 3 R** Particle filters
● Tested in the SIGMA laboratory. For more detailed information, contact the filter manufacturer
● Tested and documented with certificates; accredited testing laboratory

RECOMMENDED PROTECTION

Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
Vanadia, (V2O5) smoke		7440-62-2							P3 R	
Vanadia, (V2O5) dust		7440-62-2							P3 R	
Vanadious oxide		1314-62-1							P3 R	
Valeraldehyde	Amylaldehyde	110-62-3	●							
Vinyl acetate		108-05-4	●							
Vinyl bromide		593-60-2						●		
Vinyl chloride		75-01-4						●		
Vinylidenchloride	Dichloroethane	75-35-4						●		
Vinyltoluen		25013-15-4	●							
Vx		50782-69-9	●	●					P3 R	
Warfarin		81-81-2							P2 R	

Name	synonym	CAS No.	Recommended filter							Breathing apparatus BA
			Gas filter						particle filter	
			A	B	E	K	ABEK	AX		
Xenon		7440-63-3								BA
o-Xylene		95-47-6	●							
m-Xylene		108-38-3	●							
p- Xylene		106-42-3	●							
2,3-Xylidin		87-59-2	●						P3 R	
2,4-Xylidin		95-68-1	●						P2 R	
2,5-Xylidin		95-78-3	●						P2 R	
2,6-Xylidin		87-62-7	●						P3 R	
3,4-Xylidin		95-64-7							P3 R	
3,5-Xylidin		108-69-0	●						P3 R	
Ytrium and compounds									P2 R	
Zinc chloride fumes		7646-85-7							P3 R	
Zinc chromate		13530-65-9							P2 R	
Zinc oxide, fumes		1314-13-2							P2 R	
Zinc phosphide		1314-84-7								BA
Zinc sulfate		7733-02-0							P2 R	
Zinc dust		7440-66-6							P3 R	
Zircon metal, dust		7440-67-7							P2 R	

● Recommended protection, general classification | **BA** Breathing apparatus must be used | **P2, 3 R** Particle filters
● Tested in the SIGMA laboratory. For more detailed information, contact the filter manufacturer
● Tested and documented with certificates; accredited testing laboratory

FILTERS WITH VÚBP PRAGUE CERTIFICATE

OR TESTED IN THE LABORATORY OF SIGMA VVÚ S.R.O.

(STAV K 11. 6. 2021)

NOTES

Název	Synonymum	CAS č.	Doporučený filtr							Dýchací přístroj DP
			Plynový filtr						Částicový filtr	
			A	B	E	K	ABEK	AX		
Acetone		67-64-1	●							
Ammonia	Ammonia	7664—41-7				●				
Benzene		71-43-2	●							
Cyclohexane		110-82-7	●							
Dichloromethane	Methylenchlorid, DCM	75-09-2	●							
Phosgene	Carbonyl chloride CG	75-44-5					SX			
Chlorine		7782-50-5		●						
Cyanogen chloride	Chlorocyan	506-77-4					●			
Chloroform	Trichloromethane	67-66-3	●							
Chloropicrin	Trichloronitro-methane	76-06-2	●							
Cyanogen	Carbon nitride	460-19-5		●						
Methanol	Methyl alcohol	67-56-1	●							
Mercury (steam)		7439-97-6							Hg-P3 R	
Nitrogen dioxide	Nitro	10102-44-0			●					
Sulfur dioxide	Sulfur oxide	7446-09-5					●			
Ozone	Triatomic oxygen	10028-15-6							ABEK2 P3 R ABEK2SX P3 R	
Sarin gas	Gb	107-44-8	●							
Toluene	Methyl-benzen	108-88-3	●							
Trichloretylene		79-01-6	●							

● Recommended protection, general classification | **BA** Breathing apparatus must be worn | **P2, 3 R** Particulate filters

● Tested in the SIGMA laboratory. For more detailed information, contact the filter manufacturer

● Tested and documented with certificates; accredited testing laboratory

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