



# **Respiratory Filters**

### Reliable Protection against Gases and Particles

The greatest experience and know-how, as well as one of the widest filter ranges in the market make MSA filters the first choice for users in all industries.

#### PlexTec Technology

The high-performance particle filter P3 PlexTec and the combination filters use the PlexTec Media to provide even better comfort for the user. MSA PlexTec is based on a particle filter element with a significantly increased filtering surface. The reduction in inhalation resistance improves filtering performance and service time, while at the same time allowing slightly more relaxed breathing. Additionally, using PlexTec Technology, filter housings have been reduced in size, being now more compact and lightweight.

#### **Filter Selection**

The most frequently used filters are of the ABEK type, which protect against many hazards at the same time, due to the wide range of protection that they provide.

Based on EN 14387, these filters have an application range designated by the code letters A, B, E and K. Benefits for the user include: safe selection, no mix-ups, economical procurement, simpler stockkeeping.

High-grade multiple range filters have an even greater sphere of application, as e. g. the combined filter 93 ABEK CO NO Hg/St or 93 A2B2E2K2 Hg/St.

The 9X series of MSA gas and combination filters are in full compliance with the REACH regulation and do not include any toxic materials listed in the European Regulation.

The following pages will help you select the right filter protection for your needs.

	Features	Benefits		
Optimal safety	■ Proven and optimized filter technology	→ Reliable protection		
	<ul><li>Robust metal housing</li></ul>	→ Good mechanical resistance		
Flexibility and	■ Complete filter program (including special filters)	→ Suitable for all applications		
reduced cost		→ All products from one source		
	<ul> <li>Special packaging provides longer shelf life</li> </ul>	→ Up to 6 years storage for gas filters		
High operational performance and	■ Highly efficient filter media	→ Exceeds performance requirements of EN 14387		
omfort	■ PlexTec particle filter technology with increased filtering surface	→ Low breathing resistance		
	Filter opening easy to cover (even when wearing gloves)	→ Easy and reliable pressure fit test		



## **Applications and Markings**

Colour mark	Туре	Application	Class	Max. allowed gas concentration	Standard
	Α	Organic gases and vapours	1	1000 ml/m³ (0.1 Vol%)	EN 14387
		(boiling point >65°C)	2	5000 ml/m <sup>3</sup> (0.5 Vol%)	
			3	8000 ml/m <sup>3</sup> (0.8 Vol%)	
	В	Inorganic gases and vapours	1	1000 ml/m³ (0.1 Vol%)	EN 14387
		(not CO), e.g. chlorine, H₂S,	2	5000 ml/m <sup>3</sup> (0.5 Vol%)	
		HCN	3	10000 ml/m <sup>3</sup> (1.0 Vol%)	
	E	Sulfur dioxide and	1	1000 ml/m³ (0.1 Vol%)	EN 14387
		acidic gases and vapours	2	5000 ml/m <sup>3</sup> (0.5 Vol%)	
			3	10000 ml/m <sup>3</sup> (1.0 Vol%)	
	K	Ammonia and organic	1	1000 ml/m³ (0.1 Vol%)	EN 14387
		ammonia derivatives	2	5000 ml/m <sup>3</sup> (0.5 Vol%)	
			3	10000 ml/m <sup>3</sup> (1.0 Vol%)	
	AX	Organic gases and vapours	_	Gr. 1 (100 ml/m³ max. 40 min.)	EN 14387
		(boiling point < 65°C)		Gr. 1 (500 ml/m <sup>3</sup> max. 20 min.)	
		of low boiling substance		Gr. 2 (1000 ml/m <sup>3</sup> max. 60 min.)	
		groups 1 and 2		Gr. 2 (5000 ml/m <sup>3</sup> max. 20 min.)	
	NO-P3	Nitrogen oxides	_	Maximum allowed time of use	EN 14387
		e.g. NO, NO <sub>2</sub> , NO <sub>X</sub>		20 minutes	
		and particles			
	Hg-P3	Mercury vapours	_	Maximum allowed time of use	EN 14387
		and particles		50 hours	
		-			
	CO*	Carbon monoxyde	_	Local guidelines	DIN 58620
		·			EN 14387
	Reactor	Radioactive iodine	_	Local guidelines	DIN 3181*
	P3*	and particles			
		-			
	P	Particles	1	Max. filter penetration 20%	EN 143
			2	Max. filter penetration 6%	EN 14387
			3	Max. filter penetration 0.05%	

<sup>\*</sup>only colour mark and type standardized



Particle Filter P3 PlexTec



Gas Filter 90 AB



Combined Filter 93 ABEK 2-Hg/St

### An Excerpt of our Wide Range

	Description	Part No.	Pack of	Packs in Carton	Acc. to DIN/EN	Weight in g (approx.)	Ø/Height in mm (approx.)	Thread Connector
Particle Filters	Prefilter for Filter cartridge	D1070754	12	_	flame resistant	3	107/35	P3 PlexTec, series 92 & 93
% г	Particle Filter P3 PlexTec	10094376	10	20	P3 R	80	104/46	EN 148-1
	Gas Filter 90 A	10115187	1	60	A2	230	107/70	EN 148-1
	Gas Filter 90 AB	10098113	1	60	A2, B2	230	107/70	EN 148-1
ız	Gas Filter 90 E	10115349	1	60	E2	>300	107/70	EN 148-1
Gas Filters	Gas Filter 90 K	10115320	1	60	K2	>300	107/70	EN 148-1
g	Gas Filter 90 ABEK	10098114	1	60	A2, B2, E2, K1	255	107/70	EN 148-1
	Gas Filter 90 AX	10108408	1	60	AX, A2	230	107/80	EN 148-1
	Gas Filter 90 ABEK2	10098112	1	60	A2, B2, E2, K2	290	107/77	EN 148-1
	Combined Filter 92 A/St	10115188	1	60	A2-P2 R D	260	107/85	EN 148-1
	Combined Filter 92 AB/St	10097994	1	60	A2, B2-P2 R D	270	107/85	EN 148-1
	Combined Filter 92 ABEK/St	10097995	1	60	A2, B2, E2, K1-P2 R D	295	107/85	EN 148-1
SIS	Combined Filter 92 ABEK2/St	10097996	1	60	A2, B2, E2, K2-P2 R D	350	107/93	EN 148-1
d Filte	Combined Filter 93 A/St	10115189	1	60	A2-P3 R D	260	107/85	EN 148-1
Combined Filters	Combined Filter 93 AX/St	10108409	1	60	AX-P3 R D	260	107/85	EN 148-1
S	Combined Filter 93 AB/St	10097993	1	60	A2, B2-P3 R D	270	107/85	EN 148-1
	Combined Filter 93 K/St	10115190	1	60	K2-P3 R D	295	107/85	EN 148-1
	Combined Filter 93 ABEK-Hg/St	10097231	1	60	A2, B2, E2, K1, Hg-P3 R D	295	107/85	EN 148-1
	Combined Filter 93 ABEK2-Hg/St	10097232	1	60	A2, B2, E2, K2, Hg-P3 R D	350	107/93	EN 148-1
ters	Combined Filter 93 Hg/St	10115201	1	60	Hg-P3 R D	270	107/85	EN 148-1
Special Filters	Combined Filter 93 NO-CO/St	10115314	1	60	NO-P3 R D	470	107/85	EN 148-1
Spe	Comb. Filter 93 ABEK-CO-NO-Hg/St	10115315	1	60	A1, B2, E2, K1, CO, NO, Hg-P3 R D	420	107/93	EN 148-1

R = Reusable according EN 143:2000/A1:2006 D = Dolomite tested







Combined Filter

#### **Criteria for Filter Selection**

#### Application

Respiratory filters protect against numerous known contaminants which, if inhaled, can be dangerous to health: toxic gases, vapours and particles, as well as many combinations with immediate or delayed harmful effects.

#### **Requirements for Selection**

The efficacy of filters designed to provide respiratory protection is dependent on the ambient atmosphere.

- The oxygen content of the inhalation air must be sufficient, at least 17 vol. %!
- Type, properties and composition of the hazardous agent in the ambient air must be known. Material Safety Datasheets may contain this information.
- Local regulations concerning the use of filtering devices, the requested oxygen content and the threshold limit values may differ and must always be observed.
- When using a particle filter, no hazardous gases may be present in the ambient air, when using a gas filter no hazardous particles. In case of doubt a combined filter must be used.
- Filtering devices must not be used in confined spaces such as containers, canals, etc. due to poor ventilation.
- Only filters with a weight of up to, but not exceeding, 300 g may be used on quarter and half face masks. Only filters with a weight of up to, but not exceeding, 500 g may be used on full face masks.
- Never use filters that show signs of damage.

If you are in doubt concerning any of the above-mentioned points, or if you believe that the composition of your atmosphere at work has changed, use protection that operates independently of the ambient air. MSA provides you with a wide range of breathing apparatus and airline devices.

#### **Storage Time**

For factory sealed and properly stored gas and combined filters the following storage lives can be expected:

- Filters type A, AX, B, E, K, Hg, Reactor: 6 years
- Filters type CO, NO: 4 years
- Particle Filters: 10 years

Proper storage conditions are indicated on the filter packaging. The expiration date is marked on the individual filters. Gas and combined filters that have been opened must be replaced after 6 months at the latest, or earlier if they are exhausted.

#### **Service Time**

- The expiration of the service life of gas filters can be detected by odour or tasted on the clean air side. The filters must then be replaced.
- The expiration of the service life of particle filters or combined filters that are used against particles can be detected by an increase in inhalation resistance.
- With combined filters depending on the predominant protective function – both criteria must be observed. Particle filters must only be used once against radioactive contaminants, spores, bacteria, viruses and proteolytic enzymes.
- Some filters have a specified maximum service time (CO filter cartridges, combined filters 93 Hg/St) or they have an incorporated warning system (CO filter canisters).
- Filters that are used against hazardous gases whose infiltration cannot be detected by odour, taste or irritation, are subject to special regulations concerning duration and usage that depend on the conditions of use. Otherwise a form of protection that functions independently of the ambient air must be used.

Further conditions of use in each individual workplace and of each user affect the service life of respiratory devices:

- Pace of breathing the higher the rate of breathing the higher the contamination rate of the filtering device
- Temperature of the ambient air the higher the temperature, the shorter the service life
- Humidity the higher the humidity the lower the intake capacity of activated carbon against organic gases and vapours
- Mixtures of hazardous agents less absorbent components in the activated carbon can be replaced with components that offer higher rates of absorption (desorption)

The following extract of industrial gases and toxic substances will guide you in making the correct choice of respiratory device and filter. Always read the instructions provided with every device before use. In any case, final choice and use of filtering devices remain the responsibility of the user.

The filter recommendations are based on pure substances. Concerning mixtures, by-products, or decomposition products, the presence of impurities must be taken into account. For organic compounds with a boiling point below 65 °C, AX Filters must be used.

If the above list mentions a particle filter (e.g. A–P2) for a specific substance, this is because particles are commonly found with the gas or vapour.

**For information on other substances** or detailed filter datasheets, please contact your local MSA Affiliate or a Regional Head Office near you.



### **Alphabetical List of Industrial Gases and Toxic Substances**

Substances	Formula	Filter Performance Type	Colour Mark	Remarks
Acetaldehyde	CH₃CHO	AX	brown	90 AX
Acetic acid	CH₃COOH	E	yellow	also B or A
Acetone	CH <sub>3</sub> COCH <sub>3</sub>	AX	brown	90 AX
Acetonecyanhydrin	CH <sub>3</sub> C (OH) (CN) CH <sub>3</sub>	A-(P3)	brown–(white)	1)
Acetonitrile	CH <sub>3</sub> C(OH)(CN) CH <sub>3</sub>	A – (1 3)	brown	in presence of
Acetonitne	CH3CN	A	DIOWII	•
				hydrogen cyanide: B
Acidic gases	-	E	yellow	also B
Acids (fuming concentrated)	_	E-(P2)	yellow – (white)	1)
Acrolein (2-Propenal)	CH₂CHCHO	AX	brown	90 AX
Acrylic acid-esters	CH <sub>2</sub> CHCOOR	Α	brown	1)
Acrylonitrile	CH₂CHCN	A-(P3)	brown-(white)	in presence of
reciyiomene	CHZCHCIV	7. (1.3)	brown (write)	hydrogen cyanide: B–P3
AL	D 011			
Alcohols	R·OH	A	brown	methyl alcohol: AX
Aldehydes	R∙CHO	A or AX	brown	formaldehyde: filter B
Allylchloride				
(3-chloride-1-propen)	CH <sub>2</sub> CHCH <sub>2</sub> CI	AX	brown	90 AX
2-Amino ethanol	CH <sub>2</sub> OHCH <sub>2</sub> NH <sub>2</sub>	A	brown	1)
				1)
Ammonia	NH <sub>3</sub>	K	green	
Aniline	$C_6H_5NH_2$	A-(P3)	brown-(white)	1)
Aqueous ammonia	$NH_3H_2O$	K	green	1)
Arsenic trioxide	$As_2O_3$	P3	white	in presence of
, in service an overall	7.0203	. 5	***************************************	arsine: 93 B/St (B2-P3)
Austra	A -1.1	D		
Arsine	$AsH_3$	В	grey	in presence of
				arsenides: 93 B/St (B2-P
Benzene	C <sub>6</sub> H <sub>6</sub>	A	brown	1)
	$C_6H_5CH_2Br$	A-(P2)		also B
Benzyl bromide			brown – (white)	
Beryllium	Be	P3	white	1)
Bromine	Br <sub>2</sub>	B-(P3)	grey – (white)	1)
Bromoform	CHBr₃	Α	brown	1)
Bromomethane	CH₃Br	AX	brown	90 AX
Butanone	CH <sub>3</sub> COC <sub>2</sub> H <sub>5</sub>	A	brown	1)
Butyl acetate	$CH_3COOC_4H_9$	Α	brown	1)
Butyl acrylate	$CH_2CHCOOC_4H_9$	Α	brown	1)
Butyl alcohols (butanols)	$C_4H_9OH$	Α	brown	1)
Carbon black	C	P2	white	1)
Carbon dioxide	CO <sub>2</sub>	2)	_	self-contained BA
Carbon disulfide	CS <sub>2</sub>	В	grey	1)
Carbon monoxide	CO	CO	black	CO filter canister,
				CO filter cartridge
Carbon oxysulfide	COS	В	arov	1)
			grey	1)
Carbon tetrachloride	CCI <sub>4</sub>	A	brown	
Caustic soda	NaOH	P2	white	1)
Chlorobromomethane	CH <sub>2</sub> ClBr	AX	brown	90 AX
Chlorine	$Cl_2$	B-(P3)	grey–(white)	1)
Chlorine dioxide	CIO <sub>2</sub>	B (1 3)		1)
			grey	
Chloromethane	CH₃Cl	2)	<del>-</del>	self-contained BA
Chloroform	CHCl₃	AX	brown	90 AX
Chloroprene	$CH_2C(C)CHCH_2$	AX	brown	90 AX
Chlorosulfonic acid	CISO₃H	B-(P2)	grey-(white)	also E-P2
Chromium oxide	Cr <sub>2</sub> O <sub>3</sub> , CrO <sub>3</sub>	P3	white	1)
	C12O3, C1O3			1)
Cresols	_	A	brown	
Cyanogen chloride	CICN	В	grey	93 B/St
Cyclohexane	$C_6H_{12}$	A	brown	1)
Cyclohexanol	C <sub>6</sub> H <sub>11</sub> OH	A	brown	1)
Cyclohexanone	C <sub>6</sub> H <sub>10</sub> O	A	brown	1)
	C61170O	٨	PIOMII	,
DD-products				
(Desmodur-Desmophen)	_	A-(P2)	brown – (white)	1)
DDT dust	_	P3	white	also 93 B/St
	(CH ) C (OH)CH COCH			1)
Diacetonel alcohol	(CH <sub>3</sub> ) <sub>2</sub> C (OH)CH <sub>2</sub> COCH <sub>3</sub>	A	brown	
1,2-Dibromoethane	$CH_2BrCH_2Br$	Α	brown	1)
1,2-Dichloroethane	CH <sub>2</sub> CICH <sub>2</sub> CI	Α	brown	1)

 $<sup>^{1)}\,\</sup>text{All}$  filters of the indicated performance type could be used, please see overview on page 3



 $<sup>^{2)}</sup>$  Use of self-contained respiratory protection necessary (compressed air breathing apparatus or airline breathing apparatus)

Substances	Formula	Filter Performance Type	Colour Mark	Remarks
1,2-Dichloroethylene	CHCICHCI	AX	brown	90 AX
Dichloromethane	$CH_2CI_2$	AX	brown	90 AX
1,2-Dichloropropane	$C_3H_6CI_2$	Α	brown	1)
Diesel fuel	_	Α	brown	1)
Dimethylformamide (DMF)	HCON (CH <sub>3</sub> ) <sub>2</sub>	Α	brown	1)
1,4-Dioxane	$C_4H_8O_2$	Α	brown	1)
Dust	_	P2, P3	white	1)
Epichlorhydrin	C₃H₅OCl	A-(P3)	brown – (white)	1)
Esters	R-COOR	A or AX	brown	1)
Ethanolamine	$CH_2OHCH_2NH_2$	Α	brown	1)
Ethers	ROR	A or AX	brown	1)
Ethyl acetate	$CH_3COOC_2H_5$	Α	brown	1)
Ethyl alcohol (ethanol)	C <sub>2</sub> H <sub>5</sub> OH	Α	brown	1)
Ethyl benzene	$C_6H_5CH_2CH_3$	Α	brown	1)
Ethylene dichloride	CH <sub>2</sub> CICH <sub>2</sub> CI	Α	brown	1)
Ethylidene dichloride	CH <sub>3</sub> CHCl <sub>2</sub>	AX	brown	1)
Ethylene oxide (T-gas)	C <sub>2</sub> H <sub>4</sub> O	AX	brown	90 AX
Ethyl formate	HCOOC <sub>2</sub> H <sub>5</sub>	AX	brown	90 AX
Formaldehyde (formalin)	НСНО	B-(P3)	grey – (white)	1)
Formic acid	НСООН	E	yellow	also B
Furfuryl alcohol	C <sub>5</sub> H <sub>4</sub> O <sub>2</sub>	A	brown	1)
Gasoline	-	A	brown	1)
Halogenated hydrocarbons	R-Hal	A or AX	brown	no filter for chloromethar
		B-(P2) or	grey – (white)	if they produce HCI/H <sub>2</sub> O
		B-(P3)	grey – (white)	ii tiiey produce riei, ri <sub>2</sub> o
Halogens	Hal <sub>2</sub>	B (1 3)	grey	1)
Hexachlorocyclohexane	C <sub>6</sub> H <sub>6</sub> Cl <sub>6</sub>	A-(P3)	brown – (white)	also 93 B/St
Hydrazine	N <sub>2</sub> H <sub>4</sub>	K-(P3)	green – (white)	1)
Hydrocarbons	R-H	A	brown	1)
•	HCI/H <sub>2</sub> O	E-(P2)	yellow–(white)	also B–P2
Hydrochlorid acid Hydrofluoric acid				
(hydrogen fluoride)	HF/H <sub>2</sub> O	E (D2)	yellow	also B
Hydrogen bromide	HBr	E-(P2)	yellow–(white)	also B
Hydrogen chloride	HCI	E-(P2)	yellow–(white)	also B
Hydrogen cyanide	HCN	В	grey	1)
Hydrogen halogenides	HF, HCl, HBr, HJ	E-(P2)	yellow–(white)	also B-P2
Hydrogen selenide	H₂Se	B-(P2)	grey – (white)	1)
Hydrogen sulfide	H₂S	В	grey	1)
Insecticide (organic)	_	A-(P2)	brown – (white)	1)
lodine	$J_2$	B-(P2)	grey – (white)	also A-P2
lodine (radioactive)	$J_2$	Reactor – (P3)	orange – (white)	1)
lodomethane	CH₃J	AX	brown	90 AX
lodomethane (radioactive)	CH₃J	Reactor-(P3)	orange – (white)	1)
Iron pentacarbonyl	Fe (CO <sub>5</sub> )	CO-(P3)	black–(white)	CO filter canister with particle filter P3
Isocyanates (organic)	R-NCO	B-(P2)	grey–(white)	in case of spray and propellent gas
		В	grey	if vapours only are preser
Isopropyl alcohol	CH₃CH (OH) CH₃	A	brown	1)
Ketenes	$R-CH_2 = CO$	2)	- brown	self-contained BA
Ketones	R-CO-R	A	brown	Acetone: AX
Lead fumes	Pb	P2	white	
Maleic anhydride	C <sub>4</sub> H <sub>2</sub> O <sub>3</sub>	A-(P2)	brown – (white)	1)
Mercaptans	R-SH	B (D2)	grey	
Mercury compounds	- !!-	Hg-(P3)	red – (white)	93 Hg/St
Mercury vapour	Hg	Hg-(P3)	red – (white)	93 Hg/St
Metal fumes	-	P2, P3	white	1)
Methyl alcohol (methanol)	CH₃OH	AX	brown	90 AX
Methyl bromide	CH₂Br	AX	brown	90 AX

 $<sup>^{1)}\,\</sup>text{All}$  filters of the indicated performance type could be used, please see overview on page 3

<sup>&</sup>lt;sup>2)</sup> Use of self-contained respiratory protection necessary (compressed air breathing apparatus or airline breathing apparatus)

Substances	Formula	Filter Performance Type	Colour Mark	Remarks
Methyl chloride	CH₃Cl	2)	-	self-contained BA
Methyl chloroform	CH₃CCI₃	Α	brown	1)
Methylene chloride	CH <sub>2</sub> Cl <sub>2</sub>	AX	brown	90 AX
Methyl ethyl ketone (MEK)	CH <sub>3</sub> COC <sub>2</sub> H <sub>5</sub>	A	brown	1)
Methyl isobutyl ketone (MIBK)	CH <sub>3</sub> COC <sub>4</sub> H <sub>9</sub>	A	brown	1)
Nickel tetracarbonyl	Ni (CO) <sub>4</sub>	CO-(P3)	black–(white)	CO filter canister and
Nitric acid	HNO <sub>3</sub> /H <sub>2</sub> O	NO	blue	particle filter P3 93 NO/St
				93 NO/31 1)
Nitro compounds (organic)	R-NO <sub>2</sub>	A	brown	
Nitrogen oxides Nitrous fumes	$NO$ , $NO_2$ , $N_2O_5$ $NO$ , $NO_2$ , $N_2O_5$ , $HNO_2$ , $HNO_3$	NO NO	blue blue	93 NO/St 93 NO/St
Organic nitro compounds	R-NO <sub>2</sub>	Α	brown	1)
Organic vapors, solvent	_	A, AX	brown	1)
Ozone	O <sub>3</sub>	CO	black	CO filter canister
		NO	blue	93 NO/St
Paint sprays, vapours	_	A-(P2)	brown – (white)	1)
Pentachloroethane	CHCl <sub>2</sub> CCl <sub>3</sub>	Α	brown	1)
Perchloroethylene	$CCI_2CCI_2$	A	brown	1)
Pesticides	_	A-(P2)	brown-(white)	1)
Petrol	_	Α	brown	1)
Phenols	_	Α	brown	1)
Phenylhydrazine	C <sub>6</sub> H <sub>5</sub> NHNH <sub>2</sub>	Α	brown	also K
Phosgene	COCI <sub>2</sub>	В	grey	1)
Phosphine	PH₃	В	grey	1)
Phosphorus trichloride	PCI <sub>3</sub>	B-(P2)	grey – (white)	1)
Polyacrylates	=	A-(P2)	brown – (white)	1)
Potassium cyanide (dust)	KCN	B-(P3)	grey – (white)	1)
Propyl alcohol (propanol)	CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> OH	Α	brown	1)
Pyridine	C <sub>5</sub> H <sub>5</sub> N	A	brown	also K
				1)
Quartz	SiO <sub>2</sub>	P2	white	1)
Sodium hydroxide Solvents	NaOH	P2	white brown	1)
	-	A (B2)		1)
Stibine	SbH <sub>3</sub>	B-(P3)	grey – (white)	
Styrene	C <sub>6</sub> H <sub>5</sub> CHCH <sub>2</sub>	A	brown	1)
Sulfur compounds (burning)	(SO <sub>2</sub> )	E-(P2)	yellow–(white)	1)
Sulfur dioxide	$SO_2$	E	yellow	1)
Sulfuric acid	$H_2SO_4$	B-(P2)	grey – (white)	1)
Sulfur monochloride	$S_2CI_2$	B-(P2)	grey – (white)	1)
Sulfur trioxide	(SO <sub>3</sub> )	P2	white	1)
Sulfuryl chloride	SO <sub>2</sub> Cl <sub>2</sub>	В	grey	1)
1,1,2,2-Tetrachloroethane	CHCl <sub>2</sub> CHCl <sub>2</sub>	Α	brown	1)
Tetrachloroethylene	CCI <sub>2</sub> CCI <sub>2</sub>	Α	brown	1)
Tetrachloromethane	CCI <sub>4</sub>	Α	brown	1)
Tetrahydrofuran	C <sub>4</sub> H <sub>8</sub> O	Α	brown	1)
T-gas (etylene oxide)	(C <sub>2</sub> H <sub>4</sub> O)	AX	brown	90 AX
Toluene	C <sub>6</sub> H <sub>5</sub> ·CH <sub>3</sub>	A	brown	1)
Tribromomethane	CHBr <sub>3</sub>	A	brown	1)
Trichloroethane (TCA)	CH <sub>3</sub> CCl <sub>3</sub>	A	brown	1)
Trichloroethylene (Tri)	C <sub>2</sub> HCl <sub>3</sub>	A	brown	1)
Trichloromethane	CHCl <sub>3</sub>	AX	brown	90 AX
Turpentine	-	A	brown	1)
Vanadium pentoxide dust,				
fumes	$V_2O_5$	P2	white	1)
Vinyl acetate	C <sub>4</sub> H <sub>6</sub> O <sub>2</sub>	A	brown	1)
Vinyl chloride	CH <sub>2</sub> CHCl	AX	brown	90 AX
Vinylidene chloride	CH <sub>2</sub> CCl <sub>2</sub>	AX	brown	90 AX
Vinyltoluene	CH <sub>3</sub> C <sub>6</sub> H <sub>4</sub> CHCH <sub>2</sub>	A	brown	1)
Xylenes	CH <sub>3</sub> C <sub>6</sub> H <sub>4</sub> CH <sub>3</sub>	A	brown	1)
Zinc oxide	ZnO	P2	white	1)
Zyklon (hydrogen cyanide with irritant)	0	В	grey	1)

 $<sup>^{1)}\,\</sup>text{All}$  filters of the indicated performance type could be used, please see overview on page 3



<sup>&</sup>lt;sup>2)</sup> Use of self-contained respiratory protection necessary (compressed air breathing apparatus or airline breathing apparatus)

#### Full Face and Half Masks - APR

#### **Ordering Information**

Ordering information				
D2055000	35			
D2055790	3S Basic Plus			
D2056700	Ultra Elite			
10027724	Advantage 3111, small			
10027723	Advantage 3121, medium			
10027725	Advantage 3131, large			
10042664	Advantage 3112, small (silicone harness)			
10042730	Advantage 3122, medium (silicone harness)			
10042731	Advantage 3132, large (silicone harness)			
10102276	Advantage 410, small			
10102277	Advantage 410, medium			
10102278	Advantage 410, large			
D1070712	Adapter Rd 40 x 1/7/plug¹)			
10039412	Adapter PS-MaXX <sup>2)</sup>			
D5026000	Breathing hose for full face masks			

<sup>1)</sup> Filter adapter for full face masks with MSA plug-in adapter

The weight of a single filter shall not exceed 300 g when used with the Advantage 410

Please contact us for detailed information on full face masks.

#### 35

3S is the synonym for safety, sight and style. With its connector EN 148-1, it can be used with respiratory filters or with breathing apparatus.



#### **Ultra Elite**

The full face mask with the specially large field of vision, comfortable and secure fit. It is service friendly and robust (e.g. lens with silicate coating).



#### Advantage 3000

donning and using.

The innovative full face mask series with a large, optically corrected lens.
The Advantage 3000 comes in 3 different sizes and offers an incomparable comfort in



#### **Advantage 400**

The innovative Advantage 400 convinces through exceptional comfort and sophisticated design. The user-friendly half mask comes in 3 different sizes.



<sup>2)</sup> Filter adapter for full face masks with MaXX-Quick connector



Thank you for reading this data sheet.

For pricing or for further information, please contact us at our UK Office, using the details below.

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Please note - Product designs and specifications are subject to change without notice. The user is responsible for determining the suitability of this product.