

Filter Selection Guide



MSA AUER offers a wide range of full face masks, half masks, filtering face pieces, hoods and visors, in combination with filters and turbo devices which give the user the best choice in selecting the most appropriate respiratory protection



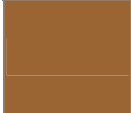
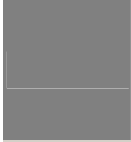
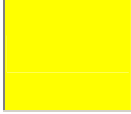

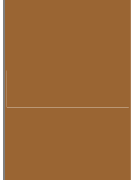
These devices have been designed to protect against numerous known contaminants, which, if inhaled, can be dangerous to health: toxic gases, vapors and particles as well as many combinations with immediate or delayed harmful effects.





Limitation of use: filters for respiratory protection may be used everywhere, except for some inherent limitation e.g. in containers or confined spaces. Principally, the following conditions must be known:

- Type, property and composition of contaminant
 - Oxygen content of the inhalation air must be sufficient (> 17% vol.)
 - Local or national restrictions or conditions may be different.
- In case of doubt, it is recommended to use a supplied air breathing apparatus.

All MSA filtering devices have been designed to meet the absolutely strongest requirements and been approved according to the relevant European Norm.

In order to help your selection of the right filter, search for the right protection in the following tables.

Color Mark	Type	Application	Class	Gas concentration	Standard
	A	Organic gases and vapors - boiling point > 65°C	1 2 3	1000 ml/m ³ 5000 ml/m ³ 10000 ml/m ³	EN 141
	B	Inorganic gases and vapors (not CO), i.e. chlorine, H ₂ S, HCN, ...	1 2 3	1000 ml/m ³ 5000 ml/m ³ 10000 ml/m ³	EN 141
	E	Sulfur dioxide and acidic gas and vapors	1 2 3	1000 ml/m ³ 5000 ml/m ³ 10000 ml/m ³	EN 141
	K	Ammonia and organic ammonia derivatives	1 2 3	1000 ml/m ³ 5000 ml/m ³ 10000 ml/m ³	EN 141
	AX	Organic gases and vapors - boiling point <65°C - of low boiling substances groups 1 and 2		gr.1: 100 ml/m ³ max 40' gr.1: 100 ml/m ³ max 20' gr.2: 1000 ml/m ³ max 60' gr.2: 5000 ml/m ³ max 20'	EN 371

Color Mark	Type	Application	Class	Gas concentration	Standard
	NO	Nitrogen oxides e.g NO, NO ₂ , NO _x		Maximum allowed time of use: 20 minutes	EN 141
	Hg	Mercury vapors		Maximum allowed time of use: 50 hours	EN 141
	CO *	Carbon monoxide		Local guidelines	DIN 3181*
	Reactor P3	Radioactive iodine		Local guidelines	DIN 3181*
	P3	Particles	1 2 3	low efficiency medium efficiency high efficiency	EN 143

* only color mark and type standardized

For all gases and vapors which may be present in combination with particles (dust, smokes, mist, spray) a combined filter (protection from gases and particles) must be used. The filter recommendations are based on pure substances. With mixtures, by-products, or decomposition products, the impurities must be taken into account.

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[Alphabetical List of Industrial Gases and Toxic Substances]

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AX Filters must be used for compounds with a boiling point below 65 °C.

If the list hereunder mentions a particle filter (e. g. A-P 2) for a specific substance, particles are commonly found with the gas or vapor.

	Substances	Formula	Filter Code Letter	Remarks
A	Acetaldehyde	CH ₃ CHO	AX	87 AX
	Acetic acid	CH ₃ COOH	E	also B or A
	Acetone	CH ₃ COCH ₃	AX	87 AX
	Acetone cyanhydrin	CH ₃ C (OH) (CN) CH ₃	A-P 3	–
	Acetonitrile	CH ₃ CN	A	in presence of hydrogen cyanide: B
	Acidic gases		E	also B
	Acids (fuming concentrated)		E-P 2	–
	Acrolein (2-Propenal)	CH ₂ CHCHO	AX	87 AX
	Acrylic acid-esters	CH ₂ CHCOOR	A	–
	Acrylonitrile	CH ₂ CHCN	A-P 3	in presence of hydrogen cyanide: B-P 3
	Alcohols	R·OH	A	methyl alcohol: AX
	Aldehydes	R·CHO	A or AX	formaldehyde: filter B
	Allylchloride (3-chloride-1-propen)	CH ₂ CHCH ₂ Cl	AX	87 AX
	2-Amino ethanol	CH ₂ OHCH ₂ NH ₂	A	–
	Ammonia	NH ₃	K	–
	Aniline	C ₆ H ₅ NH ₂	A-P 3	–
	Aqueous ammonia	NH ₃ H ₂ O	K	–
	Arsenic trioxide	As ₂ O ₃	P 3	in presence of arsine: 89 B/St (B 2-P 3)
	Arsine	AsH ₃	B	in presence of arsenides: 89 B/St (B 2-P 3)
	B	Benzene	C ₆ H ₆	A
Benzyl bromide		C ₆ H ₅ CH ₂ Br	A-P 2	also B

Substances	Formula	Filter Code Letter	Remarks
Beryllium	Be	P 3	–
Bromine	Br ₂	B–P 3	–
Bromoform	CHBr ₃	A	–
Bromomethane	CH ₃ Br	AX	87 AX
Butanone	CH ₃ COC ₂ H ₅	A	–
Butyl acetate	CH ₃ COOC ₄ H ₉	A	–
Butyl acrylate	CH ₂ CHCOOC ₄ H ₉	A	–
Butyl alcohols (butanols)	C ₄ H ₉ OH	A	–
C Carbon black	C	P 2	–
Carbon dioxide	CO ₂	–	self-contained SCBA
Carbon disulfide	CS ₂	B	–
Carbon monoxide	CO	CO	CO filter canister, CO filter cartridge
Carbon oxysulfide	COS	B	–
Carbon tetrachloride	CCl ₄	A	–
Caustic soda	NaOH	P 2	–
Chlorobromomethane	CH ₂ ClBr	AX	87 AX
Chlorine	Cl ₂	B–P 3	–
Chlorine dioxide	ClO ₂	B	–
Chloromethane	CH ₃ Cl	–	self-contained SCBA
Chloroform	CHCl ₃	AX	87 AX
Chloroprene	CH ₂ C (C) CHCH ₂	AX	87 AX
Chlorosulfonic acid	ClSO ₃ H	B–P 2	also E–P 2
Chromium oxide	Cr ₂ O ₃ , CrO ₃	P 3	–
Cresols		A	–
Cyanogen chloride	ClCN	B	89 B/St
Cyclohexane	C ₆ H ₁₂	A	–
Cyclohexanol	C ₆ H ₁₁ OH	A	–
Cyclohexanone	C ₆ H ₁₀ O	A	–

	Substances	Formula	Filter Code Letter	Remarks
D	DD-products (Desmodur-Desmophen)		A-P 2	–
	DDT dust		P 3	also 89 B/St
	Diacetonel alcohol	(CH ₃) ₂ C(OH)CH ₂ COCH ₃	A	–
	1,2-Dibromoethane	CH ₂ BrCH ₂ Br	A	–
	1,2-Dichloroethane	CH ₂ ClCH ₂ Cl	A	–
	1,2-Dichloroethylene	CHClCHCl	AX	87 AX
	Dichloromethane	CH ₂ Cl ₂	AX	87 AX
	1,2-Dichloropropane	C ₃ H ₆ Cl ₂	A	–
	Diesel fuel		A	–
	Dimethylformamide (DMF)	HCON(CH ₃) ₂	A	–
	1,4-Dioxane	C ₄ H ₈ O ₂	A	–
	Dust		P 2, P 3	–
	E	Epichlorhydrin	C ₃ H ₅ OCl	A-P 3
Esters		R-COOR	A or AX	–
Ethanolamine		CH ₂ OHCH ₂ NH ₂	A	–
Ethers		ROR	A or AX	–
Ethyl acetate		CH ₃ COOC ₂ H ₅	A	–
Ethyl alcohol (ethanol)		C ₂ H ₅ OH	A	–
Ethyl benzene		C ₆ H ₅ CH ₂ CH ₃	A	–
Ethylene chloride		CH ₂ ClCH ₂ Cl	A	–
Ethylene dichloride		CH ₂ ClCH ₂ Cl	A	–
Ethylene oxide (T-gas)		C ₂ H ₄ O	AX	87 AX
Ethyl formate		HCOOC ₂ H ₅	AX	87 AX
F		Formaldehyde (formalin)	HCHO	B-P 3
	Formic acid	HCOOH	E	also B
	Furfuryl alcohol	C ₅ H ₄ O ₂	A	–
G	Gasoline		A	–

	Substances	Formula	Filter Code Letter	Remarks
H	Halogenated hydrocarbons	R-Hal	A or AX	no filter for chloromethane
			B-P 2 or	if they produce HCl/H ₂ O
			B-P 3	–
	Halogens	Hal ₂	B	–
	Hexachlorocyclohexane	C ₆ H ₆ Cl ₆	A-P 3	also 89 B/St
	Hydrazine	N ₂ H ₄	K-P 3	–
	Hydrocarbons	R-H	A	–
	Hydrochlorid acid	HCl/H ₂ O	E-P 2	also B-P 2
	Hydrofluoric acid (hydrogen fluoride)	HF/H ₂ O	E	also B
	Hydrogen bromide	HBr	E-P 2	also B
	Hydrogen chloride	HCl	E-P 2	also B
	Hydrogen cyanide	HCN	B	–
	Hydrogen halogenides	HF, HCl, HBr, HJ	E-P 2	also B-P 2
	Hydrogen selenide	H ₂ Se	B-P 2	–
	Hydrogen sulfide	H ₂ S	B	–
I	Insecticide (organic)		A-P 2	–
	Iodine	J ₂	B-P 2	also A-P 2
	Iodine (radioactive)	J ₂	Reactor P3-	–
	Iodomethane	CH ₃ J	AX	87 AX
	Iodomethane (radioactive)	CH ₃ J	Reactor P3	–
	Iron pentacarbonyl	Fe(CO) ₅	CO-P 3	CO filter canister with particle filter P 3
	Isocyanates (organic)	R-NCO	B-P 2	in case of spray and propellent gas
			B	if vapors only are present
		Isopropyl alcohol	CH ₃ CH(OH)CH ₃	A
K	Ketenes	R-CH ₂ =CO	–	self-contained SCBA
	Ketones	R-CO-R	A	Acetone: AX
L	Lead fumes	Pb	P 2	–
M	Maleic anhydride	C ₄ H ₂ O ₃	A-P 2	–
	Mercaptans	R-SH	B	–
M	Mercury compounds		Hg-P 3	89 Hg/St
	Mercury vapour	Hg	Hg-P 3	89 Hg/St

	Substances	Formula	Filter Code Letter	Remarks
	Metal fumes		P 2, P 3	–
	Methyl alcohol (methanol)	CH ₃ OH	AX	87 AX
	Methyl bromide	CH ₂ Br	AX	87 AX
	Methyl chloride	CH ₃ Cl	–	self-contained SCBA
	Methyl chloroform	CH ₃ CCl ₃	A	–
	Methylene chloride	CH ₂ Cl ₂	AX	87 AX
	Methyl ethyl ketone (MEK)	CH ₃ COC ₂ H ₅	A	–
	Methyl isobutyl ketone (MIBK)	CH ₃ COC ₄ H ₉	A	–
N	Nickel tetracarbonyl	Ni (CO) ₄	CO–P 3	CO filter canister and particle filter P 3
	Nitric acid	HNO ₃ /H ₂ O	NO	89 NO/St
	Nitro compounds (organic)	R-NO ₂	A	–
	Nitrogen oxides	NO, NO ₂ , N ₂ O ₅	NO	89 NO/St
	Nitrous fumes	NO, NO ₂ , N ₂ O ₅ , HNO ₂ , HNO ₃	NO	89 NO/St
O	Organic nitro compounds	R-NO ₂	A	–
	Organic vapors, solvent		A, AX	–
	Ozone	O ₃	CO	CO filter canister
			NO	89 NO/St
P	Paint sprays, vapors		A–P 2	–
	Pentachloroethane	CHCl ₂ CCl ₃	A	–
	Perchloroethylene	CCl ₂ CCl ₂	A	–
	Pesticides		A–P 2	–
	Petrol		A	–
	Phenols		A	–
	Phenylhydrazine	C ₆ H ₅ NHNH ₂	A	also K
	Phosgene	COCl ₂	B	–
	Phosphine	PH ₃	B	–
	Phosphorus trichloride	PCl ₃	B–P 2	–
	Polyacrylates		A–P 2	–
P	Potassium cyanide (dust)	KCN	B–P 3	–
	Propyl alcohol (propanol)	CH ₃ CH ₂ CH ₂ OH	A	–
	Pyridine	C ₅ H ₅ N	A	also K
Q	Quartz	SiO ₂	P 2	–

	Substances	Formula	Filter Code Letter	Remarks	
S	Sodium hydroxide	NaOH	P 2	–	
	Solvents		A	–	
	Stibine	SbH ₃	B–P 3	–	
	Styrene	C ₆ H ₅ CHCH ₂	A	–	
	Sulfur compounds (burning)	(SO ₂)	E–P 2	–	
	Sulfur dioxide	SO ₂	E	–	
	Sulfuric acid	H ₂ SO ₄	B–P 2	–	
	Sulfur monochloride	S ₂ Cl ₂	B–P 2	–	
	Sulfur trioxide	(SO ₃)	P 2	–	
	Sulfuryl chloride	SO ₂ Cl ₂	B	–	
	T	1,1,2,2-Tetrachloroethane	CHCl ₂ CHCl ₂	A	–
Tetrachloroethylene		CCl ₂ CCl ₂	A	–	
Tetrachloromethane		CCl ₄	A	–	
Tetrahydrofuran		C ₄ H ₈ O	A	–	
T-gas (ethylene oxide)		(C ₂ H ₄ O)	AX	87 AX	
Toluene		C ₆ H ₅ · CH ₃	A	–	
Tribromomethane		CHBr ₃	A	–	
Trichloroethane (TCA)		CH ₃ CCl ₃	A	–	
Trichloroethylene (Tri)		C ₂ HCl ₃	A	–	
Trichloromethane		CHCl ₃	AX	87 AX	
Turpentine			A	–	
V		Vanadium pentoxide dust, fumes	V ₂ O ₅	P 2	–
		Vinyl acetate	C ₄ H ₆ O ₂	A	–
	Vinyl chloride	CH ₂ CHCl	AX	87 AX	
	Vinylidene chloride	CH ₂ CCl ₂	AX	87 AX	
	Vinyltoluene	CH ₃ C ₆ H ₄ CHCH ₂	A	–	
X	Xylenes	CH ₃ C ₆ H ₄ CH ₃	A	–	
Z	Zinc oxide	ZnO	P 2	–	
	Zyklon (hydrogen cyanide with irritant)		B	–	

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