

GAS OR VAPOR TO BE MEASURED	CHEMICAL FORMULA	1) TLV-TWA (ACGIH)	2) TUBE NO.	3) DETECTOR TUBE TO BE USED	MEASURABLE CONCENTRATION RANGE	4) PUMP STROKES TAKEN	5) SHELF LIFE (YEAR)	6) SEI TUBE
Acetaldehyde	CH <sub>3</sub> CHO	100ppm	*92 *91L	Acetaldehyde Formaldehyde-(LR)	4-750ppm 1-12ppm	1-4 2-4	1.5 1	
Acetic Acid	CH <sub>3</sub> COOH	10ppm	81	Acetic Acid	1-100ppm	1/2-2	3	
Acetic Anhydride	(CH <sub>3</sub> CO) <sub>2</sub> O	C, 5ppm	81	Acetic Acid	0.3-30ppm	1/2-2	3	
Acetone	(CH <sub>3</sub> ) <sub>2</sub> CO	750ppm	151 *151L	Acetone Acetone (LR)	0.01-2.0% 50-12,000ppm	1-2 1-2	3 2	x
Acetone Cyanohydrin	(CH <sub>3</sub> ) <sub>2</sub> C(OH)CN	—	12L	Hydrogen Cyanide-(LR)	5-70ppm	1	2	
Acetonitrile (Methyl Cyanide)	CH <sub>3</sub> CN	40ppm	52 (PYR)	Nitroparaffins	3-180ppm	1	1.5	
Acetylene	C <sub>2</sub> H <sub>2</sub>	—	171 +103	Acetylene Hydrocarbons, Low Class	0.05-4.0% 0.075-36%	1/2-2 1/2-2	3 2	
Acetylene Dichloride	See 1,2-Dichloroethane							
Acetylene Tetrabromide	See 1,1,2,2-Tetrabromoethane							
Acetylene Tetrachloride	See 1,1,2,2-Tetrachloroethane							
Acids Test	Varied	—	80	Acids Test (11)	1-80ppm	1-4	1	
Acrolein	CH <sub>2</sub> CHCHO	0.1ppm	*93	Acrolein	3-800ppm	2-4	2	
Acrylic Acid	CH <sub>2</sub> CHCOOH	2ppm	81	Acetic Acid	1-100ppm	1/2-2	3	
Acrylonitrile	CH <sub>2</sub> CHCN	2ppm	+191 +191L	Acrylonitrile Acrylonitrile-(LR)	2-360ppm 0.125-15ppm	1-4 2-7	2 2	
Air Current	See Smoke Tubes							
Alcohol	See Ethyl or Methyl Alcohol							
Aliphatic Hydrocarbons	See Hydrocarbons							
Alkenes	See Olefins							
Allyl Chloride	CH <sub>2</sub> CHCH <sub>2</sub> Cl	1ppm	*+131La	Vinyl Chloride	25-270ppm	1	2	
Amines	Varied	—	180	Amines	0.25-60ppm	1-2	3	
2-Aminoethanol	See Ethanolamine							
2-Aminopropane	See Isopropyl Amine							
Ammonia	NH <sub>3</sub>	25ppm	3H 3M 3La 3L	Ammonia-(HR) Ammonia-(MR) Ammonia-(LR) Ammonia-(LR)	0.2-32% 10-1000ppm 1-200ppm 1-60ppm	1/2-5 1/2-5 1/2-2 1/2-2	3 3 3 3	x
n-Amyl Acetate	CH <sub>3</sub> COOC <sub>2</sub> H <sub>4</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	100ppm	142 147	Butyl Acetate n-Amyl Acetate	0.01-0.9% 10-200ppm	2 2	3 2	
Aniline	C <sub>6</sub> H <sub>5</sub> NH <sub>2</sub>	2ppm	*181	Aniline	1.25-60ppm	2-5	1	
Arsine	AsH <sub>3</sub>	0.05ppm	19La	Arsine-(LR)	0.04-10ppm	1-10	2	
Aziridine	See Ethyleneimine							
Benzaldehyde	C <sub>6</sub> H <sub>5</sub> CHO	—	*91L	Formaldehyde-(LR)	2-92ppm	1	1	
Benzene	C <sub>6</sub> H <sub>6</sub>	10ppm	+121S 121 121SL +121L	Benzene Benzene Benzene-(LR) Benzene-(LR)	2-312ppm 2.5-120ppm 1-100ppm 0.125-60ppm	1-4 1-4 1-5 1-10	3 3 2 3	x
Benzyl Bromide	C <sub>6</sub> H <sub>5</sub> CH <sub>2</sub> Br	—	+136	Methyl Bromide	25-850ppm	1	2	
Benzyl Chloride	C <sub>6</sub> H <sub>5</sub> CH <sub>2</sub> Cl	1ppm	*132L	Trichloroethylene-(LR)	0.5-25ppm	1	2	
Boron Trichloride	BCl <sub>3</sub>	—	12L	Hydrogen Cyanide-(LR)	1-14ppm	2	2	
Bromine	Br <sub>2</sub>	0.1ppm	9L 8La	Nitrogen Dioxide-(LR) Chlorine	2.23ppm 0.1-1.6ppm	2 4	2 2	
2-Bromo-2-Chloro-1,1,1-Trifluoroethane	See Halothane							
Bromoethane	See Ethyl Bromide							
Bromoform (Tribromomethane)	CHBr <sub>3</sub>	0.5ppm	+136	Methyl Bromide	1-50ppm	1	2	
Butadiene	CH <sub>2</sub> CHCHCH <sub>2</sub>	10ppm	174 174L 174La	Butadiene Butadiene-(LR) Butadiene	50-800ppm 2.5-100ppm 5-100ppm	1 4-8 1	3 2 1	
Butane	C <sub>4</sub> H <sub>10</sub>	800ppm	104 +103	n-Butane Hydrocarbons-Low Class	25-1400ppm 0.035-1.68%	1 1/2-2	3 2	
1-Butanol	See n-Butyl Alcohol							
2-Butanol	See sec-Butyl Alcohol							
2-Butanone	See Methyl Ethyl Ketone							
2-Butoxyethanol	See Ethylene Glycol Monobutyl Ether							

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n-Butyl Acetate	CH <sub>3</sub> COOC <sub>4</sub> H <sub>9</sub>	150ppm	142 142L	Butyl Acetate Butyl Acetate-(LR)	0.01-0.8% 10-300ppm	2 2	3 2	
Butyl Acrylate	CH <sub>2</sub> CHCOOC <sub>4</sub> H <sub>9</sub>	10ppm	142L	Butyl Acetate-(LR)	5-65ppm	2	2	
n-Butyl Alcohol (n-Butanol)	C <sub>4</sub> H <sub>9</sub> OH	50ppm	112 114	Ethyl Alcohol (Ethanol) n-Butyl Alcohol	100-1500ppm 5-150ppm	4 3-6	3 2	
sec-Butyl Alcohol	C <sub>2</sub> H <sub>4</sub> (OH)C <sub>2</sub> H <sub>5</sub>	100ppm	112 115	Ethyl Alcohol (Ethanol) sec-Butyl Alcohol	100-3500ppm 5-150-ppm	4 4-8	3 2	
tert-Butyl Alcohol	(CH <sub>3</sub> ) <sub>3</sub> COH	100ppm	102L 104	n-Hexane-(LR) n-Butane	1000-8900ppm 1000-10,000ppm	2 2	3 3	
n-Butyl Amine	C <sub>4</sub> H <sub>9</sub> NH <sub>2</sub>	5ppm	180	Amines	1-60ppm	1/2-2	3	
sec-Butyl Amine	CH <sub>3</sub> CHNH <sub>2</sub> C <sub>2</sub> H <sub>5</sub>	5ppm	180	Amines	1-60ppm	1/2-2	3	
Butyl Cellosolve	See Ethylene Glycol Monobutyl Ether							
tert-Butyl Mercaptan	(CH <sub>3</sub> ) <sub>3</sub> C <sub>2</sub> H <sub>4</sub> SH	0.5ppm	75 75L	tert-ButylMercaptan tert-ButylMercaptan	2.5-30mg/m <sub>3</sub> 0.5-30mg/m <sub>3</sub>	2 1/2-2	2 2	
Butyronitrile	CH <sub>3</sub> (CH <sub>2</sub> ) <sub>2</sub> CN	5mg/m <sub>3</sub>	+191L	Acrylonitrile-(LR)	50-300ppm	1	2	
Carbon Dioxide	CO <sub>2</sub>	5000ppm	2HT 2HH 2H 2L 2LL	Carbon Dioxide-(XHR) (7)(9) Carbon Dioxide-(HR) Carbon Dioxide-(HR) Carbon Dioxide-(LR) Carbon Dioxide-(XLR)	10-100% 2.5-40% 0.5-20% 0.13-6.0% 100-11,500ppm	20ml/20sec 1/2-1 1/2-2 1/2-2 1/2-3	3 3 3 3 3	
Carbon Disulfide	CS <sub>2</sub>	10ppm	+13M +13	Carbon Disulfide-(MR) Carbon Disulfide	20-4000ppm 0.63-100ppm	1/2-2 1/2-4	3 3	
Carbon Monoxide	CO	50ppm	1HH 1H 1M 1L 1La 1LL	Carbon Monoxide-(XHR) Carbon Monoxide-(HR) Carbon Monoxide-(MR) Carbon Monoxide-(LR) Carbon Monoxide-(LR) Carbon Monoxide-(XLR)	1-40% 0.1-10% 0.05-4.0% 5-2000ppm 8-1000ppm 5-50ppm	1/2-1 1/2-1 1/2-2 1/2-5 1/2-3 2	2 2 2 3 2 2	
Carbon Monoxide in Hydrogen	CO in H <sub>2</sub>	—	1LK	Carbon Monoxide in Hydrogen	5-300ppm	1-3	2	
Carbon Tetrachloride	CCl <sub>4</sub>	5ppm	*+134	Carbon Tetrachloride	1-60ppm	1-5	1	
Carbonyl Chloride	See Phosgene							
Carbonyl Sulfide	COS	—	*+21	Carbonyl Sulfide	5-200ppm	1/2-2	2	
Chlorine	Cl <sub>2</sub>	0.5ppm	8HH 8H 8La	Chlorine-(XHR) Chlorine Chlorine-(LR)	0.25-10% 25-1000ppm 0.05-16ppm	1/2-2 1/2-2 1/2-10	2 2 2	
Chlorine Dioxide	ClO <sub>2</sub>	0.1ppm	8La	Chlorine-(LR)	0.33-16ppm	1/2-3	2	
Chlorobenzene (Monochlorobenzene)	C <sub>6</sub> H <sub>5</sub> Cl	75ppm	126 121	Chlorobenzene Benzene	2-500ppm 5-350ppm	1/2-2 1-2	3 3	
Chlorobromomethane	CH <sub>2</sub> ClBr	200ppm	+136 +135	Methyl Bromide Methyl Chloroform	8-80ppm 20-350ppm	1 1	2 1	
Chlorodifluoromethane (Fluorochlorocarbon 22)	CHClF <sub>2</sub>	1000ppm	+51 +51H +51L	Fluorochlorocarbon (PYR) Fluorochlorocarbons (HR)(PYR) Fluorochlorocarbons (LR)(PYR)	25-100ppm 1000-8000ppm 2.5-128ppm	1 1 1-2	2 2 2	
1-Chloro-2,3-Epoxypropane	See Epichlorohydrine							
Chloroform	CHCl <sub>3</sub>	10ppm	+137	Chloroform	4-400ppm	3-7	2	
Chloroformates	See Ethyl Chloroformate or Methyl Chloroformate							
Chloropicrin (Trichloronitromethane)	CCl <sub>3</sub> NO <sub>2</sub>	0.1ppm	*+134	Carbon Tetrachloride	1-60ppm	1-5	1	
3-Chloro-1-Propene	See Allyl Chloride							
1-Chloro-2,2,2-Trichloroethylidichloromethyl Ether	See Isoflurane							
2-Chloro-1,1,2-Trifluoroethylidifluoromethyl Ether	See Enflurane							
m-Cresol	C <sub>6</sub> H <sub>4</sub> OHCH <sub>3</sub>	5ppm	*61	Cresol	1-28ppm	2	2	
o-Cresol	C <sub>6</sub> H <sub>4</sub> OHCH <sub>3</sub>	5ppm	*61	Cresol	0.4-62.5ppm	1-4	2	
p-Cresol	C <sub>6</sub> H <sub>4</sub> OHCH <sub>3</sub>	5ppm	*61	Cresol	1-30ppm	2	2	

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Cumene	$C_6H_5CH(CH_3)_2$	50ppm	122 122L	Toluene Toluene-(LR)	5-2400ppm 2-100ppm	1/2-2 2	3 3	
Cyanide	See Hydrogen Cyanide							
Cyclohexane	$C_6H_{12}$	300ppm	102H	Hexane-(HR)	0.015-1.2%	1/2-2	3	
Cyclohexanol	$C_6H_{11}O_6$	50ppm	118 112L	Cyclohexanol Ethyl Alcohol-(LR)	5-100ppm 30-150ppm	5-10 5	2 2	
Cyclohexanone	$C_6H_{10}O$	25ppm	*154	Cyclohexanone	2-60ppm	2-4	2	
Cyclohexene	$C_6H_{10}$	300ppm	151	Acetone	100-1000ppm	1	3	
Cyclohexylamine	$C_6H_{13}N$	10ppm	180	Amines	1-60ppm	1/2-2	3	
Cyclohexyl Chloride	$C_6H_{11}Cl$	—	102L	n-Hexane-(LR)	40-1200ppm	2	3	
n-Decane	$CH_3(CH_2)_8CH_3$	—	105	Hydrocarbons, High Class	200-6000ppm	1-2	2	
Diacetone Alcohol	$CH_3COCH_2C(CH_3)_2OH$	50ppm	154	Cyclohexanone	5-150ppm	1-2	2	
1,2-Diaminoethane	See Ethylene Diamine							
Diborane	$B_2H_6$	0.1ppm	22	Diborane	0.02-5ppm	1-5		
1,1-Dibromoethane (Ethylidene Dibromide)	$CHBr_2CH_2$	—	+136	Methyl Bromide	7-70ppm	1	2	
1,2-Dibromoethane (Ethylene Dibromide)	$CH_2BrCH_2Br$	—	+136	Methyl Bromide	6-80ppm	1	2	
m-Dichlorobenzene	$C_6H_4Cl_2$	—	127	Dichlorobenzene	2.5-300ppm	2	3	
o-Dichlorobenzene	$C_6H_4Cl_2$	C, 50ppm	121	Benzene	50-700ppm	1	3	
p-Dichlorobenzene	$C_6H_4Cl_2$	75ppm	127	Dichlorobenzene	2.5-300ppm	2	3	
Dichlorodifluoromethane (Fluorochlorocarbon 12)	$CCl_2F_2$	1000ppm	+51 +51H +51L	Fluorochlorocarbons (PYR) Fluorochlorocarbons (HR)(PYR) Fluorochlorocarbons (LR)(PYR)	11-440ppm 325-2600ppm 1.8-76ppm	1 1 1-2	2 2 2	
1,1-Dichloroethane	$Cl_2CHCH_3$	200ppm	+135	Methyl Chloroform	30-1300ppm	1-4	1	
1,2-Dichloroethane (Ethylene Dichloride)	$CH_2ClCH_2Cl$	10ppm	+135 +135L	Methyl Chloroform Methyl Chloroform	200-2600ppm 8-150ppm	3 3-5	1 1	
1,1-Dichloroethylene	See Vinylidene Chloride							
1,2-Dichloroethylene (Acetylene Dichloride)	$CHClCHCl$	200ppm	*132H *139	Trichloroethylene-(HR) Dichloroethylene	10-450ppm 10-450ppm	1 1	2 2	
2,2-Dichloro-2 Fluoroethane (Fluorochlorocarbon HCFC 1416)	$CH_3CCl_2F$		+51 +51L	Fluorochlorocarbons (PYR) Fluorochlorocarbons (LR)(PYR)	10-400ppm 1-20ppm	1 2	2 2	
Dichloromethane	See Methylene Chloride							
1,2-Dichloropropane (Propylene Dichloride)	$CH_3CHClCH_2Cl$	75ppm	*+131La +135	Vinyl Chloride-(LR) Methyl Chloroform	40-600ppm 30-1500ppm	2 4	2 1	
Dichlorotetrafluoroethane (Fluorochlorocarbon 114)	$CClF_2CClF_2$	1000ppm	+51 +51H +51L	Fluorochlorocarbons (PYR) Fluorochlorocarbons (HR)(PYR) Fluorochlorocarbons (LR)(PYR)	20-800ppm 475-3800ppm 1.8-94ppm	1 1 1-2	2 2 2	
1,1-Dichloro-2,2,2- trifluoroethane (Fluorochlorocarbon HCFC-123)	$CHCl_2CF_3$	—	+51 +51L	Fluorochlorocarbons (PYR) Fluorochlorocarbons (LR)(PYR)	40-1600ppm 1.4-28ppm	1/2-1 1	2 2	
Diethanolamine	$(HOCH_2CH_2)_2NH$	3ppm	180	Amines	1-60ppm	1/2-2	3	
Diethyl Amine	$(C_2H_5)_2NH$	10ppm	180	Amines	1-60ppm	1/2-2	3	
Diethyl Benzene	$C_6H_4(CH_3)_2$	—	122 122L	Toluene Toluene-(LR)	25-2400ppm 2-150ppm	2 4	3 3	
Diethylene Dioxide	See Dioxane							
Diethylene Glycol	$CH_2OHCH_2OCH_2CH_2OH$	—	165	Ethylene Glycol	22-40mg/M3	5	2	
Diethylenetriamine	$C_4H_{13}N_3$	1ppm	180	Amines	1-60ppm	1/2-2	3	
Diethyl Ether	See Ethyl Ether							
Diisobutylene	$C_8H_{16}$	—	121	Benzene	45-540ppm	1	3	
Diisobutyl Ketone	$(CH_3)_2CHCH_2COCH_2CH(CH_3)_2$	25ppm	*91L	Formaldehyde-(LR)	1-36ppm	4	1	
Diisopropylamine	$C_6H_{15}N$	5ppm	180	Amines	1-60ppm	1/2-2	3	
Diisopropyltoluene	$(C_3H_7)_2C_6H_5CH_3$	—	141L	Ethyl Acetate(LR)	12-400ppm	1/2	2	
Dimethyl Acetamide	$CH_3CON(CH_3)_2$	10ppm	184	Dimethyl Acetamide	1.5-240ppm	1-4	2	

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Dimethyl Amine	(CH <sub>3</sub> ) <sub>2</sub> NH	10ppm	180	Amines Ammonia (HR)	1-60ppm 0.38-18.4%	1/2-2 1-3	3 3	
Dimethylamino-ethanol	(CH <sub>3</sub> ) <sub>2</sub> NCH <sub>2</sub> CH <sub>2</sub> OH	—	180	Amines	3-110ppm	1	3	
Dimethyl Aniline	C <sub>6</sub> H <sub>5</sub> (CH <sub>3</sub> ) <sub>2</sub>	5ppm	*181	Aniline	2.5-4.5ppm	3	1	
Dimethyl Ether (Methyl Ether)	(CH <sub>3</sub> ) <sub>2</sub> O	—	161	Ethyl Ether (Ether)	0.03-0.9%	1	3	
Dimethylethylamine	(CH <sub>3</sub> ) <sub>2</sub> NC <sub>2</sub> H <sub>5</sub>	—	180	Amines	1-60ppm	1/2-2	3	
Dimethyle								
Dimethylformamide	HCON(CH <sub>3</sub> ) <sub>2</sub>	10ppm	183	Dimethyl Formamide	0.8-90ppm	1/2-2	2	
Di-n-propylamine	(C <sub>3</sub> H <sub>7</sub> ) <sub>2</sub> NH	—	180	Amines	1-60ppm	1/2-2	3	
1,4-Dioxane	(C <sub>2</sub> H <sub>4</sub> O)	25ppm	163	Ethylene Oxide Tetrahydrofuran	0.6-5.6% 25-140ppm	1 2	3 2	
1,3-Dioxolan	C <sub>6</sub> H <sub>12</sub> O <sub>3</sub>	—	113L	Isopropyl Alcohol-(LR)	20-320ppm	1	2	
Divinyl Benzene	C <sub>6</sub> H <sub>4</sub> (CHCH <sub>2</sub> ) <sub>2</sub>	10ppm	124L	Styrene-(LR)	1-20ppm	3	3	
Divinyl Methoxysilane	CH <sub>3</sub> OSiH(CHCH <sub>2</sub> ) <sub>2</sub>	—	113L	Isopropyl Alcohol-(LR)	2.5-40ppm	2	2	
Enflurane	C <sub>3</sub> H <sub>2</sub> ClF <sub>5</sub> O	75ppm	+51	Fluorochlorocarbons (PYR)	200-1200ppm	1	2	
			+51L	Fluorochlorocarbons (LR)(PYR)	25-145ppm	2	2	
Epichlorohydrin	C <sub>3</sub> H <sub>5</sub> ClO	2ppm	163L	Ethylene Oxide-(LR)	0.5-130ppm	2	1	
Ethanthiol	See Ethyl Mercaptan or Mercaptans, Total							
Ethanol	See Ethyl Alcohol							
Ethanolamine	C <sub>2</sub> H <sub>7</sub> NO	3ppm	180	Amines	1-60ppm	1/2-2	3	
Ether	See Ethyl Ether							
2, Ethoxyethanol	See Ethylene Glycol Monocethyl Ether							
2, Ethoxyethyl Acetate	See Ethylene Glycol Monocethyl Ether Acetate							
Ethyl Acetate	CH <sub>3</sub> COOC <sub>2</sub> H <sub>5</sub>	400ppm	141 141L	Ethyl Acetate Ethyl Acetate-(LR)	0.04-1.5% 25-800ppm	1 2	3 2	
Ethyl Acrylate	CH <sub>2</sub> CHCOOCH <sub>2</sub> CH <sub>3</sub>	5ppm	151	Acetone	0.05-0.65%	2	3	
Ethyl Alcohol	C <sub>2</sub> H <sub>5</sub> OH	1000ppm	112 112L	Ethyl Alcohol Ethyl Alcohol-(LR)	0.01-7.5% 25-2000ppm	1/2-2 1-2	3 2	
Ethyl Amine	C <sub>2</sub> H <sub>5</sub> NH <sub>2</sub>	10ppm	180	Amines	1-60ppm	1/2-2	3	
Ethyl Benzene	C <sub>6</sub> H <sub>5</sub> C <sub>2</sub> H <sub>5</sub>	100ppm	122 122L	Toluene Toluene-(LR)	7-700ppm 1-70ppm	1/2-2 2	3 3	
Ethyl Cellosolve	See Ethylene Glycol Monocethyl Ether							
Ethylbenzyl Chloride	ClCH <sub>2</sub> C <sub>6</sub> H <sub>4</sub> C <sub>2</sub> H <sub>5</sub>	—	*+131La	Vinyl Chloride-(LR)	6-42.5ppm	2	2	
Ethyl Bromide	C <sub>2</sub> H <sub>5</sub> Br	200ppm	+136	Methyl Bromide	10-90ppm	1	2	
Ethyl Chloride	C <sub>2</sub> H <sub>5</sub> Cl	1000ppm	139	Methylene Chloride	250-10,000ppm	3-5	1	
Ethyl Chloroformate	ClCOOC <sub>2</sub> H <sub>5</sub>	—	+131La	Vinyl Chloride-(LR)	15-140ppm	2	2	
Ethyl Cyanide	See Propionitrile							
Ethylene (Ethene)	C <sub>2</sub> H <sub>4</sub>	—	172 172L	Ethylene Ethylene-(LR)	25-800ppm 0.2-50ppm	1 4	3 2	
Ethylene Bromide	See 1,2-Dibromoethane							
Ethylene Chloride	See 1,2-Dichloroethane							
Ethylene Chlorohydrin	ClCH <sub>2</sub> CH <sub>2</sub> OH	C,1ppm	111L	Methyl Alcohol(LR)	20-200ppm	3	2	
Ethylenediamine	C <sub>2</sub> H <sub>4</sub> (NH <sub>2</sub> ) <sub>2</sub>	10ppm	180	Amines	2-120ppm	1/2-2	3	
Ethylene Dibromide (EDB)	See 1,2-Dibromoethane							
Ethylene Dichloride	See 1,2-Dichloroethane							
Ethylene Glycol	C <sub>2</sub> H <sub>6</sub> O <sub>2</sub>	C,50ppm	*+165	Ethylene Glycol	50-300mg/m <sub>3</sub>	3	2	
Ethylene Glycol Monobutyl Ether (Butyl Cellosolve)	C <sub>4</sub> H <sub>9</sub> OCH <sub>2</sub> CH <sub>2</sub> OH	25ppm	113L	Isopropyl Alcohol-(LR)	60-640ppm	2	2	
Ethylene Glycol Monoethyl Ether (Cellosolve)	C <sub>2</sub> H <sub>5</sub> OCH <sub>2</sub> CH <sub>2</sub> OH	5ppm	113L	Isopropyl Alcohol-(LR)	100-1200ppm	2	2	
Ethylene Glycol Monoethyl Ether Acetate	CH <sub>3</sub> COOCH <sub>2</sub> CH <sub>2</sub> OC <sub>2</sub> H <sub>5</sub>	5ppm	113L	Isopropyl Alcohol-(LR)	6-96ppm	3	2	

GAS OR VAPOR TO BE MEASURED	CHEMICAL FORMULA	1) TLV-TWA (ACGIH)	2) TUBE NO.	3) DETECTOR TUBE TO BE USED	MEASURABLE CONCENTRATION RANGE	4) PUMP STROKES TAKEN	5) SHELF LIFE (YEAR)	6) SEI TUBE
Ethylene Glycol Monomethyl Ether (Methyl Cellosolve)	CH <sub>3</sub> OCH <sub>2</sub> CH <sub>2</sub> OH	5ppm	113L	Isopropyl Alcohol-(LR)	30-900ppm	2	2	
Ethylene Glycol Monomethyl Ether Acetate (Methyl Cellosolve Acetate)	C <sub>2</sub> H <sub>5</sub> OCH <sub>2</sub> CH <sub>2</sub> O(C)CCH <sub>3</sub>	5ppm	113L	Isopropyl Alcohol-(LR)	50-700ppm	2	2	
Ethylene Imine	C <sub>2</sub> H <sub>5</sub> N	.5ppm	180	Amines	1-60ppm	1/2-2	3	
Ethylene Oxide	(CH <sub>2</sub> ) <sub>2</sub> O	1ppm	163 +163L	Ethylene Oxide Ethylene Oxide-(LR)	0.05-3.0% 0.4-100ppm	1 2-4	3 1	
Ethyl Ether (Ether)	(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub>	400ppm	161 161L	Ethyl Ether Ethyl Ether-(LR)	0.04-1.0% 10-1200ppm	1 1-2	3 2	
Ethylidene Chloride	See 1,1-Dichloroethane							
Ethylidene Dibromide	See 1,1-Dichloromethane							
Ethyl Mercaptan	C <sub>2</sub> H <sub>5</sub> SH	0.5ppm	72 72P	Ethyl Mercaptan Ethyl Mercaptan in LP Gas (10)	0.5-120ppm 2.5-40ppm	1-10 1 minute at residential line pressure	3 2	
n-Ethyl Morpholine	CH <sub>2</sub> CH <sub>2</sub> OCH <sub>2</sub> CH <sub>2</sub> NCH <sub>2</sub> CL <sub>3</sub>	5ppm	180	Amines	0.5-60ppm	1/2-2	3	
Fluorine	F <sub>2</sub>	1ppm	17	Hydrogen Fluoride	2.5-100ppm	1	3	
Fluorochlorocarbons	See separate entries.							
Fluorochlorocarbon-11	See Trichlorofluoromethane							
Fluorochlorocarbon-12	See Dichlorofluoromethane							
Fluorochlorocarbon-22	See Chlorofluoromethane							
Fluorochlorocarbon-30	See Methylene Chloride							
Fluorochlorocarbon-112	See Tetrachlorodifluoroethane							
Fluorochlorocarbon-113	See 1,1,2-Trichloro-1,2,2-Trifluoroethane							
Fluorochlorocarbon-113b	See 1,1,1-Trichloro-2,2,2-Trifluoroethane							
Fluorochlorocarbon-114	See Dichlorotetrafluoroethane							
Fluorochlorocarbon HCFC 123	See 1,1-Dichloro-2,2,2-Difluoroethane							
Fluorochlorocarbon HCFC 134a	See 1,2,2,2-Tetrafluoroethane							
Fluorochlorocarbon HCFC 141b	See 2,2-Dichloro-2-Fluoroethane							
Fluorotrichloromethane	See Trichlorofluoromethane							
Formaldehyde	HCHO	1ppm	+91 *91L	Formaldehyde Formaldehyde-(LR)	2-20ppm 0.1-32.5ppm	2 1-5	3 1	
Formic Acid	HCOOH	5ppm	81	Acetic Acid	5.2-130ppm	1	3	
Freons(TN)	See Fluorochlorocarbons							
Furfural	C <sub>5</sub> H <sub>4</sub> O <sub>2</sub>	2ppm	*154	Cyclohexanone	2-60ppm	2-4	2	
Gasoline	Mixture	300ppm	101 101L	Gasoline Gasoline-(LR)	0.015-1.2% 30-1000ppm	1/2-2 2	3 3	
Halothane	CF <sub>3</sub> CHBrCl	50ppm	+51H +51 +51L	Fluorochlorocarbons (HR)(PYR) Fluorochlorocarbons (PYR) Fluorochlorocarbons (LR)(PYR)	1600-6400ppm 240-960ppm 3-60ppm	1 1 2	2 2 2	
Heptamethylene Diamine	NH <sub>2</sub> (CH <sub>2</sub> ) <sub>7</sub> NH <sub>2</sub>	—	180	Amines	0.5-30ppm	1/2-2	3	
n-Heptane	C <sub>7</sub> H <sub>16</sub>	400ppm	101	Gasoline Hydrocarbons-High Class	0.015-1.2% 90-2700ppm	1/2-2 1-2	3 3	
Hexamethylene Diamine	NH <sub>2</sub> (CH <sub>2</sub> ) <sub>6</sub> NH <sub>2</sub>	—	180	Amines	0.5-30ppm	1/2-2	3	
n-Hexane	C <sub>6</sub> H <sub>14</sub>	50ppm	102H 102L 105 106	Hexane-(HR) n-Hexane-(LR) Hydrocarbons-High Class Hydrocarbons-Petroleum Distillates	0.015-1.2% 50-1200ppm 80-2400ppm 300-4000ppm	1/2-2 1 1-2 1	3 3 2 3	
Hexone	See Methyl Isobutyl Ketone							
2-Hexyl Alcohol	CH <sub>3</sub> (CH <sub>2</sub> ) <sub>4</sub> CH <sub>2</sub> OH	—	141L	Ethyl Acetate-(LR)	75-2400ppm	3	2	
Hexylamine	CH <sub>3</sub> (CH <sub>2</sub> ) <sub>5</sub> NH <sub>2</sub>	—	180	Amines	1-60ppm	1/2-2	3	
Humidity Removal Pretube	—	—	RH001	Contact Messer GT&S for applications (8)				

GAS OR VAPOR TO BE MEASURED	CHEMICAL FORMULA	1) TLV-TWA (ACGIH)	2) TUBE NO.	3) DETECTOR TUBE TO BE USED	MEASURABLE CONCENTRATION RANGE	4) PUMP STROKES TAKEN	5) SHELF LIFE (YEAR)	6) SEI TUBE
Hydrazine	N <sub>2</sub> H <sub>4</sub>	0.1ppm	185 180	Hydrazine Amines	0.05-2ppm 2-120ppm	5-10 1/2-2	2 3	
Hydrocarbons-High Class (n-Octane, Nonane, Decane)	Varied	—	105	Hydrocarbons-High Class	100-3000ppm	1	3	
Hydrocarbons-Low Class (Propane, Butane)	Varied	—	+103	Hydrocarbons-Low Class	0.05-2.4%	1/2-2	1	
Hydrocarbons, Petroleum Distillates	Varied	—	106	Hydrocarbon Petroleum Distillates	0.5-28mg/L mg/m <sub>3</sub>	1/2-2	3	
Hydrochloric Acid	See Hydrogen Chloride							
Hydrocyanic Acid	See Hydrogen Cyanide							
Hydrofluoric Acid	See Hydrogen Fluoride							
Hydrogen	H <sub>2</sub>	—	30	Hydrogen (Color Intensity Tube)	0.5-2.0%	1	3	
Hydrogen Bromide	HBr	3ppm	14L	Hydrogen Chloride-(LR)	2.5-27.5ppm	4	3	
Hydrogen Chloride (Hydrochloric Acid)	HCl	5ppm	14M 14L	Hydrogen Chloride-(MR) Hydrogen Chloride-(LR)	10.1000ppm 0.1-40ppm	1/2-2 1/2-5	3 3	✓
Hydrogen Cyanide (Hydrocyanic Acid)	HCN	10ppm	12H 12M 12L	Hydrogen Cyanide-(HR) Hydrogen Cyanide-(MR) Hydrogen Cyanide-(LR)	0.05-2.0T 17-2400ppm 0.36-120ppm	1 1/2-2 1/2-5	3 2 2	✓
Hydrogen Fluoride	HF	3ppm	17	Hydrogen Fluoride	0.25-100ppm	1-7	3	
Hydrogen Sulfide	H <sub>2</sub> S	10ppm	4HT 4HP 4HH 4H 4HM 4M 4L 4LL *4LT	Hydrogen Sulfide Hydrogen Sulfide Hydrogen Sulfide-(XHR) Hydrogen Sulfide-(HR) Hydrogen Sulfide-(MR) Hydrogen Sulfide-(MR) Hydrogen Sulfide-(LR) Hydrogen Sulfide-(XLR) Hydrogen Sulfide-(XLR)	1-40% 0.25-20% 0.1-4.0% 10-3200ppm 25-1600ppm 12.5-500ppm 1-240ppm 0.25-60ppm 0.1-4ppm	1/2-2 1/2-2 1/2-1 1-10 1/2-2 1/2-2 1/2-10 1-10 1/2-2	3 3 3 3 3 3 3 3 2	✓
Hydrogen Sulfide/Sulfur Dioxide (Total Sulfur Tube)	H <sub>2</sub> S/SO <sub>2</sub>	—	45H	Hydrogen Sulfide/ Sulfur Dioxide	0.02-8.0%	1/2-1	2	
Hydrogen Sulfide/ Sulfur Dioxide (Simultaneous Tube)	H <sub>2</sub> S/SO <sub>2</sub>	10ppm(H <sub>2</sub> S)/ 2ppm(SO <sub>2</sub> )	45S	Hydrogen Sulfide Sulfur Dioxide	1.25-120ppm(H <sub>2</sub> S) 0.25-20ppm(SO <sub>2</sub> )	1/2-2	3	
Iodine	I <sub>2</sub>	0.2ppm	9L	Nitrogen Dioxide-(LR)	0.5-12ppm	2	2	
Isoamyl Acetate	CH <sub>3</sub> CO <sub>2</sub> CH <sub>2</sub> CH <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	100ppm	148	Isoamyl Acetate	10-200ppm	2	2	
Isoamyl Alcohol, Primary	See Isopentyl Alcohol							
Isobutane	(CH <sub>3</sub> ) <sub>2</sub> CHCH <sub>3</sub>	—	+103	Hydrocarbon-Low Class	0.035-1.68%	1/2-2	2	
Isobutyl Acetate	CH <sub>3</sub> COOC <sub>2</sub> H <sub>5</sub> (CH <sub>3</sub> ) <sub>2</sub>	150ppm	142 144	Butyl Acetate Isobutyl Acetate	0.005-0.66% 10-300ppm	2 2	3 2	
Isobutyl Alcohol	(CH <sub>3</sub> ) <sub>2</sub> CHCH <sub>2</sub> OH	50ppm	112 116	Ethyl Alcohol (Ethanol) Isobutyl Alcohol	100-3000ppm 5-150ppm	2-4 3-6	3 2	
Isopentane	CF <sub>3</sub> CHClOCHF <sub>2</sub>	—	+51 +51L	Fluorochlorocarbons (PYR) Fluorochlorocarbons (LR)(PYR)	200-1000ppm 30-120ppm	1 2	2 2	
Iso-Octane	(CH <sub>3</sub> ) <sub>2</sub> C <sub>2</sub> H <sub>5</sub> (CH <sub>3</sub> ) <sub>2</sub>	—	101	Gasoline	0.015-1.2%	1/2-2	3	
Isopentyl Alcohol (Primary Amyl Alcohol)	(CH <sub>3</sub> ) <sub>2</sub> CHCH <sub>2</sub> CH <sub>2</sub> OH	—	117	Isopentyl Alcohol	10-300ppm	1-4	2	
Isophorone	C <sub>9</sub> H <sub>14</sub> O	5ppm	154	Cyclohexanone	2-60ppm	2-4	2	
Isopropyl Acetate	CH <sub>3</sub> COOCH(CH <sub>3</sub> ) <sub>2</sub>	250ppm	151	Acetone Isopropyl Acetate	0.05-0.75% 25-500ppm	2 2	3 2	
Isopropyl Alcohol (Isopropanol)	(CH <sub>3</sub> ) <sub>2</sub> CHOH	400ppm	113 113L	Isopropyl Alcohol (Ethanol) Isopropyl Alcohol (Isopropanol) Isopropyl Alcohol-(LR)	100-3000ppm 5-150ppm 25-800ppm	2-4 3-6 1-2	3 2 3	
Isopropyl Benzene	See Cumene							
Isopropylamine	C <sub>3</sub> H <sub>9</sub> N	5ppm	180	Amines	1-60	1/2-2	3	
Isopropyl Ether	(CH <sub>3</sub> ) <sub>2</sub> CHOCH(CH <sub>3</sub> ) <sub>2</sub>	250ppm	161 141L	Ethyl Ether Ethyl Acetate-(LR)	180-4500ppm 22.5-720ppm	2 2	3 2	
Isopropyl Mercaptan	(CH <sub>3</sub> ) <sub>2</sub> CH(HS)	—	70	Mercaptans	1-200ppm	1-10	3	
Kerosene	Hydrocarbon Mixture	—	121 106	Benzene Petroleum Distillates	250-4000ppm 0.5-28mg/L	2 1/2-2	3 3	
L.P. Gas	Hydrocarbon Mixture	1000ppm	100A	L.P. Gas	0.02-0.8%	1	3	
Maleic Anhydride	CHCHC(O)CC(O)	0.25ppm	91	Acetic Acid	0.4-40ppm	1/2-2	3	

GAS OR VAPOR TO BE MEASURED	CHEMICAL FORMULA	1) TLV-TWA (ACGIH)	2) TUBE NO.	3) DETECTOR TUBE TO BE USED	MEASURABLE CONCENTRATION RANGE	4) PUMP STROKES TAKEN	5) SHELF LIFE (YEAR)	6) SEI TUBE
Mercaptans, Total	R-SH	—	70	Total Mercaptans (Also see Ethyl, Methyl and Butyl Mercaptan) Total Mercaptans(LR)	0.5-120ppm	1-10	3	
			70L	I-Butyl Mercaptans(LR)	0.1-8ppm	1/2-4	2	
2 Mercaptoethanol	HSCH <sub>2</sub> CH <sub>2</sub> OH	—	75L	I-Butyl Mercaptans(LR)	0.5-7.5ppm	1	2	
Mercury Vapor	Hg	0.05mg/m <sup>3</sup>	40	Mercury Vapor	0.05-13.2mg/m <sup>3</sup>	1	2	
Metaldehyde	(CH <sub>3</sub> CHO) <sub>4</sub>	—	*91L	Formaldehyde(LR)	0.13-3.25ppm	3	1	
Methacrylic Acid	CH <sub>2</sub> C(CH <sub>3</sub> )COOH	20ppm	81	Acetic Acid	0.9-90ppm	1/2-2	3	
Methacrylonitrile	CH <sub>2</sub> C(CH <sub>3</sub> )CN	1ppm	+192	Methacrylonitrile	0.2-32ppm	1-4	2	
Methanethiol	See Methyl Mercaptan							
Methanol	See Methyl Alcohol							
2-Methoxyethanol	See Ethylene Glycol Monomethyl Ether							
2-Methoxyethyl Acetate	See Ethylene Glycol Monomethyl Ether Acetate							
1-Methoxy-2-Propanol	CH <sub>3</sub> OCH <sub>2</sub> CH(OH)CH <sub>3</sub>	—	113L	Isopropyl Alcohol-(LR)	50-800ppm	4	2	
Methyl Acrylate	CH <sub>2</sub> CHCOOCH <sub>3</sub>	10ppm	151	Acetone	0.07-0.75%	2	3	
Methyl Alcohol (Methanol)	CH <sub>3</sub> OH	200ppm	111	Methyl Alcohol (Methanol)	0.004-4.5%	1/2-2	3	
			111L	Methyl Alcohol-(LR)	20-1000ppm	1-2	2	
2-Methylallyl Chloride	CH <sub>2</sub> C(CH <sub>3</sub> )CH <sub>2</sub> Cl	—	*+131La	Vinyl Chloride-(LR)	5-55ppm	1	2	
Methyl Amine	CH <sub>3</sub> NH <sub>2</sub>	10ppm	180	Amines	1-60ppm	1/2-2	3	
n-Methyl Aniline	C <sub>6</sub> H <sub>5</sub> NH(CH <sub>3</sub> )	0.5ppm	181	Aniline	3.5-42ppm	2	2	
Methyl Bromide	CH <sub>3</sub> Br	5ppm	+136	Methyl Bromide	2-200ppm	1/2-4	2	
			+136La	Methyl Bromide	1-36ppm	1-2	2	√
			+136H	Methyl Bromide-(HR)	10-600ppm	1/2-2	3	
2- Methyl, 3-Butenitrile	CH <sub>2</sub> CHCH(CH <sub>3</sub> )CN	—	+19L	Acetonitrile	1.2-11.5ppm	4	2	
Methyl Cellosolve	See Ethylene Glycol Monomethyl Ether							
Methyl Chloride	CH <sub>3</sub> Cl	50ppm	+51	Fluorochlorocarbons (PYR)	12-480ppm	1	2	
			+51L	Fluorochlorocarbons (LR)(PYR)	1.6-74ppm	1-2	2	
Methyl Chloroform (1,1,1-Trichloroethane)	CH <sub>3</sub> CCl <sub>3</sub>	350ppm	+135	Methyl Chloroform	100-500ppm	1	1	
			+135L	Methyl Chloroform-(LR)	20-200ppm	1	1	
Methyl Chloroformate	ClCOOC <sub>3</sub>	—	+131La	Vinyl Chloride-(LR)	70-1050ppm	5	2	
Methyl Cyanide	See Acetonitrile							
Methyl Cyclohexane	CH <sub>3</sub> C <sub>6</sub> H <sub>11</sub>	400ppm	102H	Hexane(HR)	0.04-0.84%	1	3	
Methyl Cyclohexanol	CH <sub>3</sub> C <sub>6</sub> H <sub>10</sub> OH	50ppm	119	Methyl Cyclohexanol	5-100ppm	5-10	2	
Methyl Cyclohexanone	CH <sub>3</sub> C <sub>5</sub> H <sub>9</sub> COH	50ppm	*155	Methyl Cyclohexanone	2-100ppm	2-3	2	
Methylene Chloride (Dichloromethane) (Freon 30)TN	CH <sub>2</sub> Cl <sub>2</sub>	50ppm	+138	Methylene Chloride	25-3000ppm	1-7	1	
			+51L	Freons(PYR)	1-46ppm	1-2	2	
Methyl Ether	See Dimethyl Ether							
Methyl Ethyl Ketone	CH <sub>3</sub> COC <sub>2</sub> H <sub>6</sub>	200ppm	152	Methyl Ethyl Ketone	0.02-0.6%	2	3	
			*151L	Acetone(LR)	21-1680ppm	5	2	
Methyl Glycol Acetate	See Ethylene Glycol Monomethyl Ether Acetate							
Methyl Hydrazine	CH <sub>3</sub> NHNH <sub>2</sub>	0.2ppm	185	Hydrazine	2-12ppm	5	2	
Methylene Iodide	CH <sub>2</sub> I <sub>2</sub>	2ppm	+121L	Benzene-(LR)	1-20ppm	5	3	
Methyl Isobutyl Ketone	CH <sub>3</sub> COCH <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	50ppm	153	Methyl Isobutyl Ketone	0.01-0.6%	2	3	
Methyl Mercaptan	CH <sub>3</sub> SH	0.5ppm	71	Methyl Mercaptan	0.25-70ppm	1-10	3	
			71H	Methyl Mercaptan	50-1650ppm	1/2-1	3	
Methyl Methacrylate	CH <sub>2</sub> C(CH <sub>3</sub> )COOCH <sub>3</sub>	100ppm	141	Ethyl Acetate	0.005-0.275%	4	3	
			149	Methyl Methacrylate	10-500ppm	1-2	2	
n- Methyl Morpholine	CH <sub>2</sub> CHOCH <sub>2</sub> CH <sub>2</sub> NCH <sub>3</sub>	—	180	Amines	0.5-60ppm	1/2-2	3	
Methyl Propionate	CH <sub>3</sub> CH <sub>2</sub> COOCH <sub>3</sub>	—	81	Acetic Acid	0.1-2.3%	5	3	
4- Methyl Pyridine	NCHCHC(CH <sub>3</sub> )CHCH	—	182	Pyridine	0.4-10.5ppm	1	3	
Mineral Spirits	Hydrocarbon Mixture	—	121	Benzene	55-1000ppm	1	3	
Monochlorobenzene	See Chlorobenzene							
Monoethyl Amine	See Methyl Amine							
Monomethyl Amine	See Methyl Amine							

GAS OR VAPOR TO BE MEASURED	CHEMICAL FORMULA	1) TLV-TWA (ACGIH)	2) TUBE NO.	3) DETECTOR TUBE TO BE USED	MEASURABLE CONCENTRATION RANGE	4) PUMP STROKES TAKEN	5) SHELF LIFE (YEAR)	6) SEI TUBE
Monomethyl Aniline	C <sub>6</sub> H <sub>5</sub> NHCH <sub>3</sub>	0.5ppm	*181	Aniline	2.5-45ppm	3	1	
Monomethyl Hydrazine	See Methyl Hydrazine							
Monostyrene	See Styrene							
Morpholine	C <sub>4</sub> H <sub>9</sub> NO	20ppm	180	Amines	1-60ppm	1/2-2	3	
Napthalene	C <sub>10</sub> H <sub>8</sub>	10ppm	*60	Phenol	0.5-12ppm	2	2	
Nickel Carbonyl	Ni(CO) <sub>4</sub>	0.05ppm	20L	Nickel Carbonyl	10-800ppm	1-4	3	
Nickel Tetracarbonyl	See Nickel Carbonyl							
Nitric Acid	HNO <sub>3</sub>	2ppm	15L	Nitric Acid-(LR)	0.1-40ppm	1/2-10	3	
Nitric Oxide (Also see Nitrogen Oxides)	NO	25ppm	+10	Nitric Oxide	NO:2-200ppm NO <sub>2</sub> :5-200ppm	1-5	1	
Nitroethane	C <sub>2</sub> H <sub>5</sub> NO <sub>2</sub>	100ppm	52	Nitroparaffins(PYR)	2-240	1	1.5	
Nitrogen Dioxide (Also see Nitrogen Oxides)	NO <sub>2</sub>	3ppm	9L +10	Nitrogen Dioxide-(LR) Nitric Oxide	0.5-125ppm NO <sub>2</sub> :5-200ppm NO <sub>2</sub> :200ppm	1-2	2	✓
Nitrogen Oxides	NO + NO <sub>2</sub>	NO:25ppm NO <sub>2</sub> :3ppm	+10	Nitrogen Oxide	NO:2-200ppm NO <sub>2</sub> :5-200ppm	1-5	1	
			11L	Nitrogen Oxides-(LR)	0.08-5ppm	2-4	2	
			11S	Nitrogen Oxides	5-575ppm	1/2-2	1	
			11	Nitrogen Oxides	25-600ppm	1	1	
			11HA	Nitrogen Oxides-(HR)	50-2500ppm	1	1	
Nitromethane	CH <sub>3</sub> NO <sub>2</sub>	100ppm	52	Nitroparaffins(PYR)	5-300ppm	1	1.5	
Nitroparaffins	See separate entries							
1-Nitropropane	CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> NO <sub>2</sub>	25ppm	52	Nitroparaffins(PYR)	4.2-252ppm	1	1.5	
2-Nitropropane	(CH <sub>3</sub> ) <sub>2</sub> CHNO <sub>2</sub>	10ppm	52	Nitroparaffins(PYR)	3.7-222ppm	1	1.5	
Nitrous Oxide	N <sub>2</sub> O	50ppm	52	Nitroparaffins(PYR)	50-1000ppm	4	1.5	
n-Nonane	CH <sub>3</sub> (CH <sub>2</sub> ) <sub>7</sub> CH <sub>3</sub>	200ppm	105	Hydrocarbons, High Class	130-3900ppm	1-2	2	
Octane	C <sub>8</sub> H <sub>18</sub>	300ppm	105	Hydrocarbons, High Class	100-3000ppm	1-2	2	
Olefins (as propylene)	Varied	—	100A	L.P. Gas	0.02 to 8%	1	3	
Organic Gas	See Polytec							
Oxygen	O <sub>2</sub>	—	+31	Oxygen	6-24%	1/2	2	
Ozone	O <sub>3</sub>	0.1ppm	18L	Ozone-(LR)	0.025-3ppm	1-10	3	✓
			18M	Ozone-(MR)	4-400ppm	1/2-5	2	
Pentachloroethane	CHCl <sub>2</sub> CCl <sub>2</sub>	—	*133L	Perchloroethylene-(LR)	55-310ppm	1	2	
1,2-Pentadiene	CH <sub>2</sub> CHCHCHCHCl <sub>3</sub>	—	174	Butadiene	250-4000ppm	1	3	
			174L	Butadiene(LR)	85-850ppm	4	2	
Pentamethylene Diamine	NH <sub>2</sub> (CH <sub>2</sub> ) <sub>5</sub> NH <sub>2</sub>	—	180	Amines	0.5-30ppm	1/2-2	3	
Pentane	C <sub>5</sub> H <sub>12</sub>	600ppm	104	n-Butane	110-1600ppm	1	3	
			105	Hydrocarbons, High Class	90-2701ppm	1-2	2	
Pentenenitrile	CH <sub>3</sub> CH <sub>2</sub> CHCHCN	—	193	Pentenenitrile	0.5-15ppm	2-4	1.5	
n-Pentyl Acetate	See n-Amyl Acetate							
Peracetic Acid	CH <sub>3</sub> COOH	—	81	Acetic Acid	1-80ppm	1/2-2	3	
Perchloroethylene	CCl <sub>2</sub> CCl <sub>2</sub>	—	*133L	Perchloroethylene-(LR)	0.5-37.5ppm	1/2-2	2	
			*133M	Perchloroethylene-(MR)	2-250ppm	1/2-2	2	
			132Ha	Trichloroethylene-(HR)	20-1300ppm	1/2-2	2	
Petroleum Benzene	Hydrocarbon Mixture	—	106	Hydrocarbons, Petroleum	0.5-28mg/L	1/2-2	3	
Petroleum Ether	Hydrocarbon Mixture	—	161	Ethyl Ether	80-2000mg/m <sub>3</sub>	1	3	
			106	Hydrocarbons, Petroleum	0.5-28mg/L	1/2-2	3	
Petroleum Naptha	Hydrocarbon Mixture	—	106	Hydrocarbons, Petroleum	0.5-28mg/L	1/2-2	3	
Phenol	C <sub>6</sub> H <sub>5</sub> OH	5ppm	*60	Phenol	0.4-62.5ppm	1-4	2	
Phosgene	COCl <sub>2</sub>	0.1ppm	*16	Phosgene	0.05-20ppm	1-10	1	
Phosphine	PH <sub>3</sub>	0.3ppm	7J	Phosphine-(HR)	0.00025-0.1% (2.5-1000ppm)	1/2-10	3	
			7	Phosphine	2.5-100ppm	1-4	3	
			7L	Phosphine-(LR)	0.15-5ppm	5-10	3	
			7La	Phosphine-(LR)	0.05-9.5ppm	1-10	2	✓
Phosphine in Acetylene	See Phosphine #7, #7J							
4-Picoline	See 4-Methyl Pyridine							
Piperlyane	See 1,3-Pentadiene							
Polytec	Varied, Hydrocarbons	—	107	Polytec	Qualitative	3	3	
Polytec II	SO <sub>2</sub> ,H <sub>2</sub> S,CO	—	25	Polytec II	Qualitative	2	2	
Polytec III	NH <sub>3</sub> ,H <sub>2</sub> S Hydrocarbons	—	26	Polytec III	Qualitative	1	2	

GAS OR VAPOR TO BE MEASURED	CHEMICAL FORMULA	1) TLV-TWA (ACGIH)	2) TUBE NO.	3) DETECTOR TUBE TO BE USED	MEASURABLE CONCENTRATION RANGE	4) PUMP STROKES TAKEN	5) SHELF LIFE (YEAR)	6) SEI TUBE
Propane	C <sub>3</sub> H <sub>8</sub>	—	100B +103	Propane (7) (9) Hydrocarbons, Low Class	0.1-2% 0.05-2.4%	20ml/20min 1/2-2	3 2	
1,2-Propanediol	See 1,2-Propylene Glyco							
Propionaldehyde	C <sub>2</sub> H <sub>5</sub> CHO	—	151L	Acetone-(LR)	25-1400ppm	2	2	
Propionic Acid	CH <sub>3</sub> CH <sub>2</sub> CO <sub>2</sub> H	10ppm	81	Acetic Acid	1.5-150ppm	1/2-2	3	
Propionic Aldehyde	See Propionaldehyde							
Propionitrile (Ethyl Cyanide)	CH <sub>3</sub> CH <sub>2</sub> CN	5.mg/m <sub>3</sub>	191	Acrylonitrile	100-1000ppm	2-4	2	
n-Propyl Acetate	CH <sub>3</sub> COOC <sub>3</sub> H <sub>7</sub>	200ppm	151 145	Acetone n-Propyl Acetate	0.06-0.9% 20-500ppm	2 1-10	3 3	
n-Propyl Alcohol	C <sub>3</sub> H <sub>7</sub> OH	200ppm	112 113 113	Ethyl Alcohol (Ethanol) Isopropyl Alcohol Isopropyl Alcohol-(LR)	0.02-0.8% 0.55-2.65% 80-800ppm	2 1 1	3 3 2	
Propyl Aldehyde	See Propionic Aldehyde							
Propyl Amine	C <sub>3</sub> H <sub>7</sub> NH <sub>2</sub>	—	180	Amines	1-60ppm	1/2-2	3	
Propyl Cyanide	See Butyronitrile							
Propylene	C <sub>3</sub> H <sub>6</sub>	—	100A	L.P. Gas (Propylene)	0.02-0.8%	1	3	
Propylene Dichloride	See 1,2-Dichloropropane							
1,2- Propylene Glycol	CH <sub>3</sub> CHOCH <sub>2</sub> CH <sub>2</sub> OH	—	165	Ethylene Glycol	10-85ppm	1-2	2	
Propyleneimine	C <sub>3</sub> H <sub>7</sub> N	2ppm	180	Amines	1-60ppm	1/2-2	3	
Propylene Oxide	C <sub>3</sub> H <sub>6</sub> O	20ppm	163 163L	Ethylene Oxide Ethylene Oxide-(LR)	0.3-3.6% 0.4-100	1 2-4	3 1	
n-Propyl Mercaptan	C <sub>3</sub> H <sub>7</sub> SH	—	70	Mercaptans	2-540ppm	1-10	3	
Pyridine	C <sub>5</sub> H <sub>5</sub> N	5ppm	182	Pyridine	0.2-35ppm	1/2-2	3	
Refrigerants	See Fluorochlorocarbons							
Smoke Tubes	—	—	501	For use in Air Flow Indicator Kit & Qualitative Respiratory Fit Testing (9)				
Stoddard Solvent	Hydrocarbon Mixture	100ppm (575mg/m <sub>3</sub> )	128	Stoddard Solvent	100-8000mg/m <sub>3</sub>	1	3	
Styrene (Monostyrene)	C <sub>6</sub> H <sub>5</sub> CHCH <sub>2</sub>	50ppm	124 124L	Styrene Styrene-(LR)	10-1000ppm 2-100ppm	1/2-2 1-4	3 3	
Sulfur Dioxide (See also Hydrogen Sulfide/Sulfur Dioxide)	SO <sub>2</sub>	2ppm	5H 5M 5L 5La 5Lb 5Lc	Sulfur Dioxide-(HR) Sulfur Dioxide-(MR) Sulfur Dioxide-(LR) Sulfur Dioxide-(LR) Sulfur Dioxide-(LR) Sulfur Dioxide in Carbon Dioxide-(LR)	0.05-8.0% 20-3600ppm 1.25-200ppm 0.5-60ppm 0.05-10ppm 0.1-26ppm	1/2-10 1/2-4 1/2-4 1-8 1-8 1-4	3 3 3 3 3 2	
1,1,2-tetrabromoethane	CHBr <sub>2</sub> CHBr <sub>2</sub>	—	+135	Methylchloroform(LR)	0.5-9ppm	3	2	
Tetrachlorodifluoroethane (Fluorochlorocarbon 112)	CCl <sub>2</sub> FCCl <sub>2</sub> F	500ppm	+51H  +51  +51L	Fluorochlorocarbons (HR)(PYR) Fluorochlorocarbons (PYR) Fluorochlorocarbons (LR)(PYR)	125-1000ppm 7-280ppm 1-60ppm	1 1 1-2	2 2 2	
1,1,2,2-Tetrachloroethane	Cl <sub>2</sub> CHCHCl <sub>2</sub>	1ppm	*+131La +131L	Vinyl Chloride-(LR) Vinyl Chloride(LR)	3-75ppm 4-80ppm	4 4	2 2	
Tetrachloroethylene	See Perachloroethylene							
Tetrachloromethane	See Carbon Tetrachloride							
1,1,2,2-Tetrafluoroethane (Fluorochlorocarbon HCFC 134C)	CH <sub>2</sub> FCF <sub>3</sub>	—	81	Acetic Acid(PYR)	600-12,000ppm	1	2	
Tetrahydrofuran	C <sub>4</sub> H <sub>8</sub> O	200ppm	161 159	Ethyl Ether Tetrahydrofuran	0.01-0.8% 20-800ppm	2-5 1-2	3 2	
Tetramethylenediamine	NH <sub>2</sub> (CH <sub>2</sub> ) <sub>4</sub> NH <sub>2</sub>	—	180	Amines	0.5-30ppm	1/2-2	3	
Thioglycol	See 2-Mercaptoethanol							
Thionyl Chloride	SOCl <sub>2</sub>	1ppm	5La	Sulfur Dioxide-(LR)	1-25ppm	2	3	
Toluene	C <sub>6</sub> H <sub>5</sub> CH <sub>3</sub>	100ppm	161 122 122L	Ethyl Ether (Ether) Toluene Toluene-(LR)	0.02-0.85% 5-600ppm 1-100ppm	1 1/2-2 1-4	3 3 3	√
O-Toluidine	CH <sub>3</sub> C <sub>6</sub> H <sub>4</sub> NH <sub>2</sub>	2ppm	*181	Aniline	2.5-35ppm	3	1	
Tribromoethane	See Bromoform							
Trichloroacetic Acid	CCl <sub>3</sub> COOH	1ppm	15L	Nitric Acid(LR)	1-37.5ppm	1	3	

