Total Protection (UK) Limited

# Filter Guide

Respiratory protection with filters is dependent on the ambient air. In order to use filtering respirators, the type, properties and composition of the hazardous agent in the ambient air must be known. The oxygen content in the inhalation air must be at least 18% Vol. When using particle filters, no hazardous gases must be present; when using gas filters, no hazardous particles should be present, in case of doubt combined filter must be used.

| Colour Mark | Type | Application | Class | Max allowed gas Concentration | Standard |
|---|---|---|---|---|---|
| | A | Organic gases and vapours (boiling point >65°C) | 1<br>2<br>3 | 1000 ml/min³ (0.1 Vol %)<br>5000 ml/min³ (0.5 vol %)<br>10000 ml/min³ (1.0 vol %) | EN141<br>or<br>EN14387 |
| | B | Inorganic gases and vapours (not CO) i.e. Chlorine, $H_2S$, HCN. | 1<br>2<br>3 | 1000 ml/min³ (0.1 Vol %)<br>5000 ml/min³ (0.5 vol %)<br>10000 ml/min³ (1.0 vol %) | EN141<br>or<br>EN14387 |
| | E | Sulphur Dioxide and acidic gases and vapours | 1<br>2<br>3 | 1000 ml/min³ (0.1 Vol %)<br>5000 ml/min³ (0.5 vol %)<br>10000 ml/min³ (1.0 vol %) | EN141<br>or<br>EN14387 |
| | K | Ammonia and organic ammonia derivatives | 1<br>2<br>3 | 1000 ml/min³ (0.1 Vol %)<br>5000 ml/min³ (0.5 vol %)<br>10000 ml/min³ (1.0 vol %) | EN141<br>or<br>EN14387 |
| | AX | Organic gases and vapours (boiling point <65°C) | - | gr.1 100 ml/min³ max 40 min<br>gr.1 500ml/min³ max 20 min<br>gr.2 1000 ml/min³ max 60 min<br>gr.2 5000 ml/min³ max 20 min | EN371 |
| | NO-P3 | Nitrogen Oxides e.g. NO, $NO_2$, NOX | - | Maximum allowed time of use 20 minutes | EN141<br>or<br>EN14387 |
| | Hg-P3 | Mercury Vapours | - | Maximum allowed time of use 50 hours | EN141<br>or<br>EN14387 |
| | CO | Carbon Monoxide | - | Local guide lines | DIN 3181 |
| | Reactor P3 | Radioactive Iodine | - | Local guide lines | DIN 3181 |
| | P | Particles | 1<br>2<br>3 | Efficiency Low<br>Effciency medium<br>Effciency high | EN141<br>or<br>EN14387 |


Specialists in Safety: Respiratory Protection

## Filters for Half Masks & Full Face Masks

### Advantage Filters

| Description | Standards |
|---|---|
| P3 High Efficiency Dust Cartridge (pair) | EN143 |
| A2 Chemical Cartridge (pair) | EN141 |
| A2B2E1K1 Chemical Cartridge (pair) | EN141 |
| A2P3 Combination Cartridge (pair) | EN141 |
| A2B2E1K1P3 Combination Cartridge (pair) | EN141 |
| P2 Pre-filters and adapters (10 pairs) | EN143 |

### TabTec® Filters

| Description | Standards |
|---|---|
| A1 TabTec Gas Filters (pair) | EN141 |
| A2 TabTec Gas Filters (pair) | EN141 |
| A2B2E1 TabTec Gas Filters (pair) | EN141 |
| A2B2E1K1 TabTec Gas Filters (pair) | EN141 |

| Description | Standards |
|---|---|
| P2 FLEXIfilter (5 pairs) | EN143 |
| P2 FLEXIfilter OR (5 pairs) (Odour Removal) | EN143 |
| P3 FLEXIfilter (5 pairs) | EN143 |
| P3 FLEXIfilter OR (5 pairs) (Odour Removal) | EN143 |

### EN148 Threaded Filters

| Description | According to EN/DIN | Weight (g) |
|---|---|---|
| **Particle Filters** | | |
| Pre-filter for screw filter | Flame Resistant | 3 |
| Particle Filter 999 | P3 | 80 |
| **Gas Filters** | | |
| Gas Filter 87 A | A2 | 180 |
| Gas Filter 87 B | A2, B2 | 210 |
| Gas Filter 87 E | E2 | 260 |
| Gas Filter 87 K | K2 | 260 |
| Gas Filter 87 ABEK | A2, B2, E2, K1 | 260 |
| Gas Filter 87 AX | AX, A2 | 260 |
| Gas Filter 87 ABEK2 | A2, B2, E2, K2 | 340 |
| **Combined Filters** | | |
| Combined Filter 88 A/St | A2 – P2 | 250 |
| Combined Filter 88 AB/St | A2, B2 – P2 | 290 |
| Combined Filter 88 ABEK/St | A2, B2, E2, K1 – P2 | 300 |
| Combined Filter 88 ABEK2/St | A2, B2, E2, K2 – P2 | 370 |
| Combined Filter 89 A/St | A2 – P3 | 250 |
| Combined Filter 89 AX/St | AX – P3 | 300 |
| Combined Filter 89 AB/St | A2, B2 – P3 | 290 |
| Combined Filter 89 K/St | K2 – P3 | 300 |
| Combined Filter 89 ABEK-Hg/St | A2, B2, E2, K1, Hg- P3 | 300 |
| Combined Filter 89 ABEK2-Hg/St | A2, B2, E2, K2, Hg-P3 | 370 |
| **Special Filters** | | |
| Combined Filter 89 Hg/St | Hg – P3 | 255 |
| Combined Filter 89 NO-CO/St | NO P3 | 455 |
| Combined Filter 89 Reactor/St | Reactor – P3 | 260 |
| Combined Filter 89 Reactor B/St | B2, Reactor P3 | 260 |
| Combined Filter 580CO/St | CO – P3 | 500 |
| Combined Filter 89 ABEK-CO-NO-Hg/St | A1, B2, E2, K1, CO, NO, Hg – P3 | 450 |

# Alphabetical List of industrial gases and toxic substances

This overview of industrial gases and toxic substances guides you in selecting the appropriate filter type. Before using respiratory protection always read the instructions for use.

Limitation of use:
Filters for respiratory protection may be used everywhere, except for some inherent limitation e.g. Confined Spaces or Containers. Principally the following conditions must be known:

- Type, property and composition of contaminant
- Oxygen content of the inhalation air must be sufficient i.e. >17%
- Local restrictions should be observed

For all gases and vapours which may be present in combination with particles (dust, smoke, mist, spray) a combination filter (gases & particles) must be used

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

For information on substances not listed please contact us.

| Substance | Formula | Filter Type | Colour |
|---|---|---|---|
| Acetaldehyde | $CH_3CHO$ | AX | Brown |
| Acetic Acid | $CH_3COOH$ | E | Yellow |
| Acetone | $CH_3COCH_3$ | AX | Brown |
| Acetonecyanhydrin | $CH_3C(OH)(CN)CH_3$ | A –P3 | Brown - White |
| Acetonitrile | $CH_3CN$ | A | Brown |
| Acidic Gases | - | E | Yellow |
| Acids (fuming concentrated) | - | E – P2 | Yellow - White |
| Acrolein (2-Propenal) | $CH_2CHCHO$ | AX | Brown |
| Acrylic Acid-esters | $CH_2CHCOOR$ | A | Brown |
| Acrylonitrile | $CH_2CHCN$ | A – P3 | Brown – White |
| Alcohols | $R{\cdot}OH$ | A | Brown |
| Aldehydes | $R{\cdot}CHO$ | A or AX | Brown |
| Allylchloride | $CH_2CHCH_2Cl$ | AX | Brown |
| 2 Amino-Ethanol | $CH_2OHCH_2NH_2$ | A | Brown |
| Ammonia | NH3 | K | Green |
| Aniline | $C_6H_5NH_2$ | A – P3 | Brown – White |
| Aqueous Ammonia | $NH_3H_2O$ | K | Green |
| Arsenic Trioxide | $As_2O_3$ | P3 | White |
| Arsine | $AsH_3$ | B | Grey |
| | | | |
| Benzene | $C_6H_6$ | A | Brown |
| Benzyl Bromide | $C_6H_5CH_2Br$ | A – P2 | Brown – White |
| Beryllium | Be | P3 | White |

| | | | |
|---|---|---|---|
| Bromine | $Br_2$ | B – P3 | Grey - White |

| Substance | Formula | Filter Type | Colour |
|---|---|---|---|
| Bromoform | $CHBr_3$ | A | Brown |
| Bromomethane | $CH_3Br$ | AX | Brown |
| Butanone | $CH_3COC_2H_5$ | A | Brown |
| Butyl Acetate | $CH_3COOC_4H_9$ | A | Brown |
| Butyl Acrylate | $CH_2CHCOOC_4H_9$ | A | Brown |
| Butyl Alcohols | $C_4H_9OH$ | A | Brown |
| | | | |
| Carbon Black | C | P2 | White |
| Carbon Dioxide | $CO_2$ | * | - |
| Carbon Disulphide | $CS_2$ | B | Grey |
| Carbon Monoxide | CO | CO | Black |
| Carbon Oxysulphide | COS | B | Grey |
| Carbon Tetrachloride | $CCl_4$ | A | Brown |
| Caustic Soda | NaOH | P2 | White |
| Chlorobromomethane | $CH_2ClBr$ | AX | Brown |
| Chlorine | $Cl_2$ | B – P3 | Grey – White |
| Chlorine Dioxide | $ClO_2$ | B | Grey |
| Chloromethane | $CH_3Cl$ | * | - |
| Chloroform | $CHCl_3$ | AX | Brown |
| Chloroprene | $CH_2C(C)CHCH_2$ | AX | Brown |
| Chlorosulfonic Acid | $ClSO_3H$ | B –P2 | Grey - White |
| Chromium Oxide | $Cr_2O_3$, $CrO_3$ | P3 | White |
| Cresols | - | A | Brown |
| Cyanogen Chloride | ClCN | B | Grey |
| Cyclohexane | $C_6H_{12}$ | A | Brown |
| Cyclohaxanone | $C_6H_{10}O$ | A | Brown |
| | | | |
| DD Products | - | A – P2 | Brown – White |
| DDT Dust | - | P3 | White |
| Diocetonel Alcohol | $(CH_3)_2C(OH)CH_2COCH_3$ | A | Brown |
| 1,2-Dibromoethane | $CH_2BrCH_2Br$ | A | Brown |
| 1,2-Dichloroethane | $CH_2ClCH_2Cl$ | A | Brown |
| 1,2-Dichloroethylene | CHClCHCl | AX | Brown |
| Dichloromethane | $CH_2CL_2$ | AX | Brown |
| 1,2-Dichloropropane | $C_3H_6CL_2$ | A | Brown |
| Diesel Fuel | - | A | Brown |
| Dimethylformamide (DMF) | $HCON(CH_3)_2$ | A | Brown |
| 1,4-Dioxane | $C_4H_8O_2$ | A | Brown |
| Dust | - | P2 / P3 | White |

| Substance | Formula | Filter Type | Colour |
|---|---|---|---|
| Epichlorhydrin | $C_3H_5OCl$ | A – P3 | Brown - White |
| Esters | R-COOR | A or AX | Brown |
| Ethanolamine | $CH_2OHCH_2NH_2$ | A | Brown |
| Ethers | ROR | A or AX | Brown |
| Ethyl Acetate | $CH_3COOC_2H_5$ | A | Brown |
| Ethyl Alcohol (Ethanol) | $C_2H_5OH$ | A | Brown |
| Ethyl Benzene | $C_6H_5CH_2CH_3$ | A | Brown |
| Ethylene Chloride | $CH_2ClCH_2CH_3$ | A | Brown |
| Ethylene Dichloride | $CH_2ClCH_2Cl$ | A | Brown |
| Ethylene Oxide (T-Gas) | $C_2H_4O$ | AX | Brown |
| Ethyl Formate | $HCOOC_2H_5$ | AX | Brown |
| | | | |
| Formaldehyde | HCHO | B – P3 | Grey – White |
| Formic Acid | HCOOH | E | Yellow |
| Furfuryl Alcohol | C5H4O2 | A | Brown |
| | | | |
| Gasoline | - | A | Brown |
| | | | |
| Halogenated Hydrocarbons | R-Hal | A or AX | Brown |
| | | B – P2 | Brown – White |
| | | B – P3 | Brown – White |
| Halogens | $Hal_2$ | B | Grey |
| Hexachlorocyclohexane | $C_6H_6Cl_6$ | A – P3 | Brown – White |
| Hydrazine | $N_2H_4$ | K – P3 | Green – White |
| Hydrocarbons | R-H | A | Brown |
| Hydrochlorid Acid | $HCl/H_2O$ | E | Yellow |
| Hydrogen Fluoride | $HF/H_2O$ | E | Yellow |
| Hydrogen Bromide | HBr | E – P2 | Yellow – White |
| Hydrogen Chloride | HCl | E – P2 | Yellow – White |
| Hydrogen Cyanide | HCN | B | Grey |
| Hydrogen Halogenides | HF,HCl,HBr,HJ | E – P2 | Yellow- White |
| Hydrogen Selenide | $H_2Se$ | B – P2 | Grey – White |
| Hydrogen Sulphide | $H_2S$ | B | Grey |
| | | | |
| Insecticide (Organic) | - | A – P2 | Brown – White |
| Iodine | $J_2$ | B – P2 | Grey – White |
| Iodine (Radioactive) | $J_2$ | Reactor P3 | Orange – White |
| Iodomethane | $CH_3J$ | AX | Brown |
| Iodomethane (Radioactive) | $CH_3J$ | Reactor – P3 | Orange – White |
| Iron – Pentacarbonyl | Fe(CO5) | CO – P3 | Black – White |
| Isocyanates (organic) | R-NCO | B-P2 | Grey – White |
| Isopropyl Alcohol | $CH_3CH(OH)CH_3$ | A | Brown |

| Substance | Formula | Filter Type | Colour |
|---|---|---|---|
| Ketenes | R-$CH_2$ - $O_3$ | * | - |
| Ketones | R-CO-R | A | Brown |
| | | | |
| Lead Fumes | Pb | $P_2$ | White |
| | | | |
| Maleic Anhydride | $C_4H_2O_3$ | A – P2 | Brown – White |
| Mercaptons | R-SH | B | Grey |
| Mercury Compounds | - | Hg – P3 | Red – White |
| Mercury Vapour | Hg | Hg – P3 | Red – White |
| Metal Fumes | - | P2, P3 | White |
| Methanol | $CH_3OH$ | AX | Brown |
| Methyl Bromide | $CH_2Br$ | AX | Brown |
| Methyl Chloride | $CH_3Cl$ | * | - |
| Methyl Chloroform | $CH_3CCl_3$ | A | Brown |
| Methylene Chloride | $CH_2Cl2$ | AX | Brown |
| Methyl Ethyl Ketone (MEK) | $CH_3COC_2H_5$ | A | Brown |
| Methyl Isobutyl Ketone (MIBK) | $CH_3COC_4H_9$ | A | Brown |
| | | | |
| Nickel Tetracarbonyl | $Ni(CO)_4$ | CO – P3 | Black – White |
| Nitric Acid | $HNO_3/H_2O$ | NO | Blue |
| Nitro Compounds (Organic) | R-$NO_2$ | A | Brown |
| Nitrogen Oxides | NO,$NO_2$, $N_2O_5$ | NO | Blue |
| Nitrous Fumes | NO,$NO_2$,$N_2O_5$,$HNO_2$,$HNO_3$ | NO | Blue |
| | | | |
| Organic Nitro Compounds | R-$NO_2$ | A | Brown |
| Organic Vapours – Solvent | - | A, AX | Brown |
| Ozone | $O_3$ | CO | Black |
| | | NO | Blue |
| Paint Sprays/Vapours | - | A – P2 | Brown – White |
| Pentachloroethane | $CHCl_2CCL_2CCl_3$ | A | Brown |
| Perchloroethylene | $CCl_2CCl_2$ | A | Brown |
| Pesticides | - | A – P2 | Brown – White |
| Petrol | - | A | Brown |
| Phenols | - | A | Brown |
| Phenylhydrazine | $C_6H_5NHNH_2$ | A | Brown |
| Phosgene | $COCl_2$ | B | Grey |
| Phosphine | $PH_3$ | B | Grey |
| Phosphorous Trichloride | $PCl_3$ | B – P2 | Grey – White |
| Polyacrylates | - | A – P2 | Brown – White |
| Potassium Cyanide (Dust) | KCN | B – P3 | Grey – White |
| Propanol | $CH_3CH_2CH_2OH$ | A | Brown |
| Pyridine | $C_5H_5N$ | A | Brown |

| Substance | Formula | Filter Type | Colour |
|---|---|---|---|
| Quartz | SiO2 | P2 | White |
| | | | |
| Sodium Hydroxide | NaOH | P2 | White |
| Solvents | - | A | Brown |
| Stibine | SbH3 | B – P3 | Grey – White |
| Styrene | C6H5CHCH2 | A | Brown |
| Sulphur Compounds (Burning) | SO2 | E – P2 | Yellow – White |
| Sulphur Dioxide | SO2 | E | Yellow |
| Sulphuric Acid | H2SO4 | B – P2 | Grey - White |
| Sulphur Monochloride | S2Cl2 | B – P2 | Grey – White |
| Sulphur Trioxide | SO3 | P2 | White |
| Sulfuryl Chloride | SO2Cl2 | B | Grey |
| | | | |
| 1,1,2,2-Tetrachloroethane | CHCl2CHCl2 | A | Brown |
| Tetrachloroethylene | CCl2CCl2 | A | Brown |
| Tetrachloromethane | CCl4 | A | Brown |
| Tetrahydrofuran | C4H8O | A | Brown |
| T-Gas (Ethylene Oxide) | (C2H4O) | AX | Brown |
| Toluene | C6H5·CH3 | A | Brown |
| Tribromomethane | CHBr3 | A | Brown |
| Turpentine | - | A | Brown |
| | | | |
| Vanadium Pentoxide (Dust/Fumes) | V2O5 | P2 | White |
| Vinyl Acetate | C4H6O2 | A | Brown |
| Vinyl Chloride | CH2CCl2 | AX | Brown |
| Vinyltoluene | CH3C6H4CHCH2 | A | Brown |
| | | | |
| Xylenes | CH3C6H4CH3 | A | Brown |
| | | | |
| Zinc Oxide | ZnO | P2 | White |
| Zyklon (HCN with irritant) | - | B | Grey |

* Protection against specified substance should be reached by using self-contained breathing apparatus

**Specialists in Safety: Respiratory Protection**


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