

The WATCHGAS PID Low/High range sensors are calibrated using isobutylene, but the PID is a broadband VOC detector, with a sensitivity that differs for each VOC. If you know what VOC you are measuring, then the table below will allow you to calculate the concentration for your specific VOC. Remember, these are approximate values, so for best accuracy you should calibrate with the relevant VOC.

The table includes six columns:

1. **Gas/VOC** The most common name for the VOC
2. **CAS No.** You can find the VOC using the CAS No.: ask your supplier.
3. **Formula** To assist in identifying the VOC
4. **Relative Response/ Correction Factor (CF)** also called the Response Factor (RF). Multiply the displayed concentration by the Relative Response/ CF/ RF to calculate the actual concentration of the VOC.
5. **Relative Sensitivity (%)** This is the inverse of the correction factor, specifying the percent response of the VOC, relative to isobutylene. If less than 100%, then the VOC is less responsive than isobutylene; if the relative sensitivity is greater than 100%, then the VOC is more responsive than isobutylene. Relative sensitivity (%) is specified the same way as cross-sensitivity for toxic gas sensors.
6. **Minimum Detection Level (MDL)** Also called Minimum Detectable Quantity (MDQ). Typical lowest concentration than can be detected. The PID-AH (low range) has greater sensitivity than the PID-A₁ (high range), so the MDL for the PID-AH will be much less than the MDL for the PID-A₁.

The Relative response/ CF/ RF is measured in dry air; high humidity will reduce this factor by 30% to 50%. So the CF/ RF should be increased in high humidity.

VOC RESPONSE

The PID cannot measure all VOCs or gases. Two types of VOCs are not measured:

ZR: No response. The 10.6 eV lamp does not ionise the VOC and the VOC cannot be measured.

NV: The Vapour pressure of the VOC at 20°C is less than a few ppm, so this Semi-Volatile Organic Compound (SVOC) cannot be measured.

Occasionally, you will be measuring a mixture of VOCs. If the total concentration is within the linear range of your PID, then it is reasonable to assume that the concentrations are additive without interference between the different VOCs. Remember that if you are measuring a combination of VOCs, then accurate measurement of one of these VOCs will be difficult; without careful data analysis, you will get only a CF averaged measurement. Be cautious when reporting actual VOC concentration if you know that there may be several VOCs present.

BALANCE GAS

The relative response is measured in laboratory air, with 20.9% oxygen, balance nitrogen. Some gases absorb UV light without causing any PID response (e.g. methane, ethane). In ambient atmospheres where these gases are present, the measured concentration of target gas will be less than is actually present. Methane absorbs UV strongly, so for accurate measurements in methane containing atmospheres, calibrate with a calibration gas containing the expected methane concentration. 50% LEL methane reduces the reading by up to 50%. Gases such as nitrogen and helium do not absorb UV and do not affect the relative response.

The correction factor for a gas mix containing PID detectable gases A, B, C... with response factors RF(A), RF(B), RF(C), in relative proportions a: b: c... is given by:

$$CF(mix) = 1/[a/CF(A)+b/CF(B)+c/CF(C)...]$$

ACCURACY OF THE TABLE

This table is for indication only. Table accuracy is 1 to 2 digits only, so when calculating concentration for a specific VOC, specify to 1 or 2 digits only.

Gas/VOC	Formula	Relative response	Relative sensitivity (%)	Typical MDL PID- AH (ppb) (Low Range)	Typical MDL PID- A1 (ppb) (High Range)
Acetaldehyde	C ₂ H ₄ O	4.9	21	25	480
Acetic acid	C ₂ H ₄ O ₂	36.2	3	180	3615
Acetic anhydride	C ₄ H ₆ O ₃	4.0	25	20	400
Acetone	C ₃ H ₆ O	0.7	140	5	70
Acetonitrile	CH ₃ CN				
Acetylene	C ₂ H ₂				
Acrolein	C ₃ H ₄ O	4.0	25	20	400
Acrylic acid	C ₃ H ₄ O ₂	2.7	36	15	275
Acrylonitrile	C ₃ H ₃ N				
Allyl alcohol	C ₃ H ₆ O	2.1	48	10	200
Allyl chloride	C ₃ H ₅ Cl	4.5	22	20	450
Ammonia	H ₃ N	8.5	12	40	850
Amyl Acetate, n-	C ₇ H ₁₄ O ₂	1.8	56	10	180
Amyl alcohol	C ₅ H ₁₂ O	3.2	31	15	320
Aniline	C ₆ H ₇ N	0.5	200	3	50
Anisole	C ₇ H ₈ O	0.5	211	2	50
Arsine	AsH ₃	2.5	40	15	250
Asphalt, petroleum fumes		1.0	100	5	100
Benzaldehyde	C ₇ H ₆ O	0.9	117	5	85
Benzene	C ₆ H ₆	0.5	200	3	50
Benzenethiol	C ₆ H ₅ SH	0.7	143	4	70
Benzonitrile	C ₇ H ₅ N	0.7	141	4	70
Benzyl alcohol	C ₇ H ₈ O	1.3	80	6	125
Benzyl chloride	C ₇ H ₇ Cl	0.6	182	3	55
Benzyl formate	C ₈ H ₈ O ₂	0.8	130	5	77
Biphenyl	C ₁₂ H ₁₀	0.4	250	2	40
Bis (2,3-epoxypropyl) ether	C ₆ H ₁₀ O ₃	3.0	33	15	300
Boron trifluoride	BF ₃				
Bromine	Br ₂	20.0	5	100	2000
Bromine pentafluoride	BrF ₅				
Bromobenzene	C ₆ H ₅ Br	0.7	143	4	70

Gas/VOC	Formula	Relative response	Relative sensitivity (%)	Typical MDL PID- AH (ppb) (Low Range)	Typical MDL PID- A1 (ppb) (High Range)
Bromoethane	C ₂ H ₅ Br	5.0	20	25	500
Bromoethyl methyl ether, 2-	C ₃ H ₇ OBr	2.5	40	15	250
Bromoform	CHBr ₃	2.8	36	15	280
Bromopropane, 1-	C ₃ H ₇ Br	1.3	77	7	130
Bromotrifluoromethane	CF ₃ Br				
Butadiene	C ₄ H ₆	0.8	120	4	80
Butadiene diepoxide, 1, 3-	C ₄ H ₆ O ₂	4.0	25	20	400
Butane, n-	CFH ₁₀	46.3	2	230	4600
Butanol, 1-	C ₄ H ₁₀ O	4.0	25	20	400
Buten-3-ol, 1-	C ₄ H ₈ O	1.2	87	6	115
Butene, 1-	C ₄ H ₈	1.3	77	7	130
Butoxyethanol, 2-	C ₆ H ₁₄ O ₂	1.1	91	6	110
Butyl Acetate, n-	C ₆ H ₁₂ O ₂	2.4	41	10	240
Butyl Acrylate, n-	C ₇ H ₁₂ O ₂	1.5	67	8	150
Butyl lactate	C ₇ H ₁₄ O ₃	2.5	40	15	250
Butyl mercaptan	C ₄ H ₁₀ S	0.5	185	3	50
Butylamine, 2-	C ₄ H ₁₁ N	0.9	111	5	90
Butylamine, n-	C ₄ H ₁₁ N	1.0	100	5	100
Camphene	C ₁₀ H ₁₆	0.5	222	2	45
Carbon dioxide	CO ₂				
Carbon disulphide	CS ₂	1.4	71	7	140
Carbon monoxide	CO				
Carbon tetrabromide	CBr ₄	3.0	33	15	300
Carbon tetrachloride	CCl ₄				
Carbonyl sulphide	COS				
Carvone, R-	C ₁₀ H ₁₄ O	1.0	100	5	100
Chlorine	Cl ₂				
Chlorine dioxide	ClO ₂	1.0	100	5	100
Chlorine trifluoride	ClF ₃				
Chloro-1, 1, 1, 2,- tetrafluoroethane	C ₂ HClF ₄				
Chloro-1, 1, 1,- trifluoroethane, 2-	C ₂ H ₂ ClF ₃				

Gas/VOC	Formula	Relative response	Relative sensitivity (%)	Typical MDL PID- AH (ppb) (Low Range)	Typical MDL PID- A1 (ppb) (High Range)
Chloro-1, 1, 2, 2- tetrafluoroethane	C ₂ HClF ₄				
Chloro-1, 1, 2- trifluoroethane, 1-	C ₂ H ₂ ClF ₃				
Chloro-1, 1-difluoroethane, 1-	C ₂ H ₃ ClF ₂				
Chloro-1, 1-difluoroethane, 1-	C ₂ H ₃ ClF ₂				
Chloro-1, 1-difluoroethane, 2-	C ₂ H ₃ ClF ₂				
Chloro-1, 2, 2- trifluoroethane	C ₂ H ₂ ClF ₃				
Chloro-1, 3-butadiene, 2-	C ₄ H ₅ Cl	3.2	30	16	320
Chloro-1-fluoroethane, 1-	C ₂ H ₄ ClF				
Chloro-2-fluoroethane, 1-	C ₂ H ₄ ClF				
Chloroacetaldehyde	C ₂ H ₃ OCl				
Chlorobenzene	C ₆ H ₅ Cl	0.5	220	2	50
Chlorodifluoromethane	CHClF ₂				
Chloroethane	C ₂ H ₅ Cl				
Chloroethanol 2-	C ₂ H ₅ ClO	10.0	10	50	1000
Chloroethyl methyl ether, 2-	C ₃ H ₇ ClO	2.6	40	13	250
Chlorofluoromethane	CH ₂ ClF				
Chloroform	CHCl ₃				
Chloromethane	CH ₃ Cl				
Chloropentafluoroethane	C ₂ ClF ₅				
Chlorotoluene, o-	C ₇ H ₇ Cl	0.5	220	2	50
Chlorotoluene, p-	C ₇ H ₇ Cl	0.5	200	3	50
Chlorotrifluoroethylene	C ₂ ClF ₃	1.0	100	5	100
Chlorotrifluoromethane	CClF ₃				
Citral	C ₁₀ H ₁₆ O	1.0	100	5	100
Citronellol	C ₁₀ H ₂₀ O	1.0	100	5	100
Cresol, m-	C ₇ H ₈ O	1.1	95	5	105
Cresol, o-	C ₇ H ₈ O	1.1	95	5	105
Cresol, p-	C ₇ H ₈ O	1.1	95	5	105
Crotonaldehyde	C ₄ H ₆ O	1.0	100	5	100
Cumene	C ₉ H ₁₂	0.6	170	3	60
Cyanamide	CH ₂ N ₂				

Gas/VOC	Formula	Relative response	Relative sensitivity (%)	Typical MDL PID- AH (ppb) (Low Range)	Typical MDL PID- A1 (ppb) (High Range)
Cyanogen bromide	CNBr				
Cyanogen chloride	CNCl				
Cyclohexane	C ₆ H ₁₂	1.3	77	7	130
Cyclohexanol	C ₆ H ₁₂ O	2.9	34	15	300
Cyclohexanone	C ₆ H ₁₀ O	1.1	91	6	110
Cyclohexene	C ₆ H ₁₀	0.8	133	5	75
Cyclohexylamine	C ₆ H ₁₃ N	1.0	102	5	100
Cyclopentane	C ₅ H ₁₀	4.0	25	20	400
Decane, n-	C ₁₀ H ₂₂	1.0	96	5	100
Diacetone alcohol	C ₆ H ₁₂ O ₂	0.8	125	5	80
Dibenzoyl peroxide	C ₁₄ H ₁₀ O ₄	0.8	125	5	80
Diborane	B ₂ H ₆				
Dibromochloromethane	CHBr ₂ Cl	10.0	10	50	1000
Dibromodifluoromethane	CF ₂ Br ₂				
Dibromoethane 1,2-	C ₂ H ₄ Br ₂	2.0	50	10	200
Dibromotetrafluoroethane, 1, 2-	C ₂ F ₄ Br ₂				
Dibutyl hydrogen phosphate	HC ₈ H ₁₈ PO ₄	4.0	25	20	400
Dichloro-1,1,1- trifluoroethane, 2,2-	C ₂ HCl ₂ F ₃				
Dichloro-1,1-difluoroethane, 1,2-	C ₂ H ₂ Cl ₂ F ₂				
Dichloro-1,2,2- trifluoroethane, 1,2-	C ₂ HCl ₂ F ₃				
Dichloro-1,2-difluoroethane, 1,2-	C ₂ H ₂ Cl ₂ F ₂				
Dichloro-1-fluoroethane, 1,1-	C ₂ H ₃ Cl ₂ F				
Dichloro-1-fluoroethane, 1,1-	C ₂ H ₃ Cl ₂ F				
Dichloro-1-fluoroethane, 1,2-	C ₂ H ₃ Cl ₂ F				
Dichloro-1-propene, 2,3-	C ₃ H ₄ Cl ₂	1.4	70	7	140
Dichloro-2,2,-difluoroethane, 1,1-	C ₂ H ₂ Cl ₂ F ₂				
Dichloroacetylene	C ₂ Cl ₂	5.0	20	25	500
Dichlorobenzene o-	C ₆ H ₄ Cl ₂	0.5	200	3	50
Dichlorodifluoromethane	CCl ₂ F ₂				
Dichloroethane 1,2-	C ₂ H ₄ Cl ₂				
Dichloroethane 1,1-	C ₂ H ₄ Cl ₂				

Gas/VOC	Formula	Relative response	Relative sensitivity (%)	Typical MDL PID- AH (ppb) (Low Range)	Typical MDL PID- A1 (ppb) (High Range)
Dichloroethane 1,1-	C ₂ H ₂ Cl ₂	1.0	105	5	100
Dichloroethane, cis-1,2-	C ₂ H ₂ Cl ₂	0.8	125	4	80
Dichloroethane, trans-1,2-	C ₂ H ₂ Cl ₂	0.7	143	4	70
Dichloroethylene 1,2-	C ₂ H ₂ Cl ₂	0.8	133	4	75
Dichlorofluoromethane	CHFCl ₂				
Dichloromethane	CH ₂ Cl ₂	39.0	3	200	3900
Dichloropropane, 1,2-	C ₃ H ₆ Cl ₂				
Dichlorotetrafluoroethane, 1,1-	C ₂ Cl ₂ F ₄				
Dichlorotetrafluoroethane, 1,2-	C ₂ Cl ₂ F ₄				
Dicyclopentadiene	C ₁₀ H ₁₂	0.9	110	5	90
Diesel fuel		0.8	130	4	75
Diethyl ether	C ₄ H ₁₀ O	0.9	110	4	90
Diethyl maleate	C ₈ H ₁₂ O ₄	2.0	50	10	200
Diethyl phthalate	C ₁₂ H ₁₄ O ₄	1.0	100	5	100
Diethyl sulphate	C ₄ H ₁₀ SO ₄	3.0	33	15	300
Diethyl sulphide	C ₄ H ₁₀ S	0.6	180	3	50
Diethylamine	C ₄ H ₁₁ N	1.0	100	5	100
Diethylaminoethanol, 2-	C ₆ H ₁₅ ON	2.7	40	15	270
Diethylaminopropylamine, 3-	C ₇ H ₁₈ N ₂	1.0	100	5	100
Difluoroethane, 1,1-	C ₂ H ₄ F ₂				
Difluoroethane, 1,2-	C ₂ H ₄ F ₂				
Difluoromethane	CH ₂ F ₂				
Dihydrogen selenide	H ₂ Se	1.0	100	5	100
Dihydroxybenzene, 1,2	C ₆ H ₆ O ₂	1.0	100	5	100
Dihydroxybenzene, 1,3	C ₆ H ₆ O ₂	1.0	100	5	100
Diisobutylene	C ₈ H ₁₆	0.6	156	3	60
Diisopropyl ether	C ₆ H ₁₄ O	0.7	150	3	70
Diisopropylamine	C ₆ H ₁₅ N	0.7	140	4	70
Diketene	C ₄ H ₄ O ₂	2.2	45	11	220
Dimethoxymethane	C ₃ H ₈ O ₂	1.4	71	7	140
Dimethyl cyclohexane, 1,2-	C ₈ H ₁₆	1.1	95	5	105
Dimethyl disulphide	C ₂ H ₆ S ₂	0.2	435	1	23

Gas/VOC	Formula	Relative response	Relative sensitivity (%)	Typical MDL PID- AH (ppb) (Low Range)	Typical MDL PID- A1 (ppb) (High Range)
Dimethyl ether	C ₂ H ₆ O	1.3	80	7	130
Dimethyl phthalate	C ₁₀ H ₁₀ O ₄	1.0	100	5	100
Dimethyl sulphate	C ₂ H ₆ O ₄ S				
Dimethyl sulphide	C ₂ H ₆ S	0.5	200	3	50
Dimethylacetamide N,N-	C ₄ H ₉ NO	1.3	75	7	130
Dimethylamine	C ₂ H ₇ N	1.4	70	7	140
Dimethylaminoethanol	C ₄ H ₁₁ NO	1.5	70	8	150
Dimethylaniline, NN-	C ₈ H ₁₁ N	0.6	167	3	60
Dimethylbutyl acetate	C ₈ H ₁₆ O ₂	1.6	60	8	160
Dimethylathylamine, NN-	C ₄ H ₁₁ N	0.8	125	4	80
Dimethylformamide	C ₃ H ₇ NO	0.9	110	5	90
Dimethylheptan-4-onem, 2,6-	C ₉ H ₁₈ O	0.8	125	4	80
Dimethylhydrazine, 1,1-	C ₂ H ₈ N ₂	1.0	100	5	100
Dinitrobenzene, m-	C ₆ H ₄ N ₂ O ₄	3.0	33	15	300
Dinitrobenzene, o-	C ₆ H ₄ N ₂ O ₄				
Dinitrobenzene, p-	C ₆ H ₄ N ₂ O ₄	5.0	20	25	500
Dinonyl phthalate	C ₂₆ H ₄₂ O ₄	1.0	100	5	100
Dioxane 1,2-	C ₄ H ₈ O ₂	1.5	67	8	150
Dioxane 1,4-	C ₄ H ₈ O ₂	1.5	67	8	150
Dipentene	C ₁₀ H ₁₆	0.9	110	5	90
Diphenyl ether	C ₁₂ H ₁₀ O	0.8	125	4	80
Disulphur decafluoride	S ₂ F ₁₀				
Disulphur dichloride	S ₂ Cl ₂	3.0	33	15	300
Di-tert-butyl-p-cresol	C ₁₁ H ₁₆ O	1.0	100	5	100
Divinylbenzene	C ₁₀ H ₁₀	0.4	250	2	40
Dodecanol	C ₁₂ H ₂₆ O	0.9	110	5	90
Enflurane	C ₄ H ₂ F ₅ ClO				
Epichlorohydrin	C ₃ H ₅ ClO	0.8	15	40	800
Epoxypropyl isopropyl ether, 2,3-	C ₆ H ₁₂ O ₂	1.1	90	5	110
Ethane	C ₂ H ₆				
Ethanol	C ₂ H ₆ O	8.7	10	45	870
Ethanolamine	C ₂ H ₇ NO	3.0	33	15	300

Gas/VOC	Formula	Relative response	Relative sensitivity (%)	Typical MDL PID- AH (ppb) (Low Range)	Typical MDL PID- A1 (ppb) (High Range)
Ethoxy-2-propanol, 1-	C ₅ H ₁₀ O ₂	2.0	50	10	200
Ethoxyethanol, 2-	C ₄ H ₁₀ O ₂	29.8	3	150	3000
Ethoxyethyl acetate, 2-	C ₆ H ₁₂ O ₃	3.0	33	15	300
Ethyl (s)-(-)-lactate	C ₅ H ₁₀ O ₃	3.0	33	15	300
Ethyl acetate	C ₄ H ₈ O ₂	3.6	28	20	360
Ethyl acrylate	C ₅ H ₈ O ₂	2.0	50	10	200
Ethyl amine	C ₂ H ₇	1.0	100	5	100
Ethyl benzene	C ₈ H ₁₀	0.5	185	3	50
Ethyl butyrate	C ₆ H ₁₂ O ₂	1.0	105	5	100
Ethyl chloroformate	C ₃ H ₅ O ₂ Cl	80	1	400	8300
Ethyl cyanoacrylate	C ₆ H ₇ O ₂ N	1.5	67	8	150
Ethyl decanoate	C ₁₂ H ₂₄ O ₂	1.8	56	10	180
Ethyl formate	C ₃ H ₆ O ₂	30	3	150	3000
Ethyl hexanoate	C ₈ H ₁₆ O ₂	2.6	38	15	260
Ethyl hexanol, 2-	C ₈ H ₁₈ O	1.5	67	8	150
Ethyl hexyl acrylate, 2-	C ₁₁ H ₂₀ O ₂	1.0	100	5	100
Ethyl mercaptan	C ₂ H ₆ S	0.7	145	3	70
Ethyl octanoate	C ₁₀ H ₂₀ O ₂	2.3	40	12	230
Ethylene	C ₂ H ₄	8.0	13	40	800
Ethylene dinitrate	C ₂ H ₄ O ₆ N ₂				
Ethylene glycol	C ₂ H ₆ O ₂	20.0	5	100	2000
Ethylene oxide	C ₂ H ₄ O	15.0	7	75	1500
Ferrocene	C ₁₀ H ₁₀ Fe	0.8	125	4	80
Fluorine	F ₂				
Fluoroethane	C ₂ H ₅ F				
Fluoromethane	CH ₃ F				
Formaldehyde	CH ₂ O				
Formamide	CH ₃ ON	2.0	50	10	200
Formic acid	CH ₂ O ₂				
Furfural	C ₅ H ₄ O ₂	1.4	70	7	140
Furfuryl alcohol	C ₅ H ₆ O ₂	2.0	50	10	200
Gasoline vapors		1.1	95	5	105

Gas/VOC	Formula	Relative response	Relative sensitivity (%)	Typical MDL PID- AH (ppb) (Low Range)	Typical MDL PID- A1 (ppb) (High Range)
Gasoline vapors		0.8	125	4	80
Gasoline vapors 92 octane		0.8	125	4	80
Germane	GeH ₄	10.0	10	50	1000
Glutaraldehyde	C ₅ H ₈ O ₂	0.9	111	5	90
Halothane	CF ₃ CHBrCl				
Helium	He				
Heptan-2-one	C ₇ H ₁₄ O	0.7	140	4	70
Heptan-3-one	C ₇ H ₁₄ O	0.8	125	4	75
Heptane n-	C ₇ H ₁₆	2.1	50	10	200
Hexachloroethane	C ₂ Cl ₆				
Hexafluoroethane	C ₂ F ₆				
Hexamethyldisilazane, 1,1,1,3,3,3-	C ₆ H ₁₉ NSi ₂	1.0	100	5	100
Hexamethyldisiloxane.	C ₆ H ₁₈ OSi ₂	0.3	350	1	30
Hexan-2-one	C ₆ H ₁₂ O	0.8	125	4	80
Hexane n-	C ₆ H ₁₄	4.2	25	20	420
Hexene, 1-	C ₆ H ₁₂	0.9	110	5	90
Hydrazine	H ₄ N ₂	3.0	33	15	300
Hydrazoic acid	HN ₃				
Hydrogen	H ₂				
Hydrogen bromide	HBr				
Hydrogen chloride	HCl				
Hydrogen cyanide	HCN				
Hydrogen fluoride	HF				
Hydrogen peroxide	H ₂ O ₂	4.0	25	20	400
Hydrogen sulfide	H ₂ S	4.0	25	20	400
Hydroquinone	C ₆ H ₆ O ₂	0.8	125	4	80
Hydroxypropyl acrylate 2-	C ₆ H ₁₀ O ₃	1.5	67	8	150
Iminodi (ethylamine) 2,2'-	C ₄ H ₁₃ N ₃	0.9	110	5	90
Iminodiethanol 2,2'-	C ₄ H ₁₁ NO ₂	1.6	60	8	160
Indene	C ₉ H ₈	0.5	220	2	50
Iodine	I ₂	0.2	667	1	15
Iodoform	CHI ₃	1.5	67	8	150

Gas/VOC	Formula	Relative response	Relative sensitivity (%)	Typical MDL PID- AH (ppb) (Low Range)	Typical MDL PID- A1 (ppb) (High Range)
Iodomethane	CH ₃ I	0.4	250	2	40
Isoamyl acetate	C ₇ H ₁₄ O ₂	1.6	60	8	160
Isobutane	C ₄ H ₁₀	8.0	15	40	800
Isobutanol	C ₄ H ₁₀ O	3.5	30	20	350
Isobutyl acetate	C ₆ H ₁₂ O ₂	2.3	45	10	230
Isobutyl acrylate	C ₇ H ₁₂ O ₂	1.3	80	7	130
Isobutylene	C ₄ H ₈	1.0	100	5	100
Isobutyraldehyde	C ₄ H ₈ O	1.2	80	6	120
Isocyanates, all					
Isodecanol	C ₁₉ H ₂₂ O	0.9	110	5	90
Isoflurane	C ₃ H ₂ ClF ₅ O				
Isononanol	C ₉ H ₂₀ O	1.5	67	8	150
Isooctane	C ₈ H ₁₈	1.1	90	5	100
Isooctanol	C ₈ H ₁₈ O	1.7	60	9	170
Isopentane	C ₅ H ₁₂	6.0	20	30	600
Isophorone	C ₉ H ₁₄ O	0.8	133	4	75
Isoprene	C ₅ H ₈	0.7	140	3	70
Isopropanol	C ₃ H ₈ O	4.4	20	22	440
Isopropyl acetate	C ₅ H ₁₀ O ₂	2.2	50	10	220
Isopropyl chloroformate	C ₄ H ₇ O ₂ Cl	1.6	60	8	160
Jet fuel jp-4		0.8	133	4	75
Jet fuel jp-5		0.7	150	3	60
Jet fuel jp-8		0.7	150	3	60
Kerosene		0.8	120	4	90
Ketene	C ₂ H ₂ O	3.0	33	15	300
Liquefied petroleum gas					
Maleic anhydride	C ₄ H ₂ O ₃	2.0	50	10	200
Mercaptoacetic acid	C ₂ H ₄ O ₂ S	1.0	100	5	100
Mercury	Hg				
Mercury alkyls					
Mesitylene	C ₉ H ₁₂	0.3	300	2	30
Methacrylic acid	C ₄ H ₆ O ₂	2.3	40	12	230

Gas/VOC	Formula	Relative response	Relative sensitivity (%)	Typical MDL PID- AH (ppb) (Low Range)	Typical MDL PID- A1 (ppb) (High Range)
Methacrylonitrile	C ₄ H ₅ N	5.0	20	25	500
Methane	CH ₄				
Methanol	CH ₄ O	200	1	1000	20000
Methoxyethanol, 2-	C ₃ H ₈ O ₂	2.7	40	15	270
Methoxyethanol, 2-	C ₅ H ₁₂ O ₃	1.4	70	7	140
Methoxymethylethoxy-2-propanol	C ₇ H ₁₆ O ₃	1.3	80	7	130
Methoxypropan-2-ol	C ₄ H ₁₀ O ₂	3.0	33	15	300
Methoxypropyl acetate	C ₆ H ₁₂ O ₃	1.2	80	6	120
Methyl acetate	C ₃ H ₆ O ₂	5.2	20	25	500
Methyl acrylate	C ₄ H ₆ O ₂	3.4	30	17	340
Methyl bromide	CH ₃ Br	1.9	50	10	190
Methyl cyanoacrylate	C ₅ H ₅ O ₂ N	5.0	20	25	500
Methyl ethyl ketone	C ₄ H ₈ O	0.8	130	4	80
Methyl ethyl ketone peroxides	C ₈ H ₁₈ O ₂	0.8	125	4	80
Methyl formate	C ₂ H ₄ O ₂				
Methyl isobutyl ketone	C ₆ H ₁₂ O	0.8	125	4	80
Methyl isocyanate	C ₂ H ₃ NO				
Methyl isothiocyanate	C ₂ H ₃ NS	0.6	167	3	60
Methyl mercaptan	CH ₄ S	0.7	140	4	70
Methyl methacrylate	C ₅ H ₈ O ₂	1.6	60	8	160
Methyl propyl ketone	C ₅ H ₁₀ O	0.8	130	4	80
Methyl salicylate	C ₈ H ₈ O ₃	1.2	80	6	120
Methyl sulphide	C ₂ H ₆ S	0.5	200	3	50
Methyl t-butyl ether	C ₅ H ₁₂ O	0.8	125	4	80
Methyl-2-propen-1-ol, 2-	C ₄ H ₈ O	1.1	90	5	100
Methyl-2-pyrrolidinone, N-	C ₅ H ₉ NO	0.9	110	5	90
Methyl-4,6-dinitrophenol, 2-	C ₇ H ₆ N ₂ O ₅	3.0	33	15	300
Methyl-5-hepten-2-one, 6-	C ₈ H ₁₄ O	0.8	125	4	80
Methylamine	CH ₅ N	1.4	70	7	140
Methylbutan-1-ol, 3-	C ₅ H ₁₂ O	3.4	30	17	340
Methylcyclohexane	C ₇ H ₁₄	1.1	90	6	110
Methylcyclohexanol, 4-	C ₇ H ₁₄ O	2.4	40	12	240

Gas/VOC	Formula	Relative response	Relative sensitivity (%)	Typical MDL PID- AH (ppb) (Low Range)	Typical MDL PID- A1 (ppb) (High Range)
Methylcyclohexanone 2-	C ₇ H ₁₂ O	1.0	100	5	100
Methylheptan-3-one, 5-	C ₈ H ₁₆ O	0.8	133	4	75
Methylhexan-2-one, 5-	C ₇ H ₁₄ O	0.8	133	4	75
Methylhydrazine	CH ₆ N ₂	1.3	80	7	130
Methyl-N-2,4, 6- tetranitroaniline, N-	C ₇ H ₅ N ₅ O ₈	3.0	33	15	300
Methylpent-3-en-2-one, 4-	C ₆ H ₁₀ O	0.7	140	4	70
Methylpentan-2-ol, 4-	C ₆ H ₁₄ O	2.8	40	14	280
Methylpentane-2,4-diol, 2-	C ₆ H ₁₄ O ₂	4.0	25	20	400
Methylpropan-2-ol, 2-	C ₄ H ₁₀ O	3.5	30	18	350
Methylstyrene	C ₉ H ₁₀	0.5	200	3	50
Mineral oil		0.8	125	4	80
Mineral Spirits		0.8	125	4	80
Naphthalene	C ₁₀ H ₈	0.4	230	2	45
Nitric Oxide	NO	8.0	15	40	800
Nitroaniline 4-	C ₆ H ₆ N ₂ O ₂	0.8	125	4	80
Nitrobenzene	C ₆ H ₅ NO ₂	1.7	60	10	170
Nitroethane	C ₂ H ₅ NO ₂				
Nitrogen dioxide	NO ₂	10.0	10	50	1000
Nitrogen trichloride	NCl ₃	1.0	100	5	100
Nitrogen trifluoride	NF ₃				
Nitromethane	CH ₃ NO ₂				
Nitropropane, 1-	C ₃ H ₇ NO ₂				
Nitropropane, 2-	C ₃ H ₇ NO ₂				
Nitrous Oxide	N ₂ O				
Nonane, n-	C ₉ H ₂₀	1.3	80	6	130
Norbornandiene, 2,5-	C ₇ H ₈	0.6	167	3	60
Octachloronaphthalene	C ₁₀ C ₁₈	1.0	100	5	100
Octane, n-	C ₈ H ₁₈	1.6	60	8	160
Octene, 1-	C ₈ H ₁₆	0.7	140	3	70
Oxalic acid	C ₂ H ₂ O ₄				
Oxalonnitrile	C ₂ N ₂				
Oxydiethanol 2,2-	C ₄ H ₁₀ O ₃	4.0	25	20	400

Gas/VOC	Formula	Relative response	Relative sensitivity (%)	Typical MDL PID- AH (ppb) (Low Range)	Typical MDL PID- A1 (ppb) (High Range)
Oxygen	O ₂				
Ozone	O ₃				
Paraffin wax, fume		1.0	100	5	100
Paraffins, normal		1.0	105	5	100
Pentacarbonyl iron	FeC ₅ O ₅	1.0	100	5	100
Pentachloroethane	C ₂ HCl ₅				
Pentachlorofluoroethane	C ₂ Cl ₅ F				
Pentafluoroethane	C ₂ HF ₅				
Pentan-2-one	C ₅ H ₁₀ O	0.8	125	4	80
Pentan-3-one	C ₅ H ₁₀ O	0.8	125	4	80
Pentandione, 2,4-	C ₅ H ₈ O ₂	0.8	133	4	75
Pentane, n-	C ₅ H ₁₂	7.9	15	40	800
Peracetic acid	C ₂ H ₄ O ₃	2.0	50	10	200
Perchloryl fluoride	C ₁₀₃ F				
Perfluoropropane	C ₃ F ₈				
Petroleum ether		0.9	110	5	90
Phenol	C ₆ H ₆ O	1.2	85	6	120
Phenyl propene, 2-	C ₉ H ₁₀	0.4	230	2	45
Phenyl-2,3-epoxypropyl ether	C ₉ H ₁₀ O ₂	0.8	125	4	80
Phenylenediamine, p-	C ₆ H ₈ N ₂	0.6	167	3	60
Phosgene	COCl ₂				
Phosphine	PH ₃	2.0	50	10	200
Picoline, 3-	C ₆ H ₇ N	0.9	110	5	90
Pinene, alpha	C ₁₀ H ₁₆	0.3	315	2	30
Pinene, beta	C ₁₀ H ₁₆	0.3	315	2	30
Piperidine	C ₅ H ₁₁ N	0.9	110	5	90
Piperylene	C ₅ H ₈	0.7	150	3	67
Prop-2-yn-1-ol	C ₃ H ₄ O	1.3	80	7	130
Propan-1-ol	C ₃ H ₈ O	4.8	20	25	480
Propane	C ₃ H ₈				
Propane-1,2-diol, total	C ₃ H ₈ O ₂	10.0	10	50	1000
Propene	C ₃ H ₆	1.4	70	7	140

Gas/VOC	Formula	Relative response	Relative sensitivity (%)	Typical MDL PID- AH (ppb) (Low Range)	Typical MDL PID- A1 (ppb) (High Range)
Propionaldehyde	C ₃ H ₆ O	1.7	60	8	169
Propionic acid	C ₃ H ₆ O ₂	8.0	15	40	800
Propyl acetate, n-	C ₅ H ₁₀ O ₂	2.5	40	13	250
Propylene dinitrate	C ₃ H ₆ N ₂ O ₆				
Propylene oxide	C ₃ H ₆ O	7.0	15	35	700
Propyleneimine	C ₃ H ₇ N	1.3	80	7	130
Pyridine	C ₅ H ₅ N	0.8	133	4	75
Pyridylamine 2-	C ₅ H ₆ N ₂	0.8	125	4	80
Silane	SiH ₄				
Sodium fluoroacetate	C ₂ H ₂ O ₂ FNa				
Styrene	C ₈ H ₈	0.4	230	2	50
Sulphur dioxide	SO ₂				
Sulphur hexafluoride	SF ₆				
Sulphur tetrafluoride	SF ₄				
Sulphuric acid	H ₂ SO ₄				
Sulphuryl fluoride	SO ₂ F ₂				
Terphenyls	C ₁₈ H ₁₄	0.6	167	3	60
Terpinolene	C ₁₀ H ₁₆	0.5	210	2	50
Tert-butanol	C ₄ H ₁₀ O	2.6	40	15	260
Tetrabromoethane, 1,1,2,2-	C ₂ H ₂ Br ₄	2.0	50	10	200
Tetracarbonylnickel	NiC ₄ O ₄	1.0	100	5	100
Tetrachloro-1,2- difluoroethane, 1,1,1,2-	C ₂ Cl ₄ F ₂				
Tetrachloro-1- fluoroethane, 1,1,1,2,2-	C ₂ HCl ₄ F				
Tetrachloro-2,2- difluoroethane, 1,1,1,2-	C ₂ Cl ₄ F ₂				
Tetrachloro-2-fluoroethane, 1,1,1,2-	C ₂ HCl ₄ F				
Tetrachloroethane, 1,1,1,2-	C ₂ H ₂ Cl ₄				
Tetrachloroethane, 1,1,2,2-	C ₂ H ₂ Cl ₄				
Tetrachloroethylene	C ₂ Cl ₄	0.7	140	4	70
Tetrachloronaphthalenes, all isomers	C ₁₀ H ₄ Cl ₄	1.0	100	5	100
Tetraethyl orthosilicate	C ₈ H ₂₀ O ₄ Si	2.0	50	10	200

Gas/VOC	Formula	Relative response	Relative sensitivity (%)	Typical MDL PID- AH (ppb) (Low Range)	Typical MDL PID- A1 (ppb) (High Range)
Tetraethyllead	C ₈ H ₂₀ Pb				
Tetrafluoroethane, 1,1,1,2-	C ₂ H ₂ F ₄				
Tetrafluoroethane, 1,1,2,2-	C ₂ H ₂ F ₄				
Tetrafluoroethylene	C ₂ F ₄	1.0	100	5	100
Tetrafluoromethane	CF ₄				
Tetrahydrofuran	C ₄ H ₈ O	1.6	65	8	150
Tetramethyl orthosilicate	C ₄ H ₁₂ O ₄ Si				
Tetramethyl succinonitrile	C ₈ H ₁₂ N ₂	1.0	100	5	100
Therminol		1.0	100	5	100
Thionyl chloride	SOCl ₂				
Toluene	C ₇ H ₈	0.5	200	3	50
Toluene-2,4-diisocyanate	C ₉ H ₆ N ₂ O ₂	1.6	60	8	160
Toluenesulphonyl chloride, p-	C ₇ H ₇ SO ₂ Cl	3.0	33	15	300
Toluidine, o-	C ₇ H ₉ N	0.5	200	3	50
Tributyl phosphate	C ₁₂ H ₂₇ O ₄ P	5.0	20	25	500
Tributylamine	C ₁₂ H ₂₇ N	1.0	100	5	100
Trichloro-1,1-difluoroethane, 1,1,2-	C ₂ HCl ₃ F ₂				
Trichloro-1,2-difluoroethane, 1,1,2-	C ₂ HCl ₃ F ₂				
Trichloro-2,2-difluoroethane, 1,1,1-	C ₂ HCl ₃ F ₂				
Trichloro-2-fluoroethane, 1,1,2-	C ₂ H ₂ Cl ₃ F				
Trichlorobenzene 1,2,4-	C ₆ H ₃ Cl ₃	0.6	180	3	50
Trichloroethane, 1,1,1-	C ₂ H ₃ Cl ₃				
Trichloroethane, 1,1,2-	C ₂ H ₃ Cl ₃				
Trichloroethylene	C ₂ HCl ₃	0.7	150	3	65
Trichlorofluoromethane	CCl ₃ F				
Trichloronitromethane	CCl ₃ NO ₂				
Trichlorophenoxyacetic acid, 2,4,5-	C ₈ H ₅ O ₃ Cl ₃	1.0	100	5	100
Trichloropropane 1,2,3-	C ₃ H ₅ Cl ₃				
Trichlorotrifluoroethane, 1,1,1-	C ₂ Cl ₃ F ₃				
Trichlorotrifluoroethane, 1,1,2-	C ₂ Cl ₃ F ₃				
Triethylamine	C ₆ H ₁₅ N	0.9	110	5	90

Gas/VOC	Formula	Relative response	Relative sensitivity (%)	Typical MDL PID- AH (ppb) (Low Range)	Typical MDL PID- A1 (ppb) (High Range)
Trifluoroethane, 1,1,1-	C ₂ H ₃ F ₃				
Trifluoroethane, 1,1,2-	C ₂ H ₃ F ₃				
Trifluoroethaneol, 2,2,2-	C ₂ H ₃ F ₃ O				
Trifluoromethane	CHF ₃				
Trimethylamine	C ₃ H ₉ N	0.5	200	3	50
Trimethylbenzene mixtures	C ₉ H ₁₂	0.3	300	2	35
Trimethylbenzene, 1,3,5-	C ₉ H ₁₂	0.3	300	2	35
Trinitroluene 2,4,6-	C ₇ H ₅ N ₃ O ₆				
Turpentine	C ₁₀ H ₁₆	0.6	167	3	60
TVOC		1.0	100	5	100
Undecane, n-	C ₁₁ H ₂₄	0.9	110	5	100
Vinyl acetate	C ₄ H ₆ O ₂	1.1	90	6	110
Vinyl bromide	C ₂ H ₃ Br	1.0	100	5	100
Vinyl chloride	C ₂ H ₃ Cl	2.1	50	10	200
Vinyl-2-pyrrolidinone, 1-	C ₆ H ₉ NO	0.9	110	5	90
Xylene mixed isomers	C ₈ H ₁₀	0.4	230	2	40
Xylene, m-	C ₈ H ₁₀	0.4	230	2	50
Xylene, o-	C ₈ H ₁₀	0.6	167	3	60
Xylene, p-	C ₈ H ₁₀	0.6	180	3	50
Xylidine, all	C ₈ H ₁₁ N	0.7	140	4	70