GAS AND DUST FILTERS

When choosing a filter, it is necessary to consider a series of factors which cannot be defined beforehand but they come only from a proper and careful risk analysis.
The type of application, the pollutant(s), the concentration, the temperature, the relative humidity, the smell threshold, the individual characteristics of the user are only some of the factors to be consider for a correct selection of a filter.
Filtering respirators protect from gases and/or vapours and/or dusts, fumes, mists because the filters retain by a chemical/physical action the airborne pollutants.

Depending on the protection given filters are divided into Gas, Particle and Combined filters, the latter being a combination of the previous two.
The standard EN 14387 gives the minimum requirements, the test methods and the marking for gas and combined filters. The standard EN 143 gives the same for Particle filters.
In the standards above, gas filters are divided in types A, B, E, K plus some other special filter as NO and Hg depending on the chemicals they protect from.

They are also classified 1, 2, 3 according to their absorption capacity. Particle filters are indicated by the letter P followed by the number 1 or 2 or 3 according to their efficiency.
Each filter type is then given a specific colour code.
Beside the main types, the so called multi-purpose filters offer at the same time the protection given by more filter types, e.g. AB, BK, ABEK.

SPASCIANI filters are produced in the series 100 and 200 with polypropylene housing, all fitted with standard connection EN 148-1. Filter respirators can only be used in environments where the Oxygen concentration in the air is at least 17% in volume.

When this condition is not granted the use of filtering devices is contraindicated. In such cases one shall resort to isolating breathing apparatus or to fresh air respirators.
It is not possible to state beforehand the duration of gas filters, this depending on the concentration of the pollutant but also on many more factors such as the humidity of air, the temperature, the breathing rate etc.

TYPE	COLOR	PROTECTION
AX		Organic Vapours, b.p. <65 °C
		Organic Vapours, b.p. <65 °C + dusts, fumes, mists
A		Organic Vapours, b.p. >65 °C
		Organic Vapours, b.p. >65 °C + dusts, fumes, mists
B		Inorganic Gases
		Inorganic Gases + dusts, fumes, mists
E		Sulphur Dioxide and Acids
		Sulphur Dioxide and Acids + dusts, fumes, mists
K		Ammonia and basic vapours
		Ammonia and basic vapours + dusts, fumes, mists
P		Dusts, fumes, mists
Hg		Mercury vapours + dusts, fumes, mists
NO		Nitrous vapours + dusts, fumes, mists
Reactor		CH_3I + radioactive dusts, fumes, mists
UP3		All gases and vapours + dusts, fumes, mists

GUIDE TO FILTER SELECTION

CHEMICAL NAME	CAS N°	FORMULA	B.P. °C	FILTER	COLOR	ODOUR THRESHOLD mg/m³	TLV ppm	TLV mg/m³	PHYSIOLOGICAL EFFECTS
Acetaldheyde	75-07-0	CH3CHO	28,8	AX	Brown	0,0002	25C	45C	Irritates nose, eyes ,cough headhache
Acetic acid	64-19-7	C2H4O2	118	A	Brown	2,5	10	25	Caustic, irritating, causes dermatitis
Acetic ether	-	-	-	A	Brown	-	-	-	Irritating: mucous membranes, narcotic, anemia, leukocytosis
Acetone	67-64-1	C3H6O	56,6	AX	Brown	47,5	500	1188	Irritating: skin, mucous membranes, respiratory tract
Acetonitrile	75-05-8	C2H3N	1,1	A	Brown	70	40	67	Highly toxic, headache, convulsions, dizziness
Acetylene	74-86-2	C2H2	-84	**		657,2	nn	nn	Asphyxiating
Acetylene tetrachloride	79-34-5	C2H2Cl4	146,3	A	Brown	21	1	6,9	Nausea, vomiting, headache, gastrointestinal disorders
Acrolein	107-02-8	C3H4O	52,5	A	Brown	0,05	0,1 C	0,23 C	Irritating eyes and respiratory tract
Acrylonitrile	107-13-1	C3H3N	77,3	A B	Brown / Grey	8,1	2	4,3	Highly toxic, headache, convulsions, dizziness, suspect carcinogen
Acrylonitrile	107-13-1	C3H3N	77	A	Brown	8,1	2	4,3	Highly toxic, headache, convulsions, dizziness, carcinogenicity
Allyl chloride	107-05-1	C3H5Cl	44,6	AX	Brown	1,41	1	3	Mucous irritants, liver and kidney damage
Ammonia	7664-41-7	NH3	-33,3	K	Green	0,026	25	17	Irritating eyes and respiratory tract, bronchitis edema
Aniline	62-53-3	C6H7N	184,4	A	Brown	-	2	7,6	Harmful central nervous system, eye disorders, tumors
Arsenic	7440-38-2	As4	-	P3	White	-	-	0,01	Highly toxic, carcinogen
Arsenic trioxide	1327-53-3	As2O3	460	BP3	Grey / White	-	-	0,01	Carcinogen
Arsine	7784-42-1	AsH3	-55	B	Grey	0,84	0,05	0,16	Headache, gastric disorders
Asbestos	1332-21-4	-	-	P3	White	-	0,2	-	Carcinogen
Benzene	71-43-2	C6H6	80	A	Brown	4,5	0,5	1,6	Toxic, irritating, carcinogen
Benzyl bromide	100-39-0	C7H7Br	198	A	Brown	-	-	-	Tear gas and toxic
Benzyl chloride	100-44-7	C7H7Cl	179	A	Brown	0,235	1	5,2	It irritates the mucous membranes strongly carcinogenic
Beryllium	7440-41-7	Be	2970	P3	White	-	-	0,002	Lung diseases. Carcinogenic suspicion
Bis (2-chloro-ethyl) sulfide	505-60-2	C4H8Cl2S	228	B	Grey	-	-	-	Strong irritant. Vomiting, headache
Bromine	7726-95-6	Br2	58,73	B	Grey	0,329	0,1	0,66	Irritates respiratory system burns on the skin
Bromoacetic acid methyl ester	96-32-2	C5H6OBr	136	A	Brown	-	-	-	Tear gas, toxic
Bromoform	75-25-2	CHBr3	149,5	A	Brown	5300	0,5	5,2	Irritates the mucous membranes. At high doses it is deadly
Bromomethane	74-83-9	CH3Br	3,56	AX	Brown	80	1	9	Irritating nerve and vascular disorders
Bromotoluene	95-46-5	C7H7Br	183,7	A	Brown	-	-	-	Irritating
Bromotrifluoro-ethylene	598-73-2	C2BrF3	-2,5	AX	Brown	-	-	-	Toxic damage the kidneys, liver. Cause of nausea

CHEMICAL NAME	CAS N°	FORMULA	B.P. °C	FILTER	COLOR	ODOUR THRESHOLD mg/m³	TLV ppm	TLV mg/m³	PHYSIOLOGICAL EFFECTS
Butyl alcohol (n-)	71-36-3	C4H10O	117,5	A	Brown	0,36	50 C	152 C	Narcotic, dermatitis, liver damage and eyes
Butyl alcohol (ter)	75-65-0	C4H10O	99,5	A	Brown	219	100	303	Narcotic, dermatitis, liver damage and eyes
Carbon dioxide	124-38-9	CO2	-	**		-	5000	9000	Asphyxiating
Carbon disulfide	75-15-0	CS2	46,5	AX	Brown	0,024	10	31	Headache, dizziness, delirium, vomiting
Carbon monoxide	630-08-0	CO	-191	CO	Black	-	25	29	Strongly toxic, nausea, headache, dizziness
Carbon tetrachloride	56-23-5	CCl4	76,8	A	Brown	60	5	31	Headache, vomiting, dizziness, liver disorders
Carbonyl chloride	75-44-5	COCl2	8,3	B	Grey	2	0,1	0,4	Irritating. Pulmonary edema. Very toxic
Chlorine	7782-50-5	Cl2	-34,5	B	Grey	0,03	0,5	1,5	Toxic, corrosive. Irritating the skin. Pulmonary edema
Chlorine dioxide	10049-04-4	ClO2	9,9	B	Grey	0,3	0,1	0,28	Irritating the mucous membranes. Stomatitis, pharyngitis edema.
Chloro Bromomethane	74-97-5	BrCH2Cl	67,8	A	Brown	2100	200	1060	Irritating and narcotic
1-Chloro-1nitro propane	600-25-9	C3H6ClNO2	134	A	Brown	-	2	10	Irritating
3-Chloro-1-propyne	624-65-7	C3H3Cl	31,6	AX	Brown	2000	5	20	Dizziness, anesthetic action, carcinogen
Chloroacetone	78-95-5	C3H5ClO	119	AP3	Brown / White	-	1 C	3,8C	Tear gas
Chloroacetophenone (CAF)	99-91-2	C8H7ClO	237	AP3	Brown / White	0,102	0,05	0,32	Strong tear gas
Chlorobenzene	108-90-7	C6H5Cl	131,7	A	Brown	0,98	10	46	Toxic to the central nervous system, spasms headache
Chloroethane	75-00-3	C2H5Cl	12,3	AX	Brown	21	100	264	Drowsiness, apathy, visual disturbances, tremor
Chloroform	67-66-3	CHCl3	61,26	AX	Brown	250	10	49	Narcotic, irritates mucous membranes, unconsciousness. Carcinogenic suspicion
Chloropicrin	76-06-2	CCl3NO2	112	AP3	Brown	5,4	0,1	0,67	Irritating, tear gas. Gastric disorders, vomiting
Chloroprene	126-99-8	C4H5Cl	59,4	AX	Brown	-	10	36	Toxic central nervous system
Chlorosulfonic acid	7790-94-5	HSO3Cl	151	BP3	Grey / White	-	-	-	Lacrimogen, sneezing
Cresol	1319-77-3	C7H8O	200	A	Brown	0,001	5	22	Ulcerates skin, causes conjunctivitis
CS	-	-	-	ABEP3	Brown / Grey / Yellow / White	-	-	-	Lachrymatory
Cyanogen	57-12-5	CN-	-21	B	Grey	500	10	21	Irritating mucous membranes, headache, nausea. Mortal
Cyanogen chloride	506-77-4	CNCl	13,1	B	Brown	2	0,3C	0,75 C	Loss and leukemia
Cyclohexane	110-82-7	C6H12	80,7	A	Brown	1,43	300	1030	Irritating to the skin
Cyclohexanol	108-93-0	C6H12O	161,5	A	Brown	400	50	206	Narcotic. It damages kidneys, liver, blood vessels
Cyclohexanone	108-94-1	C6H10O	155,6	A	Brown	0,48	25	100	Poor narcotic, irritant

CHEMICAL NAME	CAS N°	FORMULA	B.P. °C	FILTER	COLOR	ODOUR THRESHOLD mg/m³	TLV ppm	TLV mg/m³	PHYSIOLOGICAL EFFECTS
DDT	50-29-3	C14H9Cl5	-	AP3	Brown White	5,07	-	1	Action on the central nervous system
Dichloro ethane	75-34-3	C2H4Cl2	83,5	A	Brown	445	100	405	Irritating
Dichloro ethylene	75-35-4	C2H2Cl2	59	AX	Brown	0,336	200	793	Irritating and narcotic
Dichloroethyl ether	111-44-4	C4H8Cl2O	178,5	A	Brown	90	5	29	Irritating to mucous membranes. Eddema lung
Dichloro-methane	75-09-2	CH2Cl2	39,8	AX	Brown	540	50	174	It hurts the eyes, narcotic. Headache, nausea. Carcinogenic suspicion
Dichloropropane	26638-19-7	C3H6Cl2	96,8	A	Brown	-	75	347	Dermatitis, liver damage, congestion
Dichloropropene	26952-23-8	C3H4Cl2	75	A	Brown	-	1	4,5	Strong irritant
Diethylamine	109-89-7	C4H11N	55,5	A K	Brown Green	0,085	5	15	Dangerous for the eyes
Dimethyl formamide	68-12-2	C3H7NO	152,8	A	Brown	300	10	30	Irritating, liver damage
Dimethyl hydrazine	57-14-7	C2H8N2	63,3	K	Green	12	0,01	0,025	Irritating, suspicious carcinogen
Dimethyl sulfate	77-78-1	C2H6O4S	37,5	AX	Brown	-	0,1	0,52	Skin burns, conjunctivitis, paralysis. Carcinogenic suspicion
Dioxane	505-22-6	C4H8O2	101	A	Brown	0,018	25	90	Irritating to the mucous membranes. Liver problems
Ethane	74-84-0	C2H6	-172	**		-	-	-	Asphyxiant
Ethane trichloride	79-00-5	C2H3Cl3	74,1	A	Brown	542,8	350	1910	Narcotic, irritating
Ethanol	64-17-5	C2H6O	78,3	A	Brown	0,34	1000	1880	Irritating eyes and respiratory tract
Ethanolamine	141-43-5	C2H7NO	170,5	A K	Brown	5,333	3	7,5	Irritating
Ethyl acetate	141-78-6	CH3COOC2H5	77,15	A	Brown	0,02	1440	400	Irritates mucous membranes, narcotic, anemia, leukocytosis
Ethyl bromide	74-96-4	C2H5Br	38,4	AX	Brown	890	5	22	Toxic narcotic. Causal conjunctivitis. Carcinogenic suspicion
Ethyl Ether	60-29-7	C4H10O	34,6	AX	Brown	0,99	400	1210	Unconsciousness, paralysis, lack of appetite. Irritating
Ethyl methyl ketone	78-93-3	C4H8O	79,5	A	Brown	0,738	200	590	Narcotic irritant
Ethylbenzene	100-41-4	C8H10	-	A	Brown	8,7	100	434	Irritating to mucous membranes
Ethylene	74-85-1	C2H4	-104	**		299	-	-	Asphyxiant
Ethylene diamine	107-15-3	C2H8N2	117,2	AK	Brown Green	0,48	10	25	Caustic
Ethylene oxide	75-21-8	C2H4O	10,7	AX	Brown	520	1	1,8	Strongly toxic, nausea, respiratory disturbances
Fire Fume -CO	-	-	-	BP3	Grey White	-	-	-	-
Fire Fume + CO	-	-	-	COP3	Black White	-	-	-	-
Formaldehyde	50-00-0	CH2O	-19,5	AX	Brown	1,47	C 0,3	C0,37	Irritating, pulmonary edema. Carcinogenic
Formic acid	64-18-6	CH2O2	100,8	A	Brown	0,005	5	9,4	Corrosive, ulcerative, irritant: mucous membranes
Freon	-	-	-	**		-	-	-	Asphyxiating, narcotic
Fumes	-	-	-	P3	White	-	-	-	-
Furfural	98-00-0	C5H6O2	161,7	A	Brown	0,24	2	7,9	Irritating. Damage to the eyes
Furfuryl alcohol	98-00-0	C5H6O2	171	A	Brown	32	10	40	Poison, high toxicity
Hexachloro cyclohexane	319-86-8	C6H6Cl6	-	AP3	Brown White	-	-	0,5	Irritating acts on the central nervous system, convulsions, edema

CHEMICAL NAME	CAS N°	FORMULA	B.P. °C	FILTER	COLOR	ODOUR THRESHOLD mg/m³	TLV ppm	TLV mg/m³	PHYSIOLOGICAL EFFECTS
Hydrazine	302-01-2	N2H4	113,5	K	Green	3	0,01	0,013	Systemic poisoning, carcinogenic suspect
Hydrocarbons	-	-	>65	A	Brown	-	-	-	-
Hydrogen bromide	10035-10-6	HBr	126	B	Grey	6,66	3 C	9,9 C	Highly toxic, depression, skin rash
Hydrogen chloride	7647-01-0	HCl	-84,8	B E	Grey Green	7	5C	7,5C	Caustic, irritating, causes dermatitis
Hydrogen cyanide	74-90-8	HCN	25,7	B	Grey	0,9	4,7 C	5 C	Highly toxic, headache, convulsions, dizziness
Hydrogen fluoride	7664-39-3	HF	19,4	B	Grey	0,033	3C	2,3C	Toxic, corrosive, causes burns, inflammatory
Hydrogen iodide	10034-85-2	HI	-35,3	B	Grey	-	-	-	Irritating the mucous membranes. Stomatitis, pharyngitis edema.
Hydrogen phosphide	7803-51-2	PH3	-87	B	Grey	0,028	0,3	0,42	Irritating. Anemia, appetite, bone fragility
Hydrogen sulfide	7783-06-4	H2S	-60,4	B	Grey	0,0004	10	14	Irritating, headache, cough very toxic
Insecticides	-	-	-	AP3	Brown White	-	-	-	-
Iodide 131 methyl	74-88-4	CH3I	-	Reactor P3	Orange White	-	-	-	-
Iodine	7553-56-2	I2	184	B	Grey	-	0,1C	1C	It irritates the mucose. Stomatitis, pharyngitis, edema.
Iodine 131	7553-56-2	I2 131	-	Reactor P3	Orange White	-	-	-	-
Iron pentacarbonyl	13463-40-6	C5FeO5	103	COP3	Black White	-	0,1	0,23	Nausea, vomiting, unconsciousness. Toxic
Isoamyl alcohol	137-32-6	C5H12O	116	A	Brown	25,2	100	361	Irritating eyes and respiratory tract
Isobutylene	115-11-7	C4H8	-6,9	AX	Brown	54,96	-	-	Toxic corrosive. Irritating the skin. Pulmonary edema
Isocyanates	-	-	-	AP3	Brown White	-	-	-	-
Isopropyl alcohol	67-63-0	C3H8O	80,3	A	Brown	7,84	400	983	Irritating , eyes damages, narcotic
Ketene	463-51-4	C2H2O	-56	AX	Brown	-	0,5	0,86	Irritating, pulmonary edema
Lindane	58-89-9	C6H6Cl6	-	**		-	-	-	Irritating, acts as a central nervous system
Maleic anhydride	108-31-6	C4H2O3	202	A	Brown	1,84	0,25	1	Burns skin and eyes, pulmonary edema
Mercury vapors	502-39-6	Hg	356,9	HgP3	Red White	-	-	0,025	Inflammation of the mucous membranes, gingivitis, tremors
Methane	74-82-8	CH4	-161,5	**		-	-	-	Asphyxiant
2-Methoxy-ethanol	109-86-4	C3H8O2	156,4	A	Brown White	0,288	5	24	Irritating to occurring, kidney injury.
Methyl alcohol	67-56-1	CH4O	64,5	AX	Brown	13,11	200	262	Harmful nervous system, optic nerve, liver. Dermatitis, nausea
Methyl Chloride	74-87-3	CH3Cl	-23,7	**		-	50	103	Narcotic, it destroys eyes, liver, heart and central nervous system
Methyl formate	107-31-3	C2H4O2	32	AX	Brown	500	100	246	Narcotic, irritating to the eyes and respiratory tract
Methyl iodide	74-88-4	CH3I	42,5	AX	Brown	-	2	12	Carcinogenic suspicion
Methylene chloride	75-09-2	CH2Cl2	39,8	AX	Brown	540	50	174	It hurts the eyes, narcotic. Headache, nausea. Carcinogenic suspicion

CHEMICAL NAME	CAS N°	FORMULA	B.P. °C	FILTER	COLOR	ODOUR THRESHOLD mg/m³	TLV ppm	TLV mg/m³	PHYSIOLOGICAL EFFECTS
Methylethyl ketone (MEK)	78-93-3	C4H8O	79,5	A	Brown	0,738	200	590	Narcotic irritant
Mist (in general)	-	-	-	P3	White	-	-	-	-
n-Amil acetate	628-63-7	CH3COOC5H11	149	A	Brown	0,026	713	150	Irritates eyes, nose, throat. Nausea, cough, migraine
n-Butyl acetate	123-86-4	CH3COO(CH2)3CH3	126	A	Brown	0,009	730	150	Irritates eyes, nose, throat. Nausea,cough, migraine
Nickel carbonyl	13463-39-3	Ni(CO)4	43	COP3	Black White	0,21	0,05	0,12	Dizziness, gastric disorders, haemorrhage, carcinogenicity
Nitric acid	7697-37-2	HNO3	86	BP3	Grey White	0,75	2	5,2	Toxic, corrosive, pulmonary edema
Nitrobenzene	98-95-3	C6H5NO2	210,9	A	Brown	0,024	1	5	Cyanosis, headache, dizziness, nausea
Nitrogen Oxide	10102-44-0	NO2	21	NO P3	Blue White	2	3	5,6	Respiratory irritation, coughing, dyspnoea, pulmonary edema
Nitroglycerin	55-63-0	C3H5N3O9	-	A	Brown	-	0,05	0,46	Headache, dizziness, cirrhosis, tremors
NOx	-	-	-	NO P3	Blue White	-	-	-	Respiratory irritation, coughing, dyspnoea, pulmonary edema
Petrol (vapour)			-	A	Brown	-	300	890	Eye disorders, carcinogen
Phosphorus pentachloride	10026-13-8	PCl5	166,8	B	Grey	-	0,1	0,85	Eye damage. Irritating
Phosphorus trichloride	7719-12-2	PCl3	74,2	B	Grey	-	0,2	1,1	Irritating to eyes, nose, throat
Phosphoryl trichloride	10025-87-3	POCl3	105	B	Grey	-	0,1	0,63	Eye damage. Irritating
Phthalic anhydride	85-44-9	C8H4O3	295	AP3	Brown White	-	1	6,1	Irritating mucous membranes and cornea
Powders	-	-	-	P3	White	-	-	-	-
Propane	74-98-6	C3H8	-41	**		1800	-	-	Anesthetic, asphyxiating
Pyridine	110-86-1	C5H5N	115,3	A	Brown	0,009	5	16	Narcotic, irritating, headache, eczema
Sodium hydroxide	1310-73-2	NaOH	-	P3	White	-	-	2C	Corrosive, irritant
Spray paint	-	-	-	AP2	Brown White	-	-	-	
Styrene	100-42-5	C8H8	146	A	Brown	0,43	20	85	Mystique, fissure, narcotic irritation
Sulfur Chloride	10025-67-9	S2Cl2	138	BP3	Grey White	-	1C	5,5 c	It irritates the mucous membranes of the eyes and the respiratory tract.
Sulfur dioxide	7446-09-5	SO2	-10	E	Yellow	1,17	2	5,2	Harmfull for eyes and respiratory tract, bronchitis edema
Sulfur trioxide	7446-11-9	SO3	44,8	EP3	Yellow White	-	-	-	Harmfull for eyes and respiratory tract, bronchitis edema
Sulfuric acid	7664-93-9	H2SO4	330	EP3	Yellow White	1	-	-	Caustic, destroys tissues, loss of knowledge
TDI	584-84-9	C9H6N2O2	-	A	Brown	0,14	0,001	-	Bronchitis spasms dermatitis
Tetrachloro-ethane	79-34-5	C2H2Cl4	146	A	Brown	0,2	1	-	Headache gastritis and soreness
Tetraethyl lead	78-00-2	C8H20Pb	198	AP3	Brown White	-	-	0,1	Insomnia, hypothermia, tremitis, headache, nausea
Toluene	95-53-4	C7H9N	110,4	A	Brown	17,55	50	188	Toxic, irritating. Carcinogenic suspicion
Toluene diisocyanate	91-64-5	C9H6O2	118	A	Brown	3,2	0,005	0,036	Bronchitis spasms dermatitis

CHEMICAL NAME	CAS N°	FORMULA	B.P. °C	FILTER	COLOR	ODOUR THRESHOLD mg/m³	TLV ppm	TLV mg/m³	PHYSIOLOGICAL EFFECTS
Trichloro ethylene	79-01-6	C2HCl3	87,1	A	Brown	1,134	50	269	Headache gastritis and soreness
Trifluoro-methane	75-46-7	CHF3	-82	**		-	1000C	5600C	Gastric disorders, headache, and soreness
Turpentine oil	8006-64-2	-	160	A	Brown	560	100	55,6	Visual headache, irritating headache
Vinyl acetate	108-05-4	C4H6O2	73	A	Brown	0,36	10	35	Irritating skin, narcotic
Vinyl chloride	75-01-4	C2ClH3	-13,4	AX	Brown	-	5	13	Dizziness, anesthetic action, carcinogen
Xylene, mixture of isomers	1330-20-7	C8H10	144,4	A	Brown	0,348	100	434	Toxic, irritating. Carcinogenic suspicion

Legend

B.P. (Boiling Point)
Very important for Organic Chemicals as 65°C is the limit of filterability of those substances by a filter type A. Chemicals with lower b.p. can be retained by Type AX filters only. For some substances, it is recommended the use of compressed air breathing apparatus instead.

Filter
It indicates the filter(s) type(s) recommended for the chemical shown.
Two ** indicate that the chemical is not filterable and it is therefore necessary to use compressed air or fresh air respirators

Odour Threshold
It shows the minimum concentration detectable by humans' nose.
It is a mere indication and is taken from studies in the specialised literature.

TLV ppm (Threshold Limit Value)
The table shows the values the TLV-TWA published by the American Conference of Governmental Industrial Hygienists. They correspond to the concentration to which a worker can be exposed 8 hours a day for his entire working life without effect on his health. When the C appears, it means that it is a Ceiling Value, meaning that that concentration shall not be overpassed at any time. TLV-TWA are also commonly used when testing the breakthrough time of gas filters, i.e. the contaminant concentration in the effluent air which is considered to correspond to the exhaustion of the filter.

Physiological effects
It indicates very briefly the symptoms of chronic or acute intoxication of the concerned chemical. Sometimes reference is made to other entries either because they have similar effects or they are the same chemical referred to with different commercial or chemical names.