INTERNATIONAL GAS DETECTORS

PID Correction Factors
SL-031

Introduction

IGD's PIDs are designed for the detection of a wide variety of volatile organic compounds (VOCs). Generally, when measuring VOCs, a substitute gas is used as the calibration gas. In our PID, the standard surrogate gas is isobutylene (IBE). This document will list the correction factors for a wide variety of VOCs using IBE as the single calibration gas.

Correction Factor Calculation

The correction factor to measure another compound when using IBE as the standard calibration gas is:

True Concentration = Reading x CF

Mixture Correction Factor

For unknown VOC mixtures, the correction factor is calculated as:

$$CFmix = 1 / (X1/CF1 + X2/CF2 + X3/CF3 + \ldots Xi/CFi)$$

Where Xn and CFn are the mole fraction and correction factor for component n, respectively (In the case of a paint solvent the mole fractions can be obtained from the MSDS). However, if the mixture is variable over time, then it is again not possible to calculate an accurate CF or concentration.

Correction Factors for Measuring Various Compounds by PID

Compound Name	Formula	CAS Number	CF at 10.6 eV
Acetaldehyde	C2H4O	75-07-0	6.0
Acetic acid Ethanoic Acid	C2H4O2	64-19-7	22
Acetic anhydride	C4H6O3	108-24-7	6.00
Acetone	C3H6O	67-64-1	1.10
Acrolein	C3H4O	107-02-8	3.90
Acrylic acid	C3H4O2	79-10-7	12.00
Allyl alcohol	C3H6O	107-18-6	2.40
Allyl chloride	C3H5C	107-05-1	4.30
Aniline	C6H7N	62-53-3	0.48
Anisole	C7H8O	100-66-3	0.58
Arsine	AsH3	7784-42-1	2.00
Benzaldehyde	C7H6O	100-52-7	0.70
Benzene	C6H6	71-43-2	0.50
Benzonitrile	C7H5N	100-47-0	1.60
Benzyl alcohol	C7H8O	100-51-6	1.10
Benzyl chloride	C7H7Cl	100-44-7	0.60
Bromine	Br2	7726-95-6	1.30

Bromobenzene	C6H5Br	108-86-1	0.60
Bromoform Bromopropane,1-	CHBr3 C3H7Br	75-25-2 106-94-5	2.60 1.50
Butadiene	C4H6	106-99-0	0.80
Butane	C4H10	106-97-8	60.00
Butanol, 1-	C4H10O	71-36-3	4.70
Butanol, t-	C4H10O	75-65-0	2.90
Butoxyethanol, 2-	C6H14O2	111-76-2	1.20
Butoxyethyl Acetate, 2-	C8H16O3	112-07-2	1.30
Butyl acetate, n-	C6H12O2	123-86-4	2.60
Butyl acrylate, n-	C7H12O2	141-32-2	1.60
Butylamine, n-	C4H11N	109-73-9	1.10
Butyl mercaptan	C4H10S	109-79-5	0.50
Butyraldehyde	C4H8O	123-72-8	1.80
Carbon disulfide	CS2	75-15-0	1.20
Chlorobenzene	C6H5C	108-90-7	0.50
Chloro-1,3-butadiene, 2-	C4H5C	126-99-8	3.00
Chloroethyl methyl ether 2-	C3H7ClO	627-42-9	3.00
Chlorotoluene, o-	C7H7Cl	95-49-8	0.50
Cresol, m-	C7H8O	108-39-4	0.50
Cresol, o	C7H8O	95-48-7	1.10
Cresol, p	C7H8O	106-44-5	1.20
Cumene	C9H12	98-82-8	0.55
Cyclohexane Cyclohexanol	C6H12 C6H12O	110-82-7 108-93-0	1.40 0.92
Cyclohexanone	C6H10O	108-94-1	0.90
Cyclohexene	C6H10	110-83-8	0.80
Cyclohexylamine	C6H13N	108-91-8	1.20
Decane	C10H22	124-18-5	1.40
Diacetone alcohol	C6H12O2	123-42-2	0.80
Dibromo-3- chloropropane 1-2	C3H5Br2Cl	96-12-8	1.70
Dibromoethane, 1,2-	C2H4Br2	106-93-4	1.70
Dichlorobenzene, o-	C6H4Cl2	95-50-1	0.50
Dichloroethene, 1,1-	C2H2Cl2	75-35-4	0.90
Dichloroethene, c-1,2-	C2H2Cl2	156-59-2	0.80
Dichloroethene, t-1,2-	C2H2Cl2	156-60-5	0.45
Dichloro-1-propene, 2,3-	C3H4Cl2	78-88-6	1.30
Dicyclopentadiene	C10H12	77-73-6	0.48
Diesel Fuel	m.w. 226	68334-30-5	0.80
Diesel Fuel #2	m.w. 216	68334-30-5	0.70
Diethylamine	C4H11N	109-89-7	1.00
Diethylaminopropylamine, 3-	C7H18N2	104-78-9	5.00
Diethyl ether	C4H10O	60-29-7	1.20
Diketene	C4H4O2	674-82-8	2.00
Dimethylamine	C2H7N	124-40-3	1.50
Dimethyl disulfide	C2H6S2	624-92-0	0.20
Dimethylformamide, N,N	C3H7NO	68-12-2	0.80

Dimethylhydrazine, 1,1-	C2H8N2	57-14-7	0.80
Dioxane, 1,4-	C4H8O2	123-91-1	1.30
Epichlorohydrin	C2H5ClO	106-89-8	8.50
Ethanol	C2H6O	64-17-5	10.00
Ethene	C2H4	74-85-1	9.00
Ethyl acetate	C4H8O2	141-78-6	4.50
Ethylbenzene	C8H10	100-41-4	0.60
Ethylene glycol	C2H6O2	107-21-1	16.00
Ethylene oxide	C2H4O	75-21-8	13.00
Ethyl ether	C4H10O	60-29-7	1.10
Ethyl mercaptan	C2H6S	75-08-1	0.56
Gasoline #1	m.w. 72	8006-61-9	0.90
Glutaraldehyde	C5H8O2	111-30-8	0.80
Heptane, n-	C7H16	142-82-5	2.60
Hexane, n-	C6H14	110-54-3	4.30
Hexanol, 1-	C6H14O	111-27-3	2.50
Hydrazine	H4N2	302-01-2	2.60
Hydrogen iodide	HI	10034-85-2	0.60
Hydrogen sulfide	H2S	7783-06-4	3.30
Iodine	I2	7553-56-2	0.10
Iodomethane	CH3I	74-88-4	0.22
Isobutane	C4H10	75-28-5	100.00
Isobutanol Isobutene	C4H10O C4H8	78-83-1 115-11-7	3.80 1.00
Isobutyl acrylate	C7H12O2	106-63-8	1.50
Isoprene	C5H8	78-79-5	0.65
Isopropanol	C3H8O	67-63-0	5.00
Isopropyl acetate	C5H10O2	108-21-4	2.50
Isopropyl ether	C6H14O	108-20-3	0.80
Jet fuel JP-4	m.w. 115	8008-20-6 + 64741-42-0	1.00
Jet fuel JP-5	m.w. 167	8008-20-6 + 64747-77-1	0.60
Jet fuel JP-8	m.w. 165	8008-20-6 + 64741-77-1	0.70
Limonene, D-	C10H16	5989-27-5	0.33
Mesitylene	C9H12	108-67-8	0.35
Methoxyethanol, 2-	C3H8O2	109-86-4	2.40
Methoxyethoxyethanol, 2-	C5H12O3	111-77-3	1.20
Methyl acetate	C3H6O2	79-20-9	6.60
Methyl acrylate	C4H6O2	96-33-3	3.70
Methylamine	CH5N	74-89-5	1.20
Methyl bromide	CH3Br	74-83-9	1.70
Methyl t-butyl ether	C5H12O	1634-04-4	0.90
Methylcyclohexane	C7H14	107-87-2	0.98
Methyl ether	C2H6O	115-10-6	3.10
Methyl ethyl ketone	C4H8O	78-93-3	0.95
Methylhydrazine	C2H6N2	60-34-4	1.20

Methyl isobutyl ketone	C6H12O	108-10-1	0.90
Methyl isocyanate Methyl isothiocyanate	C2H3NO C2H3NS	624-83-9 551-61-6	4.60 0.45
Methyl mercaptan	CH4 S	74-93-1	0.60
Methyl methacrylate	C5H8O2	80-62-6	1.40
Methyl sulfide	C2H6S	75-18-3	0.44
Mineral spirits	m.w. 144	8020-83-5, 8052-41-3 68551-17-7	0.70
Naphthalene	C10H8	91-20-3	0.42
Nitric oxide	NO	10102-43-9	5.20
Nitrogen dioxide	NO2	10102-44-0	15.00
Octane, n-	C8H18	111-65-9	1.80
Pentane	C5H12	109-66-0	8.40
Perchloroethene	C2Cl4	127-18-4	0.55
PGME	C6H12O3	107-98-2	1.50
PGMEA	C6H12O3	108-65-6	1.00
Phenol	C6H6O	108-95-2	1.00
Phosphine	PH3	7803-51-2	3.90
Picoline	C6H7N	108-99-6	0.85
Pinene, α-	C10H16	2437-95-8	0.32
Pinene, β-	C10H16	18172-67-3	0.40
Piperylene, isomer mix	C5H8	504-60-9	0.70
Propanol, n-	C3H8O	71-23-8	5.50
Propene	C3H6	115-07-1	1.40
Propylene oxide	C3H6O	75-56-9	6.50
Pyridine	C5H5N	110-86-1	0.70
Styrene	C8H8	100-42-5	0.42
Tetrahydrofuran Tetramethyl orthosilicate	C4H8O C4H12O4Si	109-99-9 681-84-5	1.70 2.00
Toluene	C7H8	108-88-3	0.50
Tolylene-2,4-diisocyanate	C9H6N2O2	584-84-9	1.40
Trichloroethene	C2HCl3	79-01-6	0.55
Triethylamine	C6H15N	121-44-8	1.00
Turpentine	C10H16	8006-64-2	0.40

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