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FLAME IONIZATION DETECTOR RESPONSE FACTORS

(Updated: December 7, 2018)

Listed below are the EPA formatted response factors (applicable to all FIDs doing M21 style inspections, such as: phx21, TVAs, and phx42):

Stream Name	CAS	FID EPA
1,1- DICHLOROETHYLENE	75-35-4	1.23
1,1,1,2-TETRACHLOROETHANE	630-20-6	1.07
1,1,1-TRICHLOROETHANE	71-55-6	0.76
1,2-DICHLOROPROPANE	78-87-5	0.56
1,3,-BUTADIENE	106-99-0	0.73
1,4-DIOXANE	123-91-1	1.43
1-BUTANOL	71-36-3	0.81
1-BUTENE	106-98-9	0.73
1-HEXANE	110-54-3	0.41
1-HEXENE	592-41-6	0.51
1-OCTENE	111-66-0	0.31
2,2,4-TRIMETHYLPENTANE	540-84-1	0.29
2-BUTANONE (MEK)	78-93-3	0.67
2-CHLOROETHYL MERTHYL ETHER	627-42-9	1.29
2-CHLOROTOLUENE	95-49-8	0.4
2-ETHONXYETHANOL	110-80-5	1.28
2-NITROPROPANE	79-46-9	0.78
3-CHLOROPRENE (SLOW)	107-05-1	0.85
3-DIETHYLAMINOPROPYLAMINE	104-78-9	0.79
3-PICOLINE	108-99-6	0.79
ACETALDEHYDE	75-07-0	1.99
ACETIC ACID	64-19-7	2.02
ACETONE	67-64-1	0.89
Acetonitrile	75-05-8	1.13
ACETYLENE	74-86-2	0.87
ACRETALDEHYDE		1.99
ACROLIEN	107-02-8	1.3
ACRYLIC ACID	79-10-7	6.3
ACRYLONITRILE	107-13-1	0.85

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Stream Name	CAS	FID EPA
ALLYL ALCOHOL	107-18-6	1.16
alpha-METHYL STYRENE	98-83-9	0.37
AMYL ALCOHOL	71-41-0	0.66
ANILINE	62-53-3	6.4
ANISOLE	100-66-3	1.02
BENZENE	71-43-2	0.34
BENZONITRILE (SLOW)	100-47-0	1.91
BENZYL CHLORIDE	100-44-7	0.52
BROMOBENZENE (SLOW)	108-86-1	0.88
BROMOFORM	75-25-2	6.72
BUTYL ACETATE	123-86-4	0.5
BUTYL ACRYLATE	141-32-2	0.57
BUTYLALCOHOL (n-BUTANOL)	71-36-3	0.83
BUTYLAMINE	109-73-9	7
CARBON TETRACHLORIDE	56-23-5	16.04
CFC-113	76-13-1	0.72
CFC-12	75-71-8	4.23
CHLOROBENZENE	108-90-7	0.34
CHLOROFORM	67-66-3	2.29
CUMENE	98-82-8	2.75
CYCLOHEXANE	110-82-7	0.45
CYCLOHEXANOL	108-93-0	1
CYCLOHEXYLAMINE	108-91-8	0.72
DIACETONE ALCOHOL	123-42-2	0.56
DICHLOROETHYL ETHER	111-44-4	1.03
DIETHYL CARBONATE	105-58-8	0.5
DIETHYLMALEATE (@ 100 PPM)	141-05-9	3.98
DIMETHYL CARBONATE	616-38-6	1.43
DIMETHYL SULFATE	77-78-1	4.76
DIMETHYLFORMAMIDE	68-12-2	1.7
DODECANE (@ 100 PPM)	112-40-3	2.05
ENFLURANE	13838-16-9	0.33
EPICHLOROHYDRIN	106-89-8	1.26
ETHANE	74-84-0	0.88
ETHANOL	64-17-5	1.62
ETHYL ACETATE	141-78-6	0.79

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Stream Name	CAS	FID EPA
ETHYL ACRYLATE	140-88-5	0.74
ETHYL BENZENE	100-41-4	0.33
ETHYL CHLORIDE	75-00-3	0.83
ETHYL CHLOROFORMATE	541-41-3	0.99
ETHYL LACTATE	97-64-3	0.86
ETHYLAMINE	75-04-7	1.42
ETHYLENE	74-85-1	1.31
ETHYLENE DICHLORIDE	107-06-2	0.84
ETHYLENE OXIDE	75-21-8	1.29
FORMALDEHYDE (@ 10 PPM)	50-00-0	9.76
FREON 22	76-13-1	1.28
HALOTHANE	151-67-7	0.85
HCF-134A	811-97-2	0.3
HCFC 123	306-83-2	0.98
HCFC-141B	1717-00-6	0.29
HCFC-142B (MONOCHLORODIFLUOROETHANE)	75-68-3	0.24
HCFC-22 (MONOCHLORODIFLUOROMETHANE)	75-45-6	0.73
HEXANE	110-54-3	0.4
HFC-134A (1112-TETRAFLUOROETHANE)	811-97-2	0.3
HYDROGEN CYANIDE	74-90-8	6.09
IODOMETHANE	74-88-4	2.95
ISOBUTANE (2-METHYLPROPANE)	75-28-5	0.54
ISOBUTANOL	78-83-1	0.93
ISOBUTYL ALCOHOL (2-METHYL-1-PROPANOL)	78-83-1	0.67
ISOBUTYL CHLOROFORMATE	543-27-1	0.47
ISOBUTYLENE	115-11-7	0.64
ISOFLURANE	26675-46-7	0.64
ISOPHORONE (SLOW)	78-59-1	3.46
ISOPROPYL ACETATE	108-21-4	0.64
ISOPROPYL ALCOHOL	67-63-0	0.94
ISOPROPYL ETHER	108-20-3	0.44
M- CRESOL (100ppm)	108-39-4	4.82
METHANOL	67-56-1	3.81
METHYL ACETATE	79-20-9	1.19
METHYL BROMIDE	74-83-9	1.78
METHYL CELLOSOLVE	109-86-4	2.82

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Stream Name	CAS	FID EPA
METHYL CHLORIDE	74-87-3	1
METHYL CHLOROFORMATE	79-22-1	2.41
METHYL METHACRYLATE	80-62-6	0.59
METHYL SALICYLATE (@ 100 PPM)	119-36-8	2.17
METHYL tert-BUTYLETHER	1634-04-4	0.56
METHYLAMINE	74-89-5	2.76
METHYLCYCLOHEXANE	108-87-2	0.37
METHYLENE CHLORIDE	75-09-2	1.17
MIBK, 4-METHYL-2-PENTANONE	108-10-1	0.46
n-BUTANE	106-97-8	0.55
n-DECANE	124-18-5	0.45
n-HEPTANE	142-82-5	0.35
n-HEXANE	110-54-3	0.4
NITROBENZENE	98-95-3	4.6
NITROETHANE	79-24-3	1.06
NITROMETHANE	75-52-5	2.77
n-METHYL PYRROLIDINONE (@ 10 PPM)	872-50-4	3.05
n-NONANE	111-84-2	0.35
n-OCTANE	111-65-9	0.34
n-OCTYL MERCAPTAN	111-88-6	0.57
n-PENTANE	109-66-0	0.49
OCTANE	111-65-9	0.32
PARACHLOROBENZOTRIFLUORIDE	98-56-6	0.16
PCBTF (DOW TEFLON BIPRODUCT)	98-56-6	0.16
PENTANE	109-66-0	0.48
per-ACETIC ACID	79-21-0	2.63
PGME - Propylene Glycol Monomethyl Ether	107-98-2	0.84
PGMEA - Propylene Glycol Monoethyl Ether Acetate	108-65-6	0.55
PIVALOYL CHLORIDE	3282-30-2	0.42
PROPANE	74-98-6	0.61
PROPANOL	71-23-8	1.03
PROPYL CHLOROFORMATE	109-61-5	0.7
PROPYLENE	115-07-1	0.93
PROPYLENE OXIDE	75-56-9	0.92
PYRIDINE	110-86-1	1.06
sec-BUTANOL	78-92-2	0.61

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Stream Name	CAS	FID EPA
STYRENE	100-42-5	0.35
SUVA COLD MP (HFC-134A)	811-97-2	0.19
tert-BUTYL METHYL ETHER	1634-04-4	0.56
tert-DODECANETHIOL	25103-58-6	1.58
tert-NONYL MERCAPTAN	25360-10-5	0.67
TETRACHLOROETHYLENE	127-18-4	0.97
TETRAHYDROFURAN	109-99-9	1.17
TOLUENE	108-88-3	0.33
trans-1,2-DICHLOROETHYLENE	156-60-5	0.92
TRICHLOROETHYLENE	79-01-6	1.13
TRIETHYLAMINE (SLOW)	121-44-8	0.38
TRIETHYLPHOSPHATE (@ 100 PPM)	78-40-0	4.78
UNDECANE (@ 100 PPM)	1120-21-4	0.64
VINYL ACETATE	108-05-4	1.08
VINYL BROMIDE	593-60-2	1.79
VINYL CHLORIDE	75-01-4	1.22
Vinylidene Fluoride	75-38-7	1.13
XYLENES	1330-20-7	0.31

CAS = Chemical Abstracts Service registry number
FID EPA = flame ionization detector response factor formatted for Method 21.

Note: While some of these are provided by the referenced documents in Method 21, the "EPA" is short for EPA format response factor. There are 2 ways to describe response factor Relative Response factor (Measured response/ actual concentration) and Response Factor Multiplier (Actual concentration/Measured response). The EPA chose to standardize on the latter and it is now known by the industry as EPA Response Factor.
The list is a compilation of years and years of testing by us, our customers and agencies. It is mean to answer the question of "Will an FID see a leak of X material?".

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