

TABLE 3. MAXIMUM ALLOWABLE CONCENTRATION OF GASES AND VAPORS

SUBSTANCE	ASA STANDARDS M.A.C. ppm	THRESHOLD LIMIT VALUES A.C.G.I.H.* 1949		
		ppm	Gm/cu m or Oz/1000 cu ft	Oz/1000 cu ft ^b
Acetaldehyde.....		200	0.36	0.43
Acetic acids.....		10	0.02554	0.02
Acetic anhydride.....		5	0.02085	0.02
Acetone.....		500	1.2045	1.21
Acrolein.....		0.5	0.1145	0.013
Acrylonitrile.....		20	0.04338	0.05
Ammonia.....		250		
Amyl acetate.....		200	1.064	1.16
iso-Amyl alcohol.....		100	0.36	0.41
Aniline.....		5	0.019	0.02
Arsine.....		0.05		
Benzene (benzol).....	100	35	0.11303	0.12
Bromine.....			0.00653	0.03
1,3-Butadiene.....		1000	2.210	2.3
n-Butanol.....		50	0.1515	0.18
2-Butanone.....		250	0.735	0.88
n-Butyl acetate.....		200	0.948	1.04
Butyl "cellosolve".....		200	0.986	1.02
Carbon dioxide.....		5000		
Carbon disulfide.....	20	20	0.0622	0.05
Carbon monoxide.....	100	100		
Carbon tetrachloride.....		50	0.313	0.19
"Cellosolve".....		200	0.736	0.76
"Cellosolve" acetate.....		100	0.54	0.53
Chlorine.....		1		
2-Chlorobutadiene.....		25	0.0905	0.09
Chloroform.....		100	0.488	0.31
1-Chloro-1-nitropropane.....		20	0.101	0.08
Cyclohexane.....		400	1.375	1.69
Cyclohexanol.....		100	0.409	0.42
Cyclohexanone.....		100	0.401	0.41
Cyclohexene.....		400	1.34	1.58
Cyclopropane (propene).....		400	0.6875	0.91
o-Dichlorobenzene.....		50	0.3005	0.24
Dichlorodifluoromethane.....		1000	4.94	3.18
1,1-Dichloroethane.....		100	0.405	0.33
1,2-Dichloroethane (ethylene dichloride).....		75	0.3038	0.23
1,2-Dichloroethylene.....		200	0.794	0.59
Dichloroethyl ether.....		15	0.0878	0.08
Dichloromethane.....		500	1.74	1.25
Dichloromono-fluoromethane.....		1000	4.20	2.83
1,1-Dichloro-1-nitroethane.....		10	0.0589	0.4
1,2-Dichloropropane (propylene dichloride).....		75	0.3265	0.29
Dichlorotetrafluoroethane.....		1000	6.98	4.36
Dimethylaniline.....		5	0.02475	0.02
Dimethylsulfate.....		1	0.00515	0.003
Dioxane.....		100	0.36	0.33
Ethyl acetate.....		400	1.44	1.52
Ethyl alcohol.....		1000	1.881	2.2
Ethyl benzene.....		200	0.868	0.96
Ethyl bromide.....		200	0.829	0.59
Ethyl chloride.....		1000	2.84	2.76
Ethylene chlorhydrin.....		5	0.01845	0.015
Ethylene oxide.....		100	0.18	0.09
Ethyl ether.....		400	1.212	1.67
Ethyl formate.....		100	0.303	0.315
Ethyl silicate.....		100	0.851	0.87
Formaldehyde.....	10	5	0.006135	0.005
Gasoline.....		500	2.045	2.89
Heptane.....		500	2.05	2.87
Hexane.....		500	1.76	2.54
Hydrogen chloride.....		5	0.00746	0.004
Hydrogen cyanide.....		10	0.01104	0.015
Hydrogen fluoride.....		3	0.00245	0.003

TABLE 3. MAXIMUM ALLOWABLE CONCENTRATION OF GASES AND VAPORS (Concluded)

SUBSTANCE	ASA STANDARDS M.A.C. ppm	THRESHOLD LIMIT VALUES A.C.G.I.H.* 1949		
		ppm	Gm/cu m or Oz/1000 cu ft	Oz/1000 cu ft ^b
Hydrogen selenide.....	20	0.05		
Hydrogen sulfide.....		20		
Iodine.....		1	0.01039	0.0002
Isophorone.....		25	0.141	0.15
Mesityl oxide.....		50	0.2005	0.22
Methanol.....	200	200	0.2612	0.32
Methyl acetate.....		200	0.606	0.62
Methyl bromide.....		20	0.0778	0.04
Methyl butanone.....		100	0.352	0.41
Methyl "cellosolve".....		25	0.7775	0.078
Methyl "cellosolve" acetate.....	100	25	0.1208	0.11
Methyl chloride.....		100	0.2086	0.22
Methyl cyclohexane.....		500	2.005	2.44
Methyl cyclohexanol.....		100	0.466	0.49
Methyl cyclohexanone.....		100	0.458	0.48
Methyl formate.....		100	0.2554	0.25
Methyl iso-butyl ketone.....		100	0.409	0.49
Monochlorobenzene.....		75	0.3465	0.3
Monofluorotrichloromethane.....		1000	5.61	3.59
Mononitrotoluene.....		5	0.028	0.23
Naphtha (coal tar).....		200	0.638	0.71
Naphtha (petroleum).....		500	1.945	2.6
Nickel carbonyl.....		1	0.00697	0.006
Nitrobenzene.....		1	0.00503	0.004
Nitroethane.....		100	0.307	0.275
Nitrogen oxides (other than nitrous oxide).....	25	25		
Nitroglycerine.....		0.5	0.00494	0.003
Nitromethane.....		100	0.2495	0.21
2-Nitropropane.....		50	0.182	0.17
Octane.....		500	2.33	3.17
Ozone.....		1	2.94	4.5
Pentane.....		1000	0.704	0.82
Pentanone (methyl propanone).....		200		
Phosgene.....		1		
Phosphine.....		0.05		
Phosphorus trichloride.....		0.5	0.00281	0.0018
iso-Propanol.....		400	1.022	1.22
Propyl acetate.....		200	0.834	0.885
iso-Propyl ether.....		500	2.085	2.75
Stibine.....		0.1		
Stoddard solvent.....	400	500	2.845	3.4
Styrene monomer.....		200	0.85	0.89
Sulfur chloride.....		1	0.00552	0.003
Sulfur dioxide.....		10		
1,1,2,2-Tetrachloroethane.....		5	0.343	0.02
Tetrachloroethylene.....		100	0.679	0.405
Toluene.....	200	200	0.752	0.83
Toluidine.....		5	0.0219	0.02
Trichloroethylene.....	200	100	0.536	0.35
Turpentine.....		100	0.556	0.58
Vinyl chloride (chloroethane).....		500	1.28	1.33
Xylene.....	200	200	0.868	0.96

* A.C.G.I.H. = American Conference of Governmental Industrial Hygienists.

^b Fluid ounces (at 20 C) of chemical in 1000 cu ft.

apply a reasonable safety factor to the ventilation estimate without consideration of the concentrations of gases or vapors that approach the danger point. Safety engineers prefer to limit the concentration to $\frac{1}{2}$ or $\frac{1}{3}$ of the lower explosive limit, and this fact should be given full weight in determining the capacity and design of ventilating equipment. Rarely should