4k. Vapor Pressure

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Tables 4k-1 to 4k-4, Vapor Pressures of Inorganic and Organic Compounds, were compiled by the author at The Dow Chemical Company and were published in *Ind. Eng. Chem.* **39**(4), 517 (April, 1947), and **39**(12), 1684 (December, 1947). A much more extensive list and references can be found in this journal. The numbers represent temperatures in degrees Celsius at which the vapor pressure is the value appearing at the top of the column.

Symbols

d	decomposes	M.P.	melting point
d	dextrorotatory	P_c	critical pressure
dl	inactive (50% *d* and 50% *l*)	p	polymerizes
e	explodes	s	solid
l	levorotatory	T_c	critical temperature

TABLE 4k-1. VAPOR PRESSURE OF INORGANIC COMPOUNDS—PRESSURES LESS THAN 1 ATMOSPHERE

Formula	Name	Temp., °C										M.P.
		1 mm	5 mm	10 mm	20 mm	40 mm	60 mm	100 mm	200 mm	400 mm	760 mm	
AlB_2H_{12}	Aluminum borohydride	s	− 52.2	− 42.9	− 32.5	− 20.9	− 13.4	− 3.9	+ 11.2	28.1	45.9	− 64.5
$AlBr_3$	Aluminum bromide	81.3s	103.8	118.0	134.0	150.6	161.7	176.1	199.8	227.0	256.3	97.5
$AlCl_3$	Aluminum chloride	100.0s	116.4s	123.8s	131.8s	139.9s	145.4s	152.0s	161.8s	171.6s	180.2s	192.4
AlF_3	Aluminum fluoride	1238	1298	1324	1350	1378	1398	1422	1457	1496	1537	1040
AlI_3	Aluminum iodide	178.0s	207.7	225.8	244.2	265.0	277.8	294.5	322.0	354.0	385.5	
Al_2O_3	Aluminum oxide	2148	2306	2385	2465	2549	2599	2665	2766	2874	2977	2050
NH_3	Ammonia	−109.1s	− 97.5s	− 91.9s	− 85.8s	− 79.2s	− 74.3	− 68.4	− 57.0	− 45.4	− 33.6	− 77.7
ND_3	Deutero ammonia	s	s	s	s	s	− 74.0	− 67.4	− 57.0	− 45.4	− 33.4	− 74.0
NH_4N_3	Ammonium azide	29.2s	49.4s	59.2s	69.4s	80.1s	86.7s	95.2s	107.7s	120.4s	133.8s	
NH_4Br	Ammonium bromide	198.3s	234.5s	252.0s	270.6s	290.0s	303.8s	320.0s	345.3s	370.9s	396.0s	
$NH_4CO_2NH_2$	Ammonium carbamate	− 26.1s	− 10.4s	− 2.9s	+ 5.3s	14.0s	19.6s	26.7s	37.2s	48.0s	58.3s	
NH_4Cl	Ammonium chloride	160.4s	193.8s	209.8s	226.1s	245.0s	256.2s	271.5s	293.2s	316.5s	337.8s	520
NH_4HS	Ammonium hydrogen sulfide	− 51.1	− 36.0	− 28.7	− 20.8	− 12.3	− 7.0	0.0	+ 10.5	21.8	33.3	
NH_4I	Ammonium iodide	210.9s	247.0s	263.5s	282.8s	302.8s	316.0s	331.8s	355.8s	381.0s	404.9s	
NH_4CN	Ammonium cyanide	− 50.6s	− 35.7s	− 28.6s	− 20.9s	− 12.6s	− 7.4s	− 0.5s	+ 9.6s	20.5s	31.7s	36
$SbBr_3$	Antimony tribromide	93.9	126.0	142.7	158.3	177.4	188.1	203.5	225.7	250.2	275.0	96.6
$SbCl_3$	Antimony trichloride	49.2s	71.4s	85.2	100.6	117.8	128.3	143.3	165.9	192.2	219.0	73.4
$SbCl_5$	Antimony pentachloride	22.7	48.6	61.8	75.8	91.0	101.0	114.1	d	.....	.....	2.8
SbI_3	Antimony triiodide	163.6s	203.8	223.5	244.8	267.8	282.5	303.5	333.8	368.5	401.0	167
Sb_2O_3	Antimony trioxide	574s	626s	666	729	812	873	957	1085	1242	1425	656
$AsBr_3$	Arsenic tribromide	41.8	70.6	85.2	101.3	118.7	130.0	145.2	167.7	193.6	220.0	
$AsCl_3$	Arsenic trichloride	− 11.4	+ 11.4	+ 23.5	36.0	50.0	58.7	70.9	89.2	109.7	130.4	− 18
AsF_3	Arsenic trifluoride	s	s	s	s	− 2.5	+ 4.2	13.2	26.7	41.4	56.3	− 5.9
AsF_5	Arsenic pentafluoride	−117.9s	−108.0s	−103.1s	− 98.0s	− 92.4s	− 88.5s	− 84.3s	− 75.5	− 64.0	− 52.8	− 79.8
AsH_3	Arsenic hydride (arsine)	−142.6s	−130.8s	−124.7s	−117.7s	−110.2	−104.3	− 98.0	− 87.2	− 75.2	− 62.1	−116.3
As_2O_3	Arsenic trioxide	212.5s	242.6s	259.7s	279.2s	299.2s	310.3s	332.5	370.0	412.2	457.2	312.8
BeB_2H_8	Beryllium borohydride	+ 1.0s	19.8s	28.1s	36.8s	46.2s	51.7s	58.6s	69.0s	79.7s	90.0s	123
$BeBr_2$	Beryllium bromide	289s	325s	342s	361s	379s	390s	405s	427s	451s	474s	490
$BeCl_2$	Beryllium chloride	291s	328s	346s	365s	384s	395s	411	435	461	487	405
BeI_2	Beryllium iodide	283s	322s	341s	361s	382s	394s	411s	435s	461s	487s	488
$BiBr_3$	Bismuth tribromide	s	261	282	305	327	340	360	392	425	461	218
$BiCl_3$	Bismuth trichloride	s	242	264	287	311	324	343	372	405	441	230
BH_3CO	Borine carbonyl	−139.2s	−127.3	−121.1	−114.1	−106.6	−101.9	− 95.3	− 85.5	− 74.8	− 64.0	−137.0
BBr_3	Boron tribromide	− 41.4	− 20.4	− 10.1	+ 1.5	14.0	22.1	33.5	50.3	70.0	91.7	− 45
BCl_3	Boron trichloride	− 91.5	− 75.2	− 66.9	− 57.9	− 47.8	− 41.2	− 32.4	− 18.9	− 3.6	+ 12.7	−107
BF_3	Boron trifluoride	−154.6s	−145.4s	−141.3s	−136.4s	−131.0s	−127.6s	−123.0	−115.9	−108.3	−110.7	−126.8

B_2H_5	**Dihydrodiborane**	−159.7	−149.5	−144.3	−138.5	−131.6	−127.2	−120.9	−111.2	− 99.6	− 86.5	−169
B_2BrH_5	Diborane hydrobromide	− 93.3	− 75.3	− 66.3	− 56.4	− 45.4	− 38.2	− 29.0	− 15.4	0.0	+ 16.3	−104.2
$B_3H_6N_3$	Triborine triamine	63.0$_s$	− 45.0	− 35.3	− 25.0	− 13.2	− 5.8	+ 4.0	18.5	34.3	50.6	− 58.2
B_4H_{10}	Tetrahydrotetraborane	− 90.9	− 73.1	− 64.3	− 54.8	− 44.3	− 37.4	− 28.1	− 14.0	+ 0.8	16.1	−119.9
B_5H_9	Dihydropentaborane	s	− 40.4	− 30.7	− 20.0	− 8.0	− 0.4	+ 9.6	24.6	40.8	58.1	− 47.0
B_5H_{11}	Tetrahydropentaborane	− 50.2	− 29.9	− 19.9	− 9.2	+ 2.7	10.2	20.1	34.8	51.2	67.0	
$B_{10}H_{14}$	Dihydrodecaborane	60.0$_s$	80.8$_s$	90.2$_s$	100.0	117.4	127.8	142.3	163.8	d	.....	99.6
BrF_5	Bromine pentafluoride	− 69.3$_s$	− 51.0	− 41.9	− 32.0	− 21.0	− 14.0	− 4.5	+ 9.9	25.7	40.0	− 61.4
$CdCl_2$	Cadmium chloride	s	618	656	695	736	762	797	847	908	967	568
CdF_2	Cadmium fluoride	1385	1504	1559	1617	1673	1709	1759	1834	1924	2024	520
CdI_2	Cadmium iodide	416	481	512	546	584	608	640	688	742	796	385
CdO	Cadmium oxide	1000$_s$	1100$_s$	1149$_s$	1200$_s$	1257$_s$	1295$_s$	1341$_s$	1409$_s$	1484$_s$	1559$_s$	
CBr_4	Carbon tetrabromide	s	s	s	s	96.3	106.3	119.7	139.7	163.5	189.5	90.1
CCl_4	Carbon tetrachloride	− 50.0$_s$	− 30.0$_s$	− 19.6	− 8.2	+ 4.3	12.3	23.0	38.3	57.8	76.7	− 22.6
CF_4	Carbon tetrafluoride	−184.6$_s$	−174.1	−169.3	−164.3	−158.8	−155.4	−150.7	−143.6	−135.5	−127.7	−183.7
C_3O_2	Carbon suboxide	− 94.8	− 79.0	− 71.0	− 62.2	− 52.0	− 45.5	− 36.9	− 23.3	− 8.9	+ 6.3	−107
CS_2	Carbon disulfide	− 73.8	− 54.3	− 44.7	− 34.3	− 22.5	− 15.3	− 5.1	+ 10.4	28.0	46.5	−110.8
C_3S_2	Carbon subsulfide	14.0	41.2	54.9	69.3	85.6	96.0	109.9	130.8$_p$	p	.....	+ 0.4
CSSe	Carbon selenosulfide	− 47.3	− 26.5	− 16.0	− 4.4	+ 8.6	17.0	28.3	45.7	65.2	85.6	− 75.2
CO	Carbon monoxide	−222.0$_s$	−217.2$_s$	−215.0$_s$	−212.8$_s$	−210.0$_s$	−208.1$_s$	−205.7$_s$	−102.3	−196.3	−191.3	−205.0
$COCl_2$	Carbonyl chloride	− 92.9	− 77.0	− 69.3	− 60.3	− 50.3	− 44.0	− 35.6	− 22.3	− 7.6	+ 8.3	−104
COSe	Carbonyl selenide	−117.1	−102.3	− 95.0	− 86.3	− 76.4	− 70.2	− 61.7	− 49.8	− 35.6	− 21.9	
COS	Carbonyl sulfide	−132.4	−119.8	−113.3	−106.0	− 98.3	− 93.0	− 85.9	− 75.0	− 62.7	− 49.9	−138.8
CCl_3NO_2	Chloropicrin	− 25.5	− 3.3	+ 7.8	20.0	33.8	42.3	53.8	71.8	91.8	111.9	− 64
$CClF_3$	Chlorotrifluoromethane	−149.5	−139.2	−134.1	−128.5	−121.9	−117.3	−111.7	−102.5	− 92.7	− 81.2	
C_2N_2	Cyanogen	− 95.8$_s$	− 83.2$_s$	− 76.8$_s$	− 70.1$_s$	− 62.7$_s$	− 57.9$_s$	− 51.8$_s$	− 42.6$_s$	− 33.0	− 21.0	− 34.4
CBrN	Cyanogen bromide	− 35.7$_s$	− 18.3$_s$	− 10.0$_s$	− 1.0$_s$	+ 8.6$_s$	14.7$_s$	22.6$_s$	33.8$_s$	46.0$_s$	61.5	58
CClN	Cyanogen chloride	− 76.7$_s$	− 61.4$_s$	− 53.8$_s$	− 46.1$_s$	− 37.5$_s$	− 32.1$_s$	− 24.9$_s$	− 14.1$_s$	− 2.3	+ 13.1	− 6.5
CFN	Cyanogen fluoride	−134.4$_s$	−123.8$_s$	−118.5$_s$	−112.8$_s$	−106.4$_s$	−102.3$_s$	− 97.0$_s$	− 89.2$_s$	− 80.5$_s$	− 72.6$_s$	
CIN	Cyanogen iodide	25.2$_s$	47.2$_s$	57.7$_s$	68.6$_s$	80.3$_s$	88.0$_s$	97.6$_s$	111.5$_s$	126.1$_s$	141.1$_s$	
CDN	Deuterocyanic acid	− 68.9$_s$	− 54.0$_s$	− 46.7$_s$	− 38.8$_s$	− 30.1$_s$	− 24.7$_s$	− 17.5$_s$	− 5.4$_s$	+ 10.0	26.2	− 12
CCl_2F_2	Dichlorodifluoromethane	−118.5	−104.6	− 97.8	− 90.1	− 81.6	− 76.1	− 68.6	− 57.0	− 43.9	− 29.8	
$CHCl_2F$	Dichlorofluoromethane	− 91.3	− 75.5	− 67.5	− 58.6	− 48.8	− 42.6	− 33.9	− 20.9	− 6.2	+ 8.9	−135
$CHClF_2$	Chlorodifluoromethane	−122.8	−110.2	−103.7	− 96.5	− 88.6	− 83.4	− 76.4	− 65.8	− 53.6	− 40.8	−160
CCl_3F	Trichlorofluoromethane	− 84.3	− 67.6	− 59.0	− 49.7	− 39.0	− 32.3	− 23.0	− 9.1	+ 6.8	23.7	
CsBr	Cesium bromide	748	838	887	938	993	1026	1072	1140	1221	1300	636
CsCl	Cesium chloride	744	837	884	934	989	1023	1069	1139	1217	1300	646
CsF	Cesium fluoride	712	798	844	893	947	980	1025	1092	1170	1251	683
CsI	Cesium iodide	738	828	873	923	976	1009	1055	1124	1200	1280	621
ClF	Chlorine fluoride	s	−143.4	−139.0	−134.3	−128.8	−125.3	−120.8	−114.4	−107.0	−100.5	−145
ClF_3	Chlorine trifluoride	s	− 80.4	− 71.8	− 62.3	− 51.3	− 44.1	− 34.7	− 20.7	− 4.9	+ 11.5	− 83
Cl_2O	Chlorine monoxide	− 98.5	− 81.6	− 73.1	− 64.3	− 54.3	− 48.0	− 39.4	− 26.5	− 12.5	+ 2.2	−116
ClO_2	Chlorine dioxide	s	s	− 59.0	− 51.2	− 42.8	− 37.2	− 29.4	− 17.8	− 4.0	+ 11.1	− 59
Cl_2O_5	Dichlorine hexoxide	+ 7.5	30.5	42.0	54.3	68.0	76.3	87.7	104.7	123.8	142.0	3.5
Cl_2O_7	Chlorine heptoxide	− 45.3	− 23.8	− 13.2	− 2.1	+ 10.3	18.2	29.1	44.6	62.2	78.8	− 91

TABLE 4k-1. VAPOR PRESSURE OF INORGANIC COMPOUNDS—PRESSURES LESS THAN 1 ATMOSPHERE (*Continued*)

Formula	Name	Temp., °C										M.P.
		1 mm	5 mm	10 mm	20 mm	40 mm	60 mm	100 mm	200 mm	400 mm	760 mm	
HSO_3Cl	Chlorosulfonic acid	32.0	53.5	64.0	75.3	87.6	95.2	105.3	120.0	136.1	151.0d	− 80
$Cr(CO)_6$	Chromium carbonyl	36.0	58.0	68.3	79.5	91.2	98.3	108.0	121.8	137.2	151.0	
CrO_2Cl_2	Chromyl chloride	− 18.4	+ 3.2	13.8	25.7	38.5	46.7	58.0	75.2	95.2	117.1	
$COCl_2$	Cobaltous chloride	s	s	s	s	770	801	843	904	974	1050	735
$Co(CO)_3NO$	Cobalt nitrosyl tricarbonyl	s	s	s	− 1.3	+ 11.0	18.5	29.0	44.4	62.0	80.0	− 11
CbF_5	Columbium pentafluoride	s	s	86.3	103.0	121.5	133.2	148.5	172.2	198.0	225.0	75.5
Cu_2Br_2	Cuprous bromide	s	s	718	777	844	887	951	1052	1189	1355	504
Cu_2Cl_2	Cuprous chloride	572	666	702	766	838	886	960	1077	1249	1490	422
Cu_2I_2	Cuprous iodide	546	645	656	716	786	836	907	1018	1158	1336	605
$FeCl_3$	Ferric chloride	s	610	700	737	779	805	842	897	961	1026	
$FeCl_2$	Ferrous chloride	194.0s	221.8s	235.5s	246.0s	256.8s	263.7s	272.5s	285.0s	298.0s	319.0	304
F_2O	Fluorine monoxide	.....	.....	700	737	779	805	842	897	961	1026	
$GaCl_3$	Gallium trichloride	−196.1	−186.6	−182.3	−177.8	−173.0	−170.0	−165.8	−159.0	−151.9	−144.6	−223.9
GeH_4	Germanium hydride	48.0s	67.8s	76.5s	91.3	107.5	118.0	132.0	152.8	176.3	200.0	77.0
$GeBr$	Germanium bromide	−163.0	−151.0	−145.3	−139.2	−131.6	−126.7	−120.3	−111.2	−100.2	− 88.9	−165
$GeCl_4$	Germanium chloride	s	43.3	56.8	71.8	88.1	98.8	113.2	135.4	161.6	189.0	26.1
$GeHCl_3$	Trichlorogermane	− 45.0	− 24.9	− 15.0	− 4.1	+ 8.0	16.2	27.5	44.4	63.8	84.0	− 49.5
$Ge(CH_3)_4$	Tetramethylgermanium	− 41.3	− 22.3	− 13.0	− 3.0	+ 8.8	16.2	26.5	41.6	58.3d	75.0d	− 71.1
Ge_2H_6	Digermane	− 73.2	− 54.6	− 45.2	− 35.0	− 23.4	− 16.2	− 6.3	+ 8.8	26.0	44.0	− 88
Ge_3H_8	Trigermane	− 88.7	− 69.8	− 60.1	− 49.9	− 38.2	− 30.7	− 20.3	− 4.7	+ 13.3	31.5	−109
HD	Hydrogen deuteride	− 36.9	− 12.8	− 0.9	+ 11.8	26.3	35.5	47.9	67.0	88.6	110.8	−105.6
HBr	Hydrogen bromide	.....	.....	−259.8	−259.1	−258.2	−257.6	−156.6	−255.0	−253.0	−251.0	
HCl	Hydrogen chloride	−138.8s	−127.4s	−121.8s	−115.4s	−108.3s	−103.3s	− 97.7s	− 88.1s	− 78.0	− 66.5	− 87.0
HCN	Hydrogen cyanide	−150.8s	−140.7s	−135.6s	−130.0s	−123.8s	−119.5s	−114.0	−105.2	− 95.3	− 84.8	−114.3
HF	Hydrogen fluoride	− 71.0s	− 55.3s	− 47.7s	− 39.7s	− 30.9s	− 25.1s	− 17.8s	− 5.3	+ 10.2	25.9	− 13.2
HI	Hydrogen iodide	s	− 74.7	− 65.8	− 56.0	− 45.0	− 37.9	− 28.2	− 13.2	+ 2.5	19.7	− 83.7
H_2O_2	Hydrogen peroxide	−123.3s	−109.6s	−102.3s	− 94.5s	− 85.6s	− 79.8s	− 72.1s	− 60.3s	− 48.3	− 35.1	− 50.9
H_2Se	Hydrogen selenide	15.3	38.8	50.4	63.3	77.0	85.8	97.9	116.5	137.4d	158.0d	− 0.9
H_2S	Hydrogen sulfide	−115.3s	−103.4s	− 97.9s	− 91.8s	− 84.7s	− 80.2s	− 74.2s	− 65.2s	− 53.6	− 41.1	− 64
H_2S_2	Hydrogen disulfide	−134.3s	−122.4s	−116.3s	−109.7s	−102.3s	− 97.9s	− 91.6s	− 82.3	− 71.8	− 60.4	− 85.5
H_2Te	Hydrogen telluride	− 43.2	− 24.4	− 15.2	− 5.1	+ 6.0	12.8	22.0	35.3	49.6	64.0	− 89.7
NH_2OH	Hydroxylamine	− 96.4s	− 82.4s	− 75.4s	− 67.8s	− 59.1s	− 53.7s	− 45.7s	− 32.4	− 17.2	− 2.0	− 49.0
IF_5	Iodine pentafluoride	s	39.0	47.2	55.8	64.6	70.0	77.5	87.9	99.2	110.0	34.0
IF_7	Iodine heptafluoride	− 15.2s	+ 1.5s	8.5	20.0	32.2	40.0	50.0	65.4	81.2	97.0	8.0
$Fe(CO)_5$	Iron pentacarbonyl	− 87.0s	− 70.7s	− 63.0s	− 54.5s	− 45.3s	− 39.4s	− 31.9s	− 20.7s	− 8.3s	+ 4.0s	5.5
$PbBr_2$	Lead bromide	.....	− 6.5	+ 4.6	16.7	30.3	39.1	50.3	68.0	86.1	105.0	− 21
$PbCl_2$	Lead chloride	513	578	610	646	686	711	745	796	856	914	373
		547	615	648	684	725	750	784	833	893	954	501

PbF_2	Lead fluoride	s	861	904	950	1003	1036	1080	1144	1219	1293	855
PbI_2	Lead iodide	479	540	571	605	644	668	701	750	807	872	402
PbO	Lead oxide	943	1039	1085	1134	1189	1222	1265	1330	1402	1472	890
PbS	Lead sulfide	852s	928s	975s	1005s	1048s	1071s	1108s	1160	1221	1281	1114
LiBr	Lithium bromide	748	840	888	939	994	1023	1076	1147	1226	1310	547
LiCl	Lithium chloride	783	880	932	987	1045	1081	1129	1203	1290	1382	614
LiF	Lithium fluoride	1047	1156	1211	1270	1333	1372	1425	1503	1591	1681	870
LiI	Lithium iodide	723	802	841	883	927	955	993	1049	1110	1171	446
$MgCl_2$	Magnesium chloride	778	877	930	988	1050	1088	1142	1223	1316	1418	712
$MnCl_2$	Manganous chloride	s	736	778	825	879	913	960	1028	1108	1190	650
$HgBr_2$	Mercuric bromide	136.5s	165.3s	179.8s	194.3s	211.5s	221.0s	237.8	262.7	290.0	319.0	237
$HgCl_2$	Mercuric chloride	136.2s	166.0s	180.2s	195.8s	212.5s	222.2s	237.0s	256.5s	275.5s	304.0	277
HgI_2	Mercuric iodide	157.5s	189.2s	204.5s	220.0s	238.2s	249.0s	261.8	291.0	324.2	354.0	259
MoF_6	Molybdenum hexafluoride	− 65.5s	− 49.0s	− 40.8s	− 32.0s	− 22.1s	− 16.2s	− 8.0s	+ 4.1s	17.2	36.0	17
MoO_3	Molybdenum trioxide	734s	785s	814	851	892	917	955	1014	1082	1151	795
$NiCl_2$	Nickel chloride	671s	731s	759s	789s	821s	840s	866s	904s	945s	987s	1001
$Ni(CO)_4$	Nickel carbonyl	s	s	s	s	− 23.0	− 15.9	− 6.0	+ 8.8	25.8	42.5	− 25
NF_3	Nitrogen trifluoride	s	−175.5	−170.7	−165.7	−160.2	−156.5	−152.3	−145.2	−137.4	−129.0	−183.7
NO	Nitric oxide	−184.5s	−180.6s	−178.2s	−175.3s	−171.7s	−168.9s	−166.0s	−162.3s	−156.8s	−151.7	−161
N_2O	Nitrous oxide	−143.4s	−133.4s	−128.7s	−124.0s	−118.3s	−114.9s	−110.3s	−103.6s	− 96.2s	− 88.5	− 90.9
N_2O_4	Nitrogen tetroxide	− 55.6s	− 42.7s	− 36.7s	− 30.4s	− 23.9s	− 19.9s	− 14.7s	− 5.0	+ 8.0	21.0	− 9.3
N_2O_5	Nitrogen pentoxide	− 36.8s	− 23.0s	− 16.7s	− 10.0s	− 2.9s	+ 1.8s	7.4s	15.6s	24.4s	32.4	30
NOCl	Nitrosyl chloride	s	s	s	s	− 60.2	− 54.3	− 46.3	− 34.0	− 20.3	− 6.4	− 64.5
NOF	Nitrosyl fluoride	−132.0	−120.3	−114.3	−107.8	−100.3	− 95.7	− 88.8	− 79.2	− 68.2	− 56.0	−134
NO_2F	Nitroxyl fluoride	−143.7s	−132.1	−126.2	−119.8	−112.8	−108.4	−102.3	− 93.5	− 83.2	− 72.0	−139
OsO_4	Osmium tetroxide (white)	− 5.6s	+ 15.6s	26.0s	37.4s	50.5	59.4	71.5	89.5	109.3	130.0	42
OsO_4	Osmium tetroxide (yellow)	3.2s	22.0s	31.3s	41.0s	51.7s	59.4	71.5	89.5	109.3	130.0	56
O_3	Ozone	−180.4	−168.6	−163.2	−157 2	−150.7	−146.7	−141.0	−132.6	−122.5	−111.1	−251
PBr_3	Phosphorous tribromide	7.8	34.4	47.8	62 4	79.0	89.8	103.6	125.2	149.7	175.3	− 40
PCl_3	Phosphorous trichloride	− 51.6	− 31.5	− 21.3	− 10 2	+ 2.3	10.2	21.0	37.6	56.9	74.2	−111.8
PCl_5	Phosphorous pentachloride	55.5s	74.0s	83.2s	92 5s	102.5s	108.3s	117.0s	131.3s	147.2s	162.0s	
PH_3	Phosphorous hydride (phosphene)	s	s	s	s	−129.4	−125.0	−118.8	−109.4	− 98.3	− 87.5	−132.5
PH_4Br	Phosphonium bromide	− 43.7s	− 28.5s	− 21.2s	− 13.3s	− 5.0s	+ 0.3s	7.4s	17.6s	28.0s	38.3s	
PH_4Cl	Phosphonium chloride	− 91.0s	− 79.6s	− 74.0s	− 68.0s	− 61.5s	− 57.3s	− 52.0s	− 44.0s	− 35.4s	− 27.0s	28.5
PH_4I	Phosphonium iodide	− 25.2s	− 9.0s	− 1.1s	+ 7.3s	16.1s	21.9s	29.3s	39.9s	51.6s	62.3s	—
P_2O_3	Phosphorous trioxide	s	39.7	53.0	67.8	81.0	94.2	108.3	129.0	150.3	173.1	22.5
$POCl_3$	Phosphorous oxychloride	s	s	2.0	13.6	27.3	35.8	47.4	65.0	84.3	105.1	2
P_2O_5	Phosphorous pentoxide (stable form)	384s	424s	442s	462s	481s	493s	510s	532s	556s	591	569
P_2O_5	Phosphorous pentoxide (metastable form)	189	220	236	253	270	280	294	314	336	358	
$PSBr_3$	Phosphorous thiobromide	50.0	72.4	83.6	95.5	108.0	116.0	126.3	141.8	157.8	175.0d	38
$PSCl_3$	Phosphorous thiochloride	− 18.3	+ 4.6	16.1	29.0	42.7	51.8	63.8	82.0	102.3	124.0	− 36.2
KBr	Potassium bromide	795	892	940	994	1050	1087	1137	1212	1297	1383	730

TABLE 4k-1. VAPOR PRESSURE OF INORGANIC COMPOUNDS—PRESSURES LESS THAN 1 ATMOSPHERE (*Continued*)

Formula	Name	Temp., °C										M.P.
		1 mm	5 mm	10 mm	20 mm	40 mm	60 mm	100 mm	200 mm	400 mm	760 mm	
KCl	Potassium chloride	821	919	968	1020	1078	1115	1164	1239	1322	1407	790
KF	Potassium fluoride	885	988	1039	1096	1156	1193	1245	1323	1411	1502	880
KOH	Potassium hydroxide	719	814	863	918	976	1013	1064	1142	1233	1327	380
KI	Potassium iodide	745	840	887	938	995	1030	1080	1152	1238	1324	723
Re_2O_7	Rhenium heptoxide	212.5$_s$	237.5$_s$	248.0$_s$	261.0$_s$	272.0$_s$	280.0$_s$	289.0$_s$	307.0	336.0	362.4	296
RbBr	Rubidium bromide	781	876	923	975	1031	1066	1114	1186	1267	1352	682
RbCl	Rubidium chloride	792	887	937	990	1047	1084	1133	1207	1294	1381	715
RbF	Rubidium fluoride	921	982	1016	1052	1096	1123	1168	1239	1322	1408	760
RbI	Rubidium iodide	748	839	884	935	991	1026	1072	1141	1223	1304	642
SeO_2	Selenium dioxide	157.0$_s$	187.7$_s$	202.5$_s$	217.5$_s$	234.1$_s$	244.6$_s$	258.0$_s$	277.0$_s$	297.7$_s$	317.0$_s$	340
SeF_4	Selenium hexafluoride	−118.6$_s$	−105.2$_s$	− 98.9$_s$	− 92.3$_s$	− 84.7$_s$	− 80.0$_s$	− 73.9$_s$	− 64.8$_s$	− 55.2$_s$	− 45.8$_s$	− 34.7
$SeOCl_2$	Selenium oxychloride	34.8	59.8	71.9	84.2	98.0	106.5	118.0	134.6	151.7	168.0	8.5
$SeCl_4$	Selenium tetrachloride	74.0$_s$	96.3$_s$	107.4$_s$	118.1$_s$	130.1$_s$	137.8$_s$	147.5$_s$	161.0$_s$	176.4$_s$	191.5$_d$	
SiH_4	Silane	−179.3	−168.6	−163.0	−156.9	−150.3	−146 3	−140.5	−131.6	−122.0	−111.5	−185
SiO_2	Silicon dioxide	$_s$	$_s$	1732	1798	1867	1911	1969	2053	2141	2227	1710
$SiCl_4$	Silicon tetrachloride	− 63.4	− 44.1	− 34.4	− 24.0	− 12.1	− 4 8	+ 5.4	21.0	38.4	56.8	− 68.8
SiF_4	Silicon tetrafluoride	−144.0$_s$	−134.8$_s$	−130.4$_s$	−125.9$_s$	−120.8$_s$	−117.5$_s$	−113.3$_s$	−107.2$_s$	−100.7$_s$	− 94.8$_s$	− 90
SiH_3Br	Bromosilane	$_s$	− 85.7	− 77.3	− 68.3	− 57.8	− 51.1	− 42.3	− 28.6	− 13.3	+ 2.4	− 93.9
SiH_3Cl	Chlorosilane	−117.8	−104.3	− 97.7	− 90.1	− 81.8	− 76.0	− 68.5	− 57.0	− 44.5	− 30.4	
SiH_3F	Fluorosilane	−153.0	−145.5	−141.2	−136.3	−130.8	−127.2	−122.4	−115.2	−106.8	− 98.0	
SiH_3I	Iodosilane	$_s$	− 53.0	− 43.7	− 33.4	− 21.8	− 14.3	− 4.4	+ 10.7	27.9	45.4	− 57.0
$SiBrCl_2F$	Bromodichlorofluorosilane	− 86.5	− 68.4	− 59.0	− 48.8	− 37.0	− 29.0	− 19.5	− 3.2	+ 15.4	35.4	−112.3
$SiBrF_3$	Bromotrifluorosilane	$_s$	$_s$	$_s$	$_s$	$_s$	$_s$	$_s$	− 69.8	− 55.9	− 41.7	− 70.5
$SiClF_3$	Chlorotrifluorosilane	−144.0$_s$	−133.0	−127.0	−120.5	−112.8	−108.2	−101.7	− 91.7	− 81.0	− 70.0	−142
$SiBr_2ClF$	Dibromochlorofluorosilane	− 65.2	− 45.5	− 35.6	− 24.5	− 12.0	− 4.7	+ 3.3	23.0	43.0	59.5	− 99.3
$SiBr_2F_2$	Dibromodifluorosilane	$_s$	$_s$	− 66.8	− 57.7	− 47.4	− 41.0	− 31.9	− 18.2	− 2.6	+ 13.7	− 66.9
SiH_2Br_2	Dibromosilane	− 60.9	− 40.0	− 29.4	− 18.0	− 5.2	+ 3.2	14.1	31.6	50.7	70.5	− 70.2
$SiCl_2F_2$	Dichlorodifluorosilane	−124.7	−110.5	−102.9	− 94.5	− 85.0	− 78.6	− 70.3	− 58.0	− 45.0	− 31.8	−139.7
SiH_2F_2	Difluorosilane	−146.7	−136.0	−130.4	−124.3	−117.5	−113.3	−107.3	− 98.3	− 87.6	− 77.8	
SiH_2I_2	Diiodosilane	$_s$	+ 3.8	18.0	34.1	52.5	64.0	79.4	101.8	125.5	149.5	− 1.0
Si_2H_6	Disilane	−114.8	− 99.3	− 91.4	− 82.7	− 72.3	− 66.4	− 57.5	− 44.6	− 29.0	− 14.3	−132.6
$(SiH_3)_2O$	Disiloxane	−112.5	− 95.8	− 88.2	− 79.8	− 70.4	− 64.2	− 55.9	− 43.5	− 29.3	− 15.4	−144.2
$SiCl_3F$	Fluorotrichlorosilane	− 92.6	− 76.4	− 68.3	− 59.0	− 48.8	− 42.2	− 33.2	− 19.3	− 4.0	+ 12.2	−120.8
Si_2Cl_6	Hexachlorodisilane	+ 4.0	27.4	38.8	51.5	65.3	73.9	85.4	102.2	120.6	139.0	− 1.2
$(SiCl_3)_2O$	Hexachlorodisiloxane	− 5.0	− 17.8	29.4	41.5	55.2	63.8	75.4	92.5	113.6	135.6	− 33.2
Si_2F_6	Hexafluorodisilane	− 81.0$_s$	− 68.8$_s$	− 63.1$_s$	− 57.0$_s$	− 50.6$_s$	− 46.7$_s$	− 41.7$_s$	− 34.2$_s$	− 26.4$_s$	− 18.9$_s$	− 18.6
Si_3Cl_8	Octachlorotrisilane	46.3	74.7	89.3	104.2	121.5	132.0	146.0	166.2	189.5	211.4	
Si_4H_{10}	Tetrasilane	− 27.7	− 6.2	+ 4.3	15.8	28.4	36.6	47.4	63.6	81.7	100.0	− 93.6

$SiBr_3F$	Tribromofluorosilane	− 46.1	− 25.4	− 15.1	− 3.7	+ 9.2	17.4	28.6	45.7	64.6	83.8	− 82.5
$SiHBr_3$	Tribromosilane	− 30.5	− 8.0	+ 3.4	16.0	30.0	39.2	51.6	70.2	90.2	111.8	− 73.5
$SiHCl_3$	Trichlorosilane	− 80.7	− 62.6	− 53.4	− 43.8	− 32.9	− 25.8	− 16.4	− 1.8	+ 14.5	31.8	−126.6
$SiHF_3$	Trifluorosilane	−152.0$_s$	−142.7$_s$	−138.2$_s$	−132.9$_s$	−127.3	−123.7	−118.7	−111.3	−102.8	− 95.0	−131.4
Si_3H_8	Trisilane	− 68.9	− 49.7	− 40.0	− 29.0	− 16.9	− 9.0	+ 1.6	17.8	35.5	53.1	−117.2
$(SiH_3)_3N$	Disilazane	− 68.7	− 49.9	− 40.4	− 30.0	− 18.5	− 11.0	− 1.1	+ 14.0	31.0	48.7	−105.7
AgCl	Silver chloride	912	1019	1074	1131	1200	1242	1297	1379	1467	1564	455
AgI	Silver iodide	820	927	983	1045	1111	1152	1210	1297	1400	1506	552
NaBr	Sodium bromide	806	903	952	1005	1063	1099	1143	1220	1304	1392	755
NaCl	Sodium chloride	865	967	1017	1072	1131	1169	1220	1296	1379	1465	800
NaCN	Sodium cyanide	817	928	983	1046	1115	1156	1211	1302	1401	1497	564
NaF	Sodium fluoride	1077	1186	1240	1300	1363	1403	1455	1531	1617	1704	992
NaOH	Sodium hydroxide	739	843	897	953	1017	1057	1111	1192	1286	1378	318
NaI	Sodium iodide	767	857	903	952	1005	1039	1083	1150	1225	1304	651
$SnBr_4$	Stannic bromide	s	58.3	72.7	88.1	105.5	116.2	131.0	152.8	177.7	204.7	31.0
$SnCl_4$	Stannic chloride	− 22.7	− 1.0	+ 10.0	22.0	35.2	43.5	54.7	72.0	92.1	113.0	− 30.2
SnH_4	Stannic hydride	−140.0	−125.8	−118.5	−111.2	−102.3	− 96.6	− 89.2	− 78.0	− 65.2	52.3	−149.9
SnI_4	Stannic iodide	s	156.0	175.8	196.2	218.8	234.2	254.2	283.5	315.5	348.0	144.5
$SnCl_2$	Stannous chloride	316	366	391	420	450	467	493	533	577	623	246.8
SrO	Strontium oxide	2068$_s$	2198$_s$	2262$_s$	2333$_s$	2410$_s$	.....	.....	.....	.....	.....	2430
SF_6	Sulfur hexafluoride	−132.7$_s$	−120.6$_s$	−114.7$_s$	−108.4$_s$	−101.5$_s$	− 96.8$_s$	− 90.9$_s$	− 82.3$_s$	− 72.6$_s$	− 63.5$_s$	− 50.2
SO_2	Sulfur dioxide	− 95.5$_s$	− 83.0$_s$	− 76.8$_s$	− 69.7	− 60.5	− 54.6	− 46.9	− 35.4	− 23.0	− 10.0	− 73.2
S_2Cl_2	Sulfur monochloride	− 7.4	− 15.7	27.5	40.0	54.1	63.2	75.3	93.5	115.4	138.0	− 80
SO_2Cl_2	Sulfuryl chloride	s	− 35.1	− 24.8	− 13.4	− 1.0	+ 7.2	17.8	33.7	51.3	69.2	− 54.1
SO_3	Sulfur trioxide (α)	− 39.0$_s$	− 23.7$_s$	− 16.5$_s$	− 9.1$_s$	− 1.0$_s$	+ 4.0$_s$	10.5$_s$	20.5	32.6	44.8	16.8
SO_3	Sulfur trioxide (β)	− 34.0$_s$	− 19.2$_s$	− 12.3$_s$	− 4.9$_s$	+ 3.2$_s$	8.0$_s$	14.3$_s$	23.7$_s$	32.6	44.8	32.3
SO_3	Sulfur trioxide (γ)	− 15.3$_s$	− 2.0$_s$	+ 4.3$_s$	11.1$_s$	17.9$_s$	21.4$_s$	28.0$_s$	35.8$_s$	44.0$_s$	51.6$_s$	62.1
H_2SO_4	Sulfuric acid	145.8	178.0	194.2	211.5	229.7	241.5	257.0	279.8	305.0	330.0$_d$	10.5
$SOBr_2$	Thionyl bromide	− 6.7	+ 18.4	31.0	44.1	58.8	68.3	80.6	99.0	119.2	139.5	− 52.2
$SOCl_2$	Thionyl chloride	− 52.9	− 32.4	− 21.9	− 10.5	+ 2.2	10.4	21.4	37.9	56.5	75.4	−104.5
TaF_5	Tantalum pentafluoride	s	s	s	s	s	110.3	130.0	159.9	194.0	230.0	96.8
$TeCl_4$	Tellurium tetrachloride	s	s	233	253	273	287	304	330	360	392	224
TeF_6	Tellurium hexafluoride	−111.3$_s$	− 98.8$_s$	− 92.4$_s$	− 86.0$_s$	− 78.4$_s$	− 73.8$_s$	− 67.9$_s$	− 57.3$_s$	− 48.2$_s$	− 38.6$_s$	− 37.8
TlBr	Thallium bromide	s	490	522	559	598	621	653	703	759	819	460
TlCl	Thallium chloride	s	487	517	550	589	612	645	694	748	807	430
TlI	Thallium iodide	440	502	531	567	607	631	663	712	763	823	440
$TiCl_4$	Titanium tetrachloride	− 13.9	+ 9.4	21.3	34.2	48.4	58.0	71.0	90.5	112.7	136.0	− 30
WF_6	Tungsten hexafluoride	− 71.4$_s$	− 56.5$_s$	− 49.2$_s$	− 41.5$_s$	− 33.0$_s$	− 27.5$_s$	− 20.3$_s$	− 10.0$_s$	+ 1.2	17.3	− 0.5
UF_6	Uranium hexafluoride	− 38.8$_s$	− 22.0$_s$	− 13.8$_s$	− 5.2$_s$	+ 4.4$_s$	10.4$_s$	18.2$_s$	30.0$_s$	42.7$_s$	55.7	69.2
$VOCl_3$	Vanadyl trichloride	− 23.2	+ 0.2	12.2	26.6	40.0	49.8	62.5	82.0	103.5	127.2	
$ZnCl_2$	Zinc chloride	428	481	508	536	566	584	610	648	689	732	365
ZnF_2	Zinc fluoride	1243	1328	1359	1402	1448	1480	1527	1602	1690	1770	872
$ZrBr_4$	Zirconium tetrabromide	207$_s$	237$_s$	250$_s$	266$_s$	281$_s$	289$_s$	301$_s$	318$_s$	337$_s$	357$_s$	450
$ZrCl_4$	Zirconium tetrachloride	190$_s$	217$_s$	230$_s$	243$_s$	259$_s$	268$_s$	279$_s$	295$_s$	312$_s$	331$_s$	437
ZrI_4	Zirconium tetraiodide	264$_s$	297$_s$	311$_s$	329$_s$	344$_s$	355$_s$	369$_s$	389$_s$	409$_s$	431$_s$	499

TABLE 4k-2. VAPOR PRESSURE OF INORGANIC COMPOUNDS—PRESSURES GREATER THAN 1 ATMOSPHERE

Formula	Name	Temp., °C										P_c
		1 atm	2 atm	5 atm	10 atm	20 atm	30 atm	40 atm	50 atm	60 atm	T_c	
NH_3	Ammonia	− 33.6	− 18.7	+ 4.7	25.7	50.1	66.1	78.9	89.3	98.3	132.4	111.5
A	Argon	−185.6	−179.0	−166.7	−154.9	−141.3	−132.0	−124.9	.....	.....	−122.0	48.0
BCl_3	Boron trichloride	12.7	33.2	66.0	96.7	135.4	161.5	.....	.....	.....	178.8	38.2
BF_3	Boron trifluoride	−100.7	− 89.4	− 72.6	− 57.7	− 40.0	− 28.4	− 19.0	.....	.....	− 12.2	49.2
Br_2	Bromine	58.2	78.8	110.3	139.8	174.0	197.0	216.0	230.0	243.5	302.2	121
CCl_4	Carbontetrachloride	76.7	102.0	141.7	178.0	222.0	251.2	276.0	.....	.....	283.1	45.0
CO_2	Carbon dioxide	− 78.2$_s$	− 69.1$_s$	− 56.7	− 39.5	− 18.9	− 5.3	+ 5.9	14.9	22.4	31.1	73.0
CS_2	Carbon disulfide	46.5	69.1	104.8	136.3	175.5	201.5	222.8	240.0	256.0	273.0	72.9
CO	Carbon monoxide	−191.3	−183.5	−170.7	−161.0	−149.7	−141.9	.....	.....	.....	−138.7	34.6
$COCl_2$	Carbonyl chloride	+ 8.3	27.3	57.2	85.0	119.0	141.8	159.8	174.0	.....	181.7	56.0
$CClF_3$	Chlorotrifluoromethane	− 81.2	− 66.7	− 42.7	− 18.5	+ 12.0	34.8	52.8	.....	.....	53	40.3
C_2N_2	Cyanogen	− 21.0	− 4.4	+ 21.4	44.6	72.6	91.6	106.5	118.2	.....	126.6	58.2
CCl_2F_2	Dichlorodifluoromethane	− 29.8	− 12.2	+ 16.1	42.4	74.0	95.6	.....	.....	.....	111.5	39.6
$CHCl_2F$	Dichlorofluoromethane	8.9	28.4	59.0	87.0	121.2	144.0	162.6	177.5	.....	178.5	51.0
$CHClF_2$	Chlorodifluoromethane	− 40.8	− 24.7	+ 0.3	24.0	52.0	70.3	85.3	.....	.....	96.0	48.7

CCl_3F	Trichlorofluoromethane	23.7	44.1	77.3	108.2	146.7	172.0	194.0	.....	.....	198.0	43.2
Cl_2	Chlorine	− 33.8	− 16.9	+ 10.3	35.6	65.0	84.8	101.6	115.2	127.1	144.0	76.1
HBr	Hydrogen bromide	− 66.5	− 51.5	− 29.1	− 8.4	+ 16.8	33.9	48.1	60.0	70.6	90.0	84.4
HCl	Hydrogen chloride	− 84.8	− 71.4	− 50.5	− 31.7	− 8.8	+ 5.9	17.8	27.9	36.2	51.4	81.6
HCN	Hydrogen cyanide	25.9	45.8	75.8	102.7	135.0	153.8	169.9	183.5	.....	183.5	50.0
HI	Hydrogen iodide	− 35.1	− 18.9	+ 7.3	32.0	62.2	83.2	100.7	116.2	127.5	151.0	82.0
H_2S	Hydrogen sulfide	− 60.4	− 45.9	− 22.3	− 0.4	+ 25.5	41.9	55.8	66.7	76.3	100.3	88.9
H_2Se	Hydrogen selenide	− 41.1	− 25.2	0.0	+ 23.4	50.8	69.7	84.6	97.2	108.7	137	91.0
Kr	Krypton	−152.0	−143.5	−130.0	−118.0	−101.7	− 88.8	− 78.4	− 66.5	.....	− 63	54
NO	Nitric oxide	−151.7	−145.1	−135.7	−127.3	−116.8	−109.0	−103.2	− 99.0	− 94.8	− 92.9	64.6
N_2O	Nitrous oxide	− 88.5	− 76.8	− 58.0	− 40.7	− 18.8	− 4.3	+ 8.0	18.0	27.4	36.5	71.7
N_2O_4	Nitrogen tetroxide	21.0	37.3	59.8	79.4	100.3	112.3	121.4	127.0	132.2	158	99
SiF_4	Silicon tetrafluoride	− 94.8	− 84.4	− 67.9	− 52.6	− 33.4	− 21.2	.....	.....	.....	− 14.2	36.7
$SiClF_3$	Chlorotrifluorosilane	− 70.0	− 57.3	− 37.2	− 18.6	+ 4.1	19.4	.....	.....	.....	34.8	34.2
$SiCl_2F_2$	Dichlorodifluorosilane	− 31.8	− 15.1	+ 11.6	36.6	66.2	86.0	.....	.....	.....	95.8	34.5
$SiCl_3F$	Fluorotrichlorosilane	12.2	32.4	64.6	94.2	131.8	156.0	.....	.....	.....	165.3	35.3
$SnCl_4$	Stannic chloride	113.0	141.3	184.3	223.0	270.0	299.8	.....	.....	.....	318.7	37.9
SO_2	Sulfur dioxide	− 10.0	+ 6.3	32.1	55.5	83.8	102.6	118.0	130.2	141.7	157.2	77.7
SO_3	Sulfur trioxide	44.8	60.0	82.5	104.0	138.0	157.8	175.0	187.8	198.0	218.3	83.6

TABLE 4k-3. VAPOR PRESSURE OF ORGANIC COMPOUNDS—PRESSURES LESS THAN 1 ATMOSPHERE

Formula	Name	Temp., °C										M.P.
		1 mm	5 mm	10 mm	20 mm	40 mm	60 mm	100 mm	200 mm	400 mm	760 mm	
$CClF_3$	Chlorotrifluoromethane	−149.5	−139.2	−134.1	−128.5	−121.9	−117.3	−111.7	−102.5	− 92.7	− 81.2	
CCl_2F_2	Dichlorodifluoromethane	−118.5	−104.6	− 97.8	− 90.1	− 81.6	− 76.1	− 68.6	− 57.0	− 43.9	− 29.8	
CCl_2O	Carbonyl chloride	− 92.9	− 77.0	− 69.3	− 60.3	− 50.3	− 44.0	− 35.6	− 22.3	− 7.6	+ 8.3	−104
CCl_3F	Trichlorofluoromethane	− 84.3	− 67.6	− 59.0	− 49.7	− 39.0	− 32.3	− 23.0	− 9.1	+ 6.8	23.7	
CCl_4	Carbontetrachloride	− 50.0$_s$	− 30.0$_s$	− 19.60	− 8.2	+ 4.3	12.3	23.0	38.3	57.8	76.7	− 22.6
$CHClF_2$	Chlorodifluoromethane	−122.8	−110.2	−103.7	− 96.5	− 88.6	− 83.4	− 76.4	− 65.8	− 53.6	− 40.8	−160
$CHCl_2F$	Dichlorofluoromethane	− 91.3	− 75.5	− 67.5	− 58.6	− 48.8	− 42.6	− 33.9	− 20.9	− 6.2	+ 8.9	−135
$CHCl_3$	Trichloromethane	− 58.0	− 39.1	− 29.7	− 19.0	− 7.1	+ 0.5	10.4	25.9	42.7	61.3	− 63.5
CHN	Hydrocyanic acid	− 70.8$_s$	− 55.6$_s$	− 48.2$_s$	− 40.3$_s$	− 31.3$_s$	− 25.8$_s$	− 18.8$_s$	+ 5.9	+ 9.8	25.8	− 14
CH_2O	Formaldehyde	$_s$	$_s$	− 88.0	− 79.6	− 70.6	− 65.0	− 57.3	− 46.0	− 33.0	− 19.5	− 92
CH_2O_2	Formic acid	− 20.0$_s$	− 5.0$_s$	+ 2.1$_s$	10.3	24.0	32.4	43.8	61.4	80.3	100.6	8.2
CH_3Br	Methyl bromide	− 96.3$_s$	− 80.6	− 72.8	− 64.0	− 54.2	− 48.0	− 39.4	− 26.5	− 11.9	+ 3.6	− 93
CH_3Cl	Methyl chloride	$_s$	− 99.5$_s$	− 92.4	− 84.8	− 76.0	− 70.4	− 63.0	− 51.2	− 38.0	− 24.0	− 97.7
CH_3F	Methyl fluoride	−147.3	−137.0	−131.6	−125.9	−119.1	−115.0	−109.0	− 99.9	− 89.5	− 78.2	
CH_3I	Methyl iodide	$_s$	− 55.0	− 45.8	− 35.6	− 24.2	− 16.9	− 7.0	+ 8.0	25.3	42.4	− 64.4
CH_3NO_2	Nitromethane	− 29.0	− 7.9	+ 2.8	14.1	27.5	35.5	46.6	63.5	82.0	101.2	− 29
CH_4	Methane	−205.9$_s$	−199.0$_s$	−195.5$_s$	−191.8$_s$	−187.7$_s$	−185.1$_s$	−181.4	−175.5	−168.8	−161.5	−182.5
CH_4O	Methanol	− 44.0	− 25.3	− 16.2	− 6.0	+ 5.0	12.1	21.2	34.8	49.9	64.7	− 97.8
CH_4S	Methanethiol	− 90.7	− 75.3	− 67.5	− 58.8	− 49.2	− 43.1	− 34.8	− 22.1	− 7.9	+ 6.8	−121
CH_5N	Methylamine	− 95.8$_s$	− 81.3	− 73.8	− 65.9	− 56.9	− 51.3	− 43.7	− 32.4	− 19.7	− 6.3	− 93.5
CO	Carbon monoxide	−222.0$_s$	−217.2$_s$	−215.0$_s$	−212.8$_s$	−210.0$_s$	−208.1$_s$	−205.7$_s$	−201.3	−196.3	−191.3	−205.0
CS_2	Carbon disulfide	− 73.8	− 54.3	− 44.7	− 34.3	− 22.5	− 15.3	− 5.1	+ 10.4	28.0	46.5	−110.8
C_2ClF_3	1-Chloro-1,2,2-trifluoroethylene	−116.0	−102.5	− 95.9	− 88.2	− 79.7	− 74.1	− 66.7	− 55.0	− 41.7	− 27.9	−157.5
$C_2Cl_2F_4$	1,2-Dichloro-1,1,2,2-tetrafluoroethane	− 95.4	− 80.0	− 72.3	− 63.5	− 53.7	− 47.5	− 39.1	− 26.3	− 12.0	+ 3.5	− 94
$C_2Cl_3F_3$	1,1,2-Trichloro-1,2,2-trifluoroethane	− 68.0$_s$	− 49.4$_s$	− 40.3$_s$	− 30.0	− 18.5	− 11.2	− 1.7	+ 13.5	30.2	47.6	− 35
C_2H_2	Acetylene	−142.9$_s$	−138.0$_s$	−128.2$_s$	−122.8$_s$	−116.7$_s$	−112.8$_s$	−107.9$_s$	−100.3$_s$	− 92.0$_s$	− 84.0$_s$	− 81.5
$C_2H_2Cl_2$	*cis*-1,2-Dichloroethylene	− 58.4	− 39.2	− 29.9	− 19.4	− 7.9	− 0.5	+ 9.5	24.6	41.0	59.0	− 80.5
$C_2H_2Cl_2$	*trans*-1,2-Dichloroethylene	− 65.4$_s$	− 47.2	− 38.0	− 28.0	− 17.0	− 10.0	− 0.2	+ 14.3	30.8	47.8	− 50.0
C_2H_4	Ethylene	−168.3	−158.3	−153.2	−147.6	−141.3	−137.3	−131.8	−123.4	−113.9	−103.7	−169
$C_2H_4Br_2$	1,2-Dibromoethane	− 27.0$_s$	+ 4.7$_s$	18.6	32.7	48.0	57.9	70.4	89.8	110.1	131.5	10
$C_2H_4Cl_2$	1,1-Dichloroethane	− 60.7	− 41.9	− 32.3	− 21.9	− 10.2	− 2.9	+ 7.2	22.4	39.8	57.4	− 96.7

$C_2H_4Cl_2$	1,2-Dichloroethane	− 44.5$_s$	− 24.0	− 13.6	− 2.4	+ 10.0	18.1	29.4	45.7	64.0	82.4	− 35.3
$C_2H_4O_2$	Acetic acid	− 17.2$_s$	+ 6.3$_s$	17.5	29.9	43.0	51.7	63.0	80.0	99.0	118.1	16.7
$C_2H_4O_2$	Methyl formate	− 74.2	− 57.0	− 48.6	− 39.2	− 28.7	− 21.9	− 12.9	+ 0.8	16.0	32.0	− 99.8
C_2H_5Br	Ethyl bromide	− 74.3	− 56.4	− 47.5	− 37.8	− 26.7	− 19.5	− 10.0	+ 4.5	21.0	38.4	−117.8
C_2H_5Cl	Ethyl chloride	− 89.8	− 73.9	− 65.8	− 56.8	− 47.0	− 40.6	− 32.0	− 18.6	− 3.9	+ 12.3	−139
C_2H_5F	Ethyl fluoride	−117.0	−103.8	− 97.7	− 90.0	− 81.8	− 76.4	− 69.3	− 58.0	− 45.5	− 32.0	
C_2H_6	Ethane	−159.5	−148.5	−142.9	−136.7	−129.8	−125.4	−119.3	−110.2	− 99.7	− 88.6	−183.2
C_2H_6O	Ethanol	− 31.3	− 12.0	− 2.3	+ 8.0	19.0	26.0	34.9	48.4	63.5	78.4	−112
C_2H_6O	Dimethyl ether	−115.7	−101.1	− 93.3	− 85.2	− 76.2	− 70.4	− 62.7	− 50.9	− 37.8	− 23.7	−138.5
C_2H_6S	Dimethyl sulfide	− 75.6	− 58.0	− 49.2	− 39.4	− 28.4	− 21.4	− 12.0	+ 2.6	18.7	36.0	− 83.2
C_2H_6S	Ethanethiol	− 75.7	− 59.1	− 50.2	− 40.7	− 29.8	− 22.4	− 13.0	+ 1.5	17.7	35.0	−121
C_2H_7N	Ethylamine	− 82.3$_s$	− 66.4	− 58.3	− 48.6	− 39.8	− 33.4	− 25.1	− 12.3	+ 2.0	16.6	− 80.6
C_2H_7N	Dimethylamine	− 87.7	− 72.2	− 64.6	− 56.0	− 46.7	− 40.7	− 32.6	− 20.4	− 7.1	+ 7.4	− 96
C_2N_2	Cyanogen	− 95.8$_s$	− 83.2$_s$	− 76.8$_s$	− 70.1$_s$	− 62.7$_s$	− 57.9$_s$	− 51.8$_s$	− 42.6$_s$	− 33.0	− 21.0	− 34.4
C_3H_4	Propadiene	−120.6	−108.0	−101.0	− 93.4	− 85.2	− 78.8	− 72.5	− 61.3	− 48.5	− 35.0	−136
C_3H_4	Propyne	−111.0$_s$	− 97.5	− 90.5	− 82.9	− 74.3	− 68.8	− 61.3	− 49.8	− 37.2	− 23.3	−102.7
$C_3H_5N_3O_9$	Nitroglycerine	127	167	188	210	235	251$_d$	e	.....	.....	.....	11
C_3H_6	Propylene	−131.9	−120.7	−112.1	−104.7	− 96.5	− 91.3	− 84.1	− 73.3	− 60.9	− 47.7	−185
C_3H_6O	Acetone	− 59.4	− 40.5	− 31.1	− 20.8	− 9.4	− 2.0	+ 7.7	22.7	39.5	56.5	− 94.6
$C_3H_6O_2$	Propionic acid	4.6	28.0	39.7	52.0	65.8	74.1	85.8	102.5	122.0	141.1	− 22
$C_3H_6O_2$	Methyl acetate	− 57.2	− 38.6	− 29.3	− 19.1	− 7.9	− 0.5	+ 9.4	24.0	40.0	57.8	− 98.7
$C_3H_6O_2$	Ethyl formate	− 60.5	− 42.2	− 33.0	− 22.7	− 11.5	− 4.3	+ 5.4	20.0	37.1	54.3	− 79
C_3H_8	Propane	−128.9	−115.4	−108.5	−100.9	− 92.4	− 87.0	− 79.6	− 68.4	− 55.6	− 42.1	−187.1
C_3H_8O	1-Propanol	− 15.0	+ 5.0	14.7	25.3	36.4	43.5	52.8	66.8	82.0	97.8	−127
C_3H_8O	2-Propanol	− 26.1	− 7.0	+ 2.4	12.7	23.8	30.5	39.5	53.0	67.8	82.5	− 85.8
C_3H_8O	Ethyl methyl ether	− 91.0	− 75.6	− 67.8	− 59.1	− 49.4	− 43.3	− 34.8	− 22.0	− 7.8	+ 7.5	
$C_3H_8O_3$	Glycerol	125.5	153.8	167.2	182.2	198.0	208.0	220.1	240.0	263.0	290.0	17.9
C_3H_9N	Propylamine	− 64.4	− 46.3	− 37.2	− 27.1	− 16.0	− 9.0	+ 0.5	15.0	31.5	48.5	− 83
C_3H_9N	Trimethylamine	− 97.1	− 81.7	− 73.8	− 65.0	− 55.2	− 48.8	− 40.3	− 27.0	− 12.5	+ 2.9	−117.1
C_4H_2	1,3-Butadiyne	− 82.5$_s$	− 68.0$_s$	− 61.2$_s$	− 53.8$_s$	− 45.9$_s$	− 41.0$_s$	− 34.0	− 20.9	− 6.1	+ 9.7	− 34.9
C_4H_6	1,2-Butadiene	− 89.0	− 72.7	− 64.2	− 54.9	− 44.3	− 37.5	− 28.3	− 14.2	+ 1.8	18.5	
C_4H_6	1,3-Butadiene	−102.8	− 87.6	− 79.7	− 71.0	− 61.3	− 55.1	− 46.8	− 33.9	− 19.3	− 4.5	−108.9
C_4H_6	Cyclobutene	− 99.1	− 83.4	− 75.4	− 66.6	− 56.4	− 50.0	− 41.2	− 27.8	− 12.2	+ 2.4	
C_4H_6	1-Butyne	− 92.5	− 76.7	− 68.7	− 59.9	− 50.0	− 43.4	− 34.9	− 21.6	− 6.9	+ 8.7	−130
C_4H_6	2-Butyne	− 73.0$_s$	− 57.9$_s$	− 50.5$_s$	− 42.5$_s$	− 33.9$_s$	− 27.3	− 18.8	− 5.0	+ 10.6	27.2	− 32.5
$C_4H_6O_3$	Acetic anhydride	1.7	24.8	36.0	48.3	62.1	70.3	82.2	100.0	119.8	139.6	− 73
$C_4H_6O_4$	Dimethyl oxalate	20.0	44.0	56.0	69.4	83.6	92.3	104.8	123.3	143.3	163.3	
$C_4H_8O_2$	Butyric acid	25.5	49.8	61.5	74.0	88.0	96.5	108.0	125.5	144.5	163.5	− 4.7
$C_4H_8O_2$	Isobutyric acid	14.7	39.3	51.2	64.0	77.8	86.3	98.0	115.8	134.5	154.5	− 47
$C_4H_8O_2$	Ethyl acetate	− 43.4	− 23.5	− 13.5	− 3.0	+ 9.1	16.3	27.0	42.0	59.3	77.1	− 82.4
$C_4H_8O_2$	Methyl propionate	− 42.0	− 21.5	− 11.8	− 1.0	+ 11.0	18.7	29.0	44.2	61.8	79.8	− 87.5

TABLE 4k-3. VAPOR PRESSURE OF ORGANIC COMPOUNDS—PRESSURES LESS THAN 1 ATMOSPHERE (*Continued*)

Formula	Name	Temp., °C										M.P.
		1 mm	5 mm	10 mm	20 mm	40 mm	60 mm	100 mm	200 mm	400 mm	760 mm	
$C_4H_8O_2$	Propyl formate	− 43.0	− 22.7	− 12.6	− 1.7	+ 10.8	18.8	29.5	45.3	62.6	81.3	− 92.9
C_4H_{10}	Butane	−101.5	− 85.7	− 77.8	− 68.9	− 59.1	− 52.8	− 44.2	− 31.2	− 15.3	− 0.5	−135
C_4H_{10}	2-Methylpropane	−109.2	− 94.1	− 86.4	− 77.9	− 68.4	− 62.4	− 54.1	− 41.5	− 27.1	− 11.7	−145
$C_4H_{10}O$	Butyl alcohol	− 1.2	+ 20.0	30.2	41.5	53.4	60.3	70.1	84.3	100.8	117.5	− 79.9
$C_4H_{10}O$	*sec*-Butyl alcohol	− 12.2	+ 7.2	16.9	27.3	38.1	45.2	54.1	67.9	83.9	99.5	−114.7
$C_4H_{10}O$	Isobutyl alcohol	− 9.0	+ 11.0	21.7	32.4	44.1	51.7	61.5	75.9	91.4	108.0	−108
$C_4H_{10}O$	*tert*-Butyl alcohol	− 20.4$_s$	− 3.0$_s$	+ 5.5$_s$	14.3$_s$	24.5$_s$	31.0	39.8	52.7	68.0	82.9	25.3
$C_4H_{10}O$	Diethyl ether	− 74.3	− 56.9	− 48.1	− 38.5	− 27.7	− 21.8	− 11.5	+ 2.2	17.9	34.6	−116.3
$C_4H_{10}S$	Diethyl sulfide	− 39.6	− 18.6	− 8.0	+ 3.5	16.1	24.2	35.0	51.3	69.7	88.0	− 99.5
$C_4H_{11}N$	Diethylamine			− 33.0	− 22.6	− 11.3	− 4.0	+ 6.0	21.0	38.0	55.5	− 38.9
$C_4H_{12}Si$	Tetramethylsilane	− 83.8	− 66.7	− 58.0	− 48.3	− 37.4	− 30.3	− 20.9	− 6.5	+ 10.0	27.0	−102.1
$C_5H_{10}O_2$	Ethyl propionate	− 28.0	− 7.2	+ 3.4	14.3	27.2	35.1	45.2	61.7	79.8	99.1	− 72.6
$C_5H_{10}O_2$	Propyl acetate	− 26.7	− 5.4	+ 5.0	16.0	28.8	37.0	47.8	64.0	82.0	101.8	− 92.5
$C_5H_{10}O_2$	Methyl butyrate	− 26.8	− 5.5	+ 5.0	16.7	29.6	37.4	48.0	64.3	83.1	102.3	
$C_5H_{10}O_2$	Methyl isobutyrate	− 34.1	− 13.0	− 2.9	+ 8.4	21.0	28.9	39.6	55.7	73.6	92.6	− 84.7
$C_5H_{10}O_2$	Isobutyl formate	− 32.7	− 11.4	− 0.8	+ 11.0	24.1	32.4	43.4	60.0	79.0	98.2	− 95.3
C_5H_{12}	Pentane	− 76.6	− 62.5	− 50.1	− 40.2	− 29.2	− 22.2	− 12.6	+ 1.9	− 18.5	36.1	−129.7
C_5H_{12}	2-Methylbutane	− 82.9	− 65.8	− 57.0	− 47.3	− 36.5	− 29.6	− 20.2	− 5.9	+ 10.5	27.8	−159.7
C_5H_{12}	2,2-Dimethylpropane	−102.0$_s$	− 85.4$_s$	− 76.7$_s$	− 67.2$_s$	− 56.1$_s$	− 49.0$_s$	− 39.1$_s$	− 23.7$_s$	− 7.1	+ 9.5	− 16.6
$C_5H_{12}O$	Ethyl propyl ether	− 64.3	− 45.0	− 35.0	− 24.0	− 12.0	− 4.0	+ 6.8	23.3	41.6	61.7	
C_6H_5Br	Bromobenzene	+ 2.9	27.8	40.0	53.8	68.6	78.1	90.8	110.1	132.3	156.2	− 30.7
C_6H_5Cl	Chlorobenzene	− 13.0	10.6	22.2	35.3	49.7	58.3	70.7	89.4	110.0	132.2	− 45.2
C_6H_5F	Fluorobenzene	− 43.4$_s$	− 22.8	− 12.4	− 1.2	+ 11.5	19.6	30.4	47.2	65.7	84.7	− 42.1
C_6H_5I	Iodobenzene	24.1	50.6	64.0	78.3	94.4	105.0	118.3	139.8	163.9	188.6	− 28.5
C_6H_6	Benzene	− 36.7$_s$	− 19.6$_s$	− 11.5$_s$	− 2.6$_s$	+ 7.6	15.4	26.1	42.2	60.6	80.1	+ 5.5
C_6H_6O	Phenol	40.1$_s$	62.5	73.8	86.0	100.1	108.4	121.4	139.0	160.0	181.9	40.6
C_6H_7N	Aniline	34.8	57.9	69.4	82.0	96.7	106.0	119.9	140.1	161.9	184.4	− 6.2
C_6H_{12}	Cyclohexane	− 45.3$_s$	− 25.4$_s$	− 15.9$_s$	− 5.0$_s$	+ 6.7	14.7	25.5	42.0	60.8	80.7	+ 6.6
C_6H_{14}	Hexane	− 53.9	− 34.5	− 25.0	− 14.1	− 2.3	+ 5.4	15.8	31.6	49.6	68.7	− 95.3
C_6H_{14}	2,3-Dimethylbutane	− 63.6	− 44.5	− 34.9	− 24.1	− 12.4	− 4.9	+ 5.4	21.1	39.0	58.0	−128.2
C_7H_8	Toluene	− 26.7	− 4.4	+ 6.4	18.4	31.8	40.3	51.9	69.5	89.5	110.6	− 95.0
C_7H_{16}	Heptane	− 34.0	− 12.7	− 2.1	+ 9.5	22.3	30.6	41.8	58.7	78.0	98.4	− 90.6
C_8H_{10}	Ethylbenzene	− 9.8	+ 13.9	25.9	38.6	52.8	61.8	74.1	92.7	113.8	136.2	− 94.9
C_8H_{18}	Octane	− 14.0	+ 8.3	19.2	31.5	45.1	53.8	65.7	83.6	104.0	125.6	− 56.8
$C_{12}H_{26}$	Dodecane	47.8	75.8	90.0	104.6	121.7	132.1	146.2	167.2	191.0	216.2	− 9.6

Tables 4k-5 to 4k-14, Vapor Pressures of Special Gases, listing values of the vapor pressures of He_4, He_3, normal and equilibrium H_2, Ne, N_2, and O_2, were taken from Thermometry at Low Temperature, a master's essay at the University of Pittsburgh, 1965, by Edward R. Simco. This booklet is also entitled Research Report 4 and was supported in part by the National Science Foundation.

Table 4k-15, Vapor Pressures of the Chemical Elements, lists values of the vapor pressure, temperature, and heat associated with the phase transitions for the chemical elements. The numbers represent temperature in degrees Celsius at which the vapor pressure is the value appearing at the top of the column. A circled dot between columns indicates a change of phase. The six columns on the right side list the following information:

ΔH_{v298}	heat of vaporization at 25°C, or atmospheric boiling temperature if the value contains an asterisk (*), cal/mol
T_m	melting temperature
ΔH_m	heat of melting, cal/mol
T_t	transition temperature
ΔH_t	heat of transition, cal/mol
Trans	designates solid-state transition

Equilibrium vapor pressures are listed for substances with polymorphic vapor or condensed forms (As, Sb, Bi, P, Po, S, Se, Te). The basic sources should be consulted for vapor pressures of the various polymorphic forms. The sources for this table are: (1) Ralph Hultgren, Raymond L. Orr, Philip D. Anderson, and Kenneth K. Kelley, "Selected Values of Thermodynamic Properties of Metals and Alloys," John Wiley & Sons, Inc., New York, 1963 (updated by privately distributed supplements); (2) Daniel R. Stull and Gerard C. Sinke, "Thermodynamic Properties of the Elements," *Advances in Chem. Ser. No. 18*: (3) Richard E. Honig, "Vapor Pressure Data for the Solid and Liquid Elements," *RCA Rev.* **23**(4), 567–586 (1962); (4) Richard E. Honig and H. O. Hook, "Vapor Pressure Data for Some Common Gases," *RCA Rev.* **21**(3), 360–368 (1960).

Table 4k-16, Vapor Pressure of Ice, has been taken from the *NBS Circ.* 564, Tables of Thermal Properties of Gases, by J. Hilsenrath, C. W. Beckett, W. S. Benedict, L. Fano, H. J. Hoge, J. F. Masi, R. L. Nuttall, Y. S. Touloukian, and H. W. Woolley, U.S. Government Printing Office, Washington, D.C., 1955. The values were smoothed, and adjusted to agree with the ice-point value adopted in Table 4k-17.

Table 4k-17, Vapor Pressure of Liquid Water below 100°C, and Table 4k-18, Vapor Pressure of Liquid Water above 100°C, have been taken from the recent work of M. R. Gibson and E. A. Bruges, *J. Mech. Eng. Sci.*, **9**(1), 24–35 (February, 1967).

Table 4k-19, Vapor Pressure of Mercury, is taken from the compilation of J. Johnston, F. Fenwick, and H. G. Leopold, "International Critical Tables," vol. III, McGraw-Hill Book Company, New York, 1928.

Table 4k-20, Vapor Pressure of Carbon Dioxide, is from C. H. Meyers and M. S. Van Dusen, *J. Research NBS*, **10**, 409 (1933).

Table 4k-21, Vapor Pressure of Ethyl Alcohol, and Table 4k-22, Vapor Pressure of Methyl Alcohol, are reprinted by permission from the "Smithsonian Physical Tables," 9th ed. Smithsonian Institution, Washington, D.C., 1954.

Table 4k-23, Constants in the Equation for the Rate of Evaporation of Metals, is taken by permission from pages 752–754 of "Scientific Foundations of Vacuum Technique," by S. Dushman, John Wiley & Sons, Inc., New York, 1949.

TABLE 4k-4. VAPOR PRESSURE OF ORGANIC COMPOUNDS—PRESSURES GREATER THAN 1 ATMOSPHERE

Formula	Name	Temp., °C									T_c	P_c
		1 atm	2 atm	5 atm	10 atm	20 atm	30 atm	40 atm	50 atm	60 atm		
$CClF_3$	Chlorotrifluoromethane	− 81.2	− 66.7	− 42.7	− 18.5	+ 12.0	34.8	52.8	.....	.....	53	40.3
CCl_2F_2	Dichlorodifluoromethane	− 29.8	− 12.2	+ 16.1	42.4	74.0	95.6	.....	.....	.....	111.5	39.6
CCl_2O	Carbonyl chloride	8.3	27.3	57.2	85.0	119.0	141.8	159.8	174.0	.....	181.7	56.0
CCl_3F	Trichlorofluoromethane	23.7	44.1	77.3	108.2	146.7	172.0	194.0	.....	.....	198.0	43.2
CCl_4	Carbontetrachloride	76.7	102.0	141.7	178.0	222.0	251.2	276.0	.....	.....	283.1	45.0
$CHClF_2$	Chlorodifluoromethane	− 40.8	− 24.7	+ 0.3	24.0	52.0	70.3	85.3	.....	.....	96	48.7
$CHCl_2F$	Dichlorofluoromethane	8.9	28.4	59.0	87.0	121.2	144.0	162.6	177.5	.....	178.5	51.0
$CHCl_3$	Trichloromethane	61.3	83.9	120.0	152.3	191.8	216.5	237.5	254.0	.....	260	54.9
CHN	Hydrocyanic acid	25.8	45.5	75.5	103.5	134.2	154.0	170.2	183.5	.....	183.5	50.0
CH_3Br	Methyl bromide	3.6	23.3	54.8	84.0	121.7	147.5	170.2	190.0	.....	194	51.6
CH_3Cl	Methyl chloride	− 24.0	− 6.4	+ 22.0	47.3	77.3	97.5	113.8	126.0	137.5	143.8	65.8
CH_3F	Methyl fluoride	− 78.2	− 64.5	− 42.0	− 21.0	+ 2.6	15.5	26.5	36.0	43.5	44.9	62.0
CH_3I	Methyl iodide	42.4	65.5	101.8	138.0	176.5	206.0	228.5	248.0	.....	255	54.6
CH_4	Methane	−161.5	−152.3	−138.3	−124.8	−108.5	− 96.3	− 86.3	.....	.....	− 82.1	45.8
CH_4O	Methanol	64.7	84.0	112.5	138.0	167.8	186.5	203.5	214.0	224.0	240.0	78.7
CH_4S	Methanethiol	6.8	26.1	55.9	83.4	117.5	140.0	157.7	172.0	185.0	196.8	71.4
CH_5N	Methylamine	− 6.3	+ 10.1	36.0	59.5	87.8	106.3	121.8	133.7	144.6	156.9	73.6
CO	Carbon monoxide	−191.3	−183.5	−170.7	−161.0	−149.7	−141.9	.....	.....	.....	−138.7	34.6
CS_2	Carbon disulfide	46.5	69.1	104.8	136.3	175.5	201.5	222.8	240.0	256.0	273.0	72.9
C_2ClF_3	1-Chloro-1,2,2-trifluoroethylene	− 27.9	− 11.1	+ 15.5	40.0	71.1	91.9	.....	.....	.....	107.0	39.0
$C_2Cl_2F_4$	1,2-Dichloro-1,1,2,2-tetrafluoroethane	3.5	22.8	54.0	82.3	117.5	140.9	.....	.....	.....	145.7	32.3
$C_2Cl_3F_3$	1,1,2-Trichloro-1,2,2-trifluoroethane	47.6	70.0	105.5	138.0	177.7	205.0	.....	.....	.....	214.1	33.7

C_2H_2.....	Acetylene	− 84.0$_s$	− 71.6	− 50.2	− 32.7	− 10.0	+ 4.8	16.8	26.3	34.8	36.0	62.0
$C_2H_2Cl_2$..	*cis*-1,2-Dichloroethylene	59.0	82.1	119.3	152.3	194.0	221.5	244.5	260.0	.....	271.0	57.9
$C_2H_2Cl_2$..	*trans*-1,2,Dichloroethylene	47.8	69.8	104.0	135.7	174.0	199.8	220.0	236.5	.....	243.3	54.5
C_2H_4.....	Ethylene	−103.7	− 90.8	− 71.1	− 52.8	− 29.1	− 14.2	− 1.5	+ 8.9	.....	9.6	50.7
$C_2H_4Br_2$..	1,2-Dibromoethane	131.5	157.7	200.0	237.0	269.0	286.0	295.0	300.0	304.5	309.8	70.6
$C_2H_4Cl_2$..	1,1-Dichloroethane	57.3	80.2	117.3	150.3	192.7	220.0	243.0	261.5	.....	261.5	50.0
$C_2H_4Cl_2$..	1,2-Dichloroethane	83.7	108.1	147.8	183.5	226.5	254.0	272.0	285.0	.....	288.4	53.0
$C_2H_4O_2$...	Acetic acid	118.1	143.5	180.3	214.0	252.0	276.5	297.0	312.5	.....	321.6	57.2
$C_2H_4O_2$...	Methyl formate	32.0	51.9	83.5	112.0	147.2	169.7	188.5	213.0	.....	214.0	59.1
C_2H_5Br...	Ethyl bromide	38.4	60.2	95.0	126.8	164.3	188.0	206.5	220.0	229.5	230.8	61.5
C_2H_5Cl...	Ethyl chloride	12.3	32.5	64.0	92.6	127.3	149.5	167.0	180.5	.....	187.2	52.0
C_2H_5F....	Ethyl fluoride	− 32.0	− 16.7	+ 7.7	30.2	57.5	75.7	90.0	.....	.....	102.2	49.6
C_2H_6.....	Ethane	− 88.6	− 75.0	− 52.8	− 32.0	− 6.4	+ 10.0	23.6	.....	.....	32.3	48.2
C_2H_6O....	Ethanol	78.4	97.5	126.0	151.8	183.0	203.0	218.0	230.0	242.0	243.5	63.1
C_2H_6O....	Dimethyl ether	− 23.7	− 6.4	+ 20.8	45.5	75.7	96.0	112.1	125.2	.....	126.9	52.0
C_2H_6S....	Ethanethiol	35.0	56.6	90.7	121.9	159.5	184.3	204.7	220.0	.....	225.5	54.2
C_2H_6S....	Dimethyl sulfide	36.0	57.8	92.3	124.5	163.8	188.5	209.0	224.5	.....	229.9	54.6
C_2H_7N...	Ethylamine	16.6	35.7	65.3	91.8	124.0	146.0	163.0	176.0	.....	183.2	55.5
C_2H_7N...	Dimethylamine	7.4	25.0	53.9	80.0	111.7	132.2	149.8	162.6	.....	164.5	52.4
C_2N_2.....	Cyanogen	− 21.0	− 4.4	+ 21.4	44.6	72.6	91.5	106.5	118.2	.....	126.6	58.2
C_3H_4.....	Propadiene	− 35.0	− 18.4	+ 8.0	33.2	64.5	85.5	108.5	118.0	.....	120.7	51.8
C_3H_4.....	Propyne	− 23.3	− 7.1	+ 19.5	43.8	74.0	94.0	111.5	125.0	.....	128	52.8
C_3H_6.....	Propylene	− 47.7	− 31.4	− 4.8	+ 19.8	49.5	70.0	85.0	.....	.....	91.4	45.4
C_3H_6O....	Acetone	56.5	78.6	113.0	144.5	181.0	205.0	214.5	.....	.....	235.0	47.0
$C_3H_6O_2$...	Propionic acid	141.1	160.0	186.0	203.5	220.0	228.0	233.0	238.0	.....	239.5	53.0

TABLE 4k-4. VAPOR PRESSURE OF ORGANIC COMPOUNDS—PRESSURES GREATER THAN 1 ATMOSPHERE (*Continued*)

Formula	Name	Temp., °C									T_c	P_c
		1 atm	2 atm	5 atm	10 atm	20 atm	30 atm	40 atm	50 atm	60 atm		
$C_3H_6O_2$	Methyl acetate	57.8	79.5	113.1	144.2	181.0	205.0	225.0	.....	.....	233.7	46.3
$C_3H_6O_2$	Ethyl formate	54.3	76.0	110.5	142.2	180.0	205.0	225.0	.....	.....	235.3	46.8
C_3H_8	Propane	− 42.1	− 25.6	+ 1.4	26.9	58.1	78.7	94.8	.....	.....	96.8	42.0
C_3H_8O	1-Propanol	97.8	117.0	149.0	177.0	210.8	232.3	250.0	.....	.....	263.7	49.9
C_3H_8O	2-Propanol	82.5	101.3	130.2	155.7	186.0	205.0	220.2	232.0	.....	235	53
C_3H_8O	Ethyl methyl ether	7.5	26.5	56.4	84.0	108.0	141.4	160.0	.....	.....	164.7	43.4
C_3H_9N	Propylamine	48.5	69.8	102.8	133.4	170.0	194.3	214.5	.....	.....	223.8	46.8
C_4H_6	1,3-Butadiene	− 4.5	+ 15.3	47.0	76.0	114.0	139.8	158.0	.....	.....	161.8	42.6
$C_4H_6O_3$	Acetic anhydride	139.6	162.0	194.0	221.5	253.0	272.8	288.5	.....	.....	296	46
$C_4H_6O_4$	Dimethyl oxalate	163.3	189.6	228.7	.....	.....	.....	.....	.....	.....	260	9.5
$C_4H_8O_2$	Butyric acid	163.5	188.3	225.0	257.0	295.0	319.0	338.0	352.0	.....	355	52.0
$C_4H_8O_2$	Isobutyric acid	154.5	179.8	217.0	250.0	289.0	315.0	336.0	.....	.....	336	40.0
$C_4H_8O_2$	Ethyl acetate	77.1	100.6	136.6	169.7	209.5	235.0	.....	.....	.....	250.1	37.9
$C_4H_8O_2$	Methyl propionate	79.8	103.0	139.8	172.6	212.5	239.0	.....	.....	.....	257.4	39.3
$C_4H_8O_2$	Propyl formate	81.3	104.3	142.0	176.4	217.5	245.0	.....	.....	.....	264.8	39.5
C_4H_{10}	Butane	− 0.5	+ 18.8	50.0	79.5	116.0	140.6	.....	.....	.....	152.8	36.0
C_4H_{10}	2-Methylpropane	− 11.7	+ 7.5	39.0	66.8	99.5	120.5	.....	.....	.....	134.0	37.0
$C_4H_{10}O$	Butyl alcohol	117.5	139.8	172.5	203.0	237.0	259.0	277.0	.....	.....	287	48.4
$C_4H_{10}O$	*sec*-Butyl alcohol	99.5	118.2	147.5	172.0	204.0	230.0	251.0	.....	.....	265	48
$C_4H_{10}O$	Isobutyl alcohol	108.0	127.3	156.2	182.0	212.5	232.0	251.0	.....	.....	265	48
$C_4H_{10}O$	*tert*-Butyl alcohol	82.9	102.0	130.0	154.2	184.2	207.0	222.5	.....	.....	235	49
$C_4H_{10}O$	Diethyl ether	34.6	56.0	90.0	122.0	159.0	183.3	.....	.....	.....	193.8	35.5
$C_4H_{10}S$	Diethyl sulfide	88.0	112.0	153.8	190.2	234.0	263.0	.....	.....	.....	283.8	39.1
$C_4H_{11}N$	Diethylamine	55.5	77.8	113.0	145.3	184.5	210.0	.....	.....	.....	223.3	36.6
$C_4H_{12}Si$	Tetramethylsilane	27.0	48.0	82.0	113.0	152.0	178.0	.....	.....	.....	185	33

$C_5H_{10}O_2$..	Ethyl propionate	99.1	123.8	162.7	197.8	240.0	264.5	.....	.....	.....	272.8	33.2
$C_5H_{10}O_2$..	Propyl acetate	101.8	125.8	165.7	200.5	242.8	269.0	.....	.....	.....	276.2	33.2
$C_5H_{10}O_2$..	Isobutyl formate	98.2	121.8	157.8	192.4	234.0	261.0	.....	.....	.....	278.0	38.0
$C_5H_{10}O_2$..	Methyl butyrate	102.3	127.5	166.7	203.0	244.5	272.0	.....	.....	.....	281.2	34.2
$C_5H_{10}O_2$..	Methyl isobutyrate	92.6	116.7	155.2	190.2	232.0	259.5	.....	.....	.....	267.5	33.9
C_5H_{12}....	Pentane	36.1	58.0	92.4	124.7	164.3	191.3	.....	.....	.....	197.2	33.0
C_5H_{12}....	2-Methylbutane	27.8	48.8	82.8	114.5	154.0	180.3	.....	.....	.....	187.8	32.8
C_5H_{12}....	2,2-Dimethylpropane	+ 9.5	29.5	61.1	90.7	127.6	152.5	.....	.....	.....	159.0	33.0
$C_5H_{12}O$...	Ethyl propyl ether	61.7	85.3	123.1	156.2	197.2	223.0	.....	.....	.....	227.4	32.1
C_6H_5Br...	Bromobenzene	156.2	186.2	232.5	274.5	327.0	359.8	387.5	.....	.....	397	44.6
C_6H_5Cl...	Chlorobenzene	132.2	160.2	205.0	245.3	292.8	324.4	349.8	.....	.....	359.2	44.6
C_6H_5F....	Fluorobenzene	84.7	109.9	148.5	184.4	227.6	257.0	279.3	.....	.....	286.5	44.7
C_6H_5I....	Iodobenzene	188.6	220.0	270.0	315.7	371.5	406.0	437.2	.....	.....	448	44.7
C_6H_6.....	Benzene	80.1	103.8	142.5	178.8	221.5	249.5	272.3	290.3	.....	290.5	50.1
C_6H_6O....	Phenol	181.9	208.0	248.2	283.8	328.7	358.0	382.1	400.0	418.7	419	60.5
C_6H_7N...	Aniline	184.4	212.8	254.8	292.7	342.0	375.5	400.0	422.4	.....	426	52.4
C_6H_{12}....	Cyclohexane	80.7	106.0	146.4	184.0	228.4	257.5	.....	.....	.....	279.9	39.8
$C_6H_{12}O_2$..	Ethyl isobutyrate	110.1	135.5	174.2	210.0	253.0	280.0	.....	.....	.....	280.0	30.0
C_6H_{14}....	Hexane	68.7	93.0	131.7	166.6	209.4	.....	.....	.....	.....	234.8	29.6
C_6H_{14}....	2,3-Dimethylbutane	58.0	82.0	120.3	155.7	198.7	225.5	.....	.....	.....	227.4	30.7
C_7H_8.....	Toluene	110.6	136.5	178.0	215.8	262.5	292.8	319.0	.....	.....	320.6	41.6
C_7H_{16}....	Heptane	98.4	124.8	165.7	202.8	247.5	.....	.....	.....	.....	266.8	26.9
C_8H_{10}....	Ethylbenzene	136.2	163.5	207.5	246.3	294.5	326.5	.....	.....	.....	346.4	38.1
C_8H_{18}....	Octane	125.6	152.7	196.2	235.8	181.4	.....	.....	.....	.....	296.2	24.7
$C_{12}H_{26}$....	Dodecane	216.2	249.2	300.0	345.8	.....	.....	.....	.....	.....	385	17.5

The 1958 He^4 temperature scale is defined by the equation[1]

$$\ln P = i_0 - \frac{L_0}{RT} + \frac{5}{2}\ln T - \frac{1}{RT}\int_0^T S_l\,dT + \frac{1}{RT}\int_0^P V_l\,dP + \epsilon$$

where $$i_0 \equiv \ln (2\pi m)^{\frac{3}{2}}\frac{k^{\frac{5}{2}}}{h^3},$$

and $$\epsilon \equiv \ln \frac{PV}{NRT} - \frac{2BN}{V} - \frac{3}{2}\frac{CN^2}{V^2}$$

L_0 is heat of vaporization of liquid He^4 at 0 K, S_l and V_l are the molar entropy and volume of liquid He^4, m is the mass of a He^4 atom, and B and C are virial coefficients of He^4.

The scale has been approved by the International Committee on Weights and Measures and is used for temperature measurements between the boiling point of helium (4.2150 K) and about 1.0 K and can be used up to the critical point of helium (T = 5.1994 K, P = 1,718 mm Hg). It is in agreement with the thermodynamic scale to within ±2 millikelvins.

The vapor-pressure–temperature relation for He^3 is based on the equation

$$\ln P_3 = \frac{2.49174}{T} + 4.80386 - 0.286001T + 0.198608T^2 - 0.05022237T^3 + 0.00505486T^4 + 2.24846\ln T \qquad 0.2 \le T \le 3.324\ \text{K}$$

which defines the T_{62} He^3 temperature scale. The T_{62} He^3 temperature scale is the result of the work done by Sydoriak, Roberts, and Sherman[2] at the Los Alamos Scientific Laboratory.

Table 4k-7, which gives the temperature as a function of vapor pressure for He^3, is taken from the work of R. H. Sherman, S. G. Sydoriak, and T. R. Roberts.[3]

Temperature measurements using the vapor pressure of liquid hydrogen are complicated by the phenomenon of ortho-para conversion. For ortho-hydrogen the proton spins are parallel while for para-hydrogen the spins are antiparallel. Due to the different energies of the two states, the equilibrium composition varies from 75% ortho-H_2 and 25% para-H_2 at room temperature to 99.79% para-H_2 and 0.21% ortho-H_2 at 20.4 K.[4] However in the absence of a catalyst the rate of conversion from the ortho to the para form is very slow; thus it is possible to liquefy hydrogen and preserve for many hours the equilibrium composition at room temperature.[5] Hydrogen having the composition 75% ortho-H_2 and 25% para-H_2 is generally called *normal* hydrogen and hydrogen having the composition 99.79% para-H_2 and 0.21% ortho-H_2 *equilibrium* hydrogen.

The vapor-pressure–temperature relation for equilibrium hydrogen (99.79% para-H_2 and 0.21% ortho-H_2) is based on an equation proposed by Durieux,[6]

$$\log P\,(\text{mm}) = 4.635384 - \frac{44.2674}{T} + 0.021669T - 0.000021T^2$$

[1] F. G. Brickwedde, H. Van Dijk, M. Durieux, J. R. Clement, and J. K. Logan, *J. Research NBS* **64A**, 1 (1960).

[2] S. G. Sydoriak, T. R. Roberts, and R. H. Sherman, *J. Research NBS* **68A**, 559 (1964).

[3] R. H. Sherman, S. G. Sydoriak, and T. R. Roberts, *Los Alamos Rept.* LAMS 2701, pp. 17–21, 1962; *J. Research NBS* **68A**, 579 (1964).

[4] G. K. White, "Experimental Techniques in Low Temperature Physics," p. 41, Oxford University Press, London, 1959.

[5] R. P. Hudson, in "Experimental Cryophysics," p. 224, F. E. Hoare, L. C. Jackson, and N. Kurti, eds., Butterworth & Company (Publishers), Ltd., London, 1961.

[6] M. Durieux, Thesis, p. 95, Leiden, 1960.

TABLE 4k-5. VAPOR PRESSURE OF HELIUM 4 (1958 SCALE)

Vapor pressure of ^{4}He. Unit 10^{-3} mm Hg at 0°C, g = 980.665 cm/sec^2

T	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.5	.016342	.022745	.031287	.042561	.057292	.076356	.10081	.13190	.17112	.22021
	.28121	.35649	.44877	.56118	.69729	.86116	1.0574	1.2911	1.5682	1.8949
	2.2787	2.7272	3.2494	3.8549	4.5543	5.3591	6.2820	7.3365	8.5376	9.9013
	11.445	13.187	15.147	17.348	19.811	22.561	25.624	29.027	32.800	36.974
	41.581	46.656	52.234	58.355	65.059	72.386	80.382	89.093	98.567	108.853
1.0	120.000	132.070	145.116	159.198	174.375	190.711	208.274	227.132	247.350	269.006
	292.169	316.923	343.341	371.512	401.514	433.437	467.365	503.396	541.617	582.129
	625.025	670.411	718.386	769.057	822.527	878.916	938.330	1000.87	1066.67	1135.85
	1208.51	1284.81	1364.83	1448.73	1536.61	1628.62	1724.91	1825.58	1930.79	2040.67
	2155.35	2274.99	2399.73	2529.72	2665.09	2805.99	2952.60	3105.04	3263.48	3428.07
1.5	3598.97	3776.32	3960.32	4151.07	4348.79	4553.58	4765.68	4985.18	5212.26	5447.11
	5689.88	5940.76	6199.90	6467.42	6743.57	7028.47	7322.31	7625.21	7937.40	8259.02
	8590.22	8931.18	9282.06	9643.02	10014.3	10395.9	10788.2	11191.2	11605.1	12030.1
	12466.1	12913.7	13372.8	13843.6	14326.1	14820.7	15327.3	15846.3	16377.7	16921.7
	17478.2	18047.7	18630.1	19225.5	19834.1	20455.9	21091.1	21739.7	22402.0	23077.9
2.0	23767.4	24470.9	25188.1	25919.2	26664.2	27423.3	28196.3	28983.2	29784.2	30599.1
	31428.1	32271.1	33128.0	33998.6	34882.8	35780.3	36690.9	37614.3	38550.2	39500.3
	40465.6	41446.6	42443.5	43456.5	44485.7	45531.3	46593.5	47672.5	48768.6	49881.8
	51012.3	52160.2	53325.8	54509.2	55710.5	56930.0	58167.8	59423.8	60698.8	61992.0
	63304.3	64635.2	65985.4	67354.8	68743.5	70152.0	71580.2	73028.1	74496.0	75984.2
2.5	77493.1	79022.2	80572.2	82142.9	83734.6	85347.2	86981.2	88636.7	90313.8	92012.6
	93733.4	95476.0	97240.8	99028.2	100838	102669	104525	106403	108304	110228
	112175	114145	116139	118156	120198	122263	124353	126465	128603	130765
	132952	135164	137401	139663	141949	144260	146597	148961	151349	153763
	156204	158671	161164	163684	166230	168802	171402	174028	176682	179364
3.0	182073	184810	187574	190366	193187	196037	198914	201820	204755	207719
	210711	213732	216783	219864	222975	226115	229285	232484	235714	238974
	242266	245587	248939	252322	255736	259182	262658	266166	269706	273278
	276880	280516	284183	287883	291615	295380	299178	303008	306871	310768
	314697	318659	322654	326684	330747	334845	338976	343141	347341	351575
3.5	355844	360147	364485	368860	373269	377714	382194	386710	391262	395849
	400471	405130	409825	414556	419324	424128	428968	433846	438760	443713
	448702	453729	458794	463897	469038	474218	479435	484691	489985	495317
	500688	506098	511547	517036	522564	528132	533739	539387	545075	550805
	556574	562383	568234	574126	580059	586034	592051	598110	604210	610352
4.0	616537	622764	629033	635345	641700	648099	654541	661026	667554	674125
	680740	687399	694103	700851	707643	714479	721360	728285	735255	742269
	749328	756431	763579	770772	778010	785294	792623	799999	807422	814893
	822411	829978	837592	845255	852966	860725	868533	876390	884296	892252
	900258	908313	916418	924573	932778	941033	949338	957693	966099	974556
4.5	983066	991628	1000239	1008905	1017621	1026390	1035213	1044087	1053014	1061995
	1071029	1080114	1089254	1098449	1107699	1117002	1126359	1135772	1145239	1154761
	1164339	1173972	1183662	1193407	1203209	1213066	1222981	1232955	1242983	1253069
	1263212	1273414	1283673	1293991	1304367	1314802	1325297	1335850	1346462	1357136
	1367870	1378662	1389516	1400429	1411404	1422438	1433533	1444690	1455911	1467191
5.0	1478535	1489940	1501409	1512940	1524535	1536192	1547912	1559698	1571546	1583458
	1595437	1607481	1619589	1631761	1644000	1656305	1668673	1681108	1693612	1706180
	1718817	1731521	1744290							

TABLE 4k-6. 1958 He^4 VAPOR-PRESSURE–TEMPERATURE SCALE, T IN K AS A FUNCTION OF P IN MILLIMETERS MERCURY AT 0°C AND STANDARD GRAVITY, 980.665 CM/SEC^2

P	0		1		2		3		4		5		6		7		8		9	
0.01	0.7907	65	7972	61	8033	57	8090	53	8143	50	8193	47	8240	45	8285	43	8328	40	8368	39
0.02	0.8407	38	8445	35	8480	35	8515	33	8548	32	8580	32	8612	30	8642	29	8671	28	8699	28
0.03	0.8727	27	8754	26	8780	25	8805	25	8830	24	8854	24	8878	23	8901	22	8923	22	8945	22
0.04	0.8967	21	8988	21	9009	20	9029	20	9049	19	9068	20	9088	18	9106	19	9125	18	9143	18
0.05	0.9161	18	9179	17	9196	17	9213	17	9230	16	9246	17	9263	17	9279	15	9294	16	9310	15
0.06	0.9325	15	9340	15	9355	15	9370	15	9385	14	9399	14	9413	14	9427	14	9441	14	9455	13
0.07	0.9468	14	9482	13	9495	13	9508	13	9521	13	9534	12	9546	13	9559	12	9571	12	9583	12
0.08	0.9595	12	9607	12	9619	12	9631	12	9643	11	9654	11	9665	12	9677	11	9688	11	9699	11
0.09	0.9710	11	9721	11	9732	10	9742	11	9753	10	9763	11	9774	10	9784	10	9794	10	9804	10
0.10	0.9814	10	9824	10	9834	10	9844	10	9854	9	9863	10	9873	10	9883	9	9892	9	9901	10
0.11	0.9911	9	9920	9	9929	9	9938	9	9947	9	9956	9	9965	9	9974	9	9983	8	9991	9
0.12	1.0000	9	0009	8	0017	9	0026	8	0034	8	0042	9	0051	8	0059	8	0067	8	0075	8
0.13	1.0083	8	0091	8	0099	8	0107	8	0115	8	0123	8	0131	8	0139	7	0146	8	0154	8
0.14	1.0162	7	0169	8	0177	7	0184	8	0192	7	0199	7	0206	8	0214	7	0221	7	0228	8
0.15	1.0236	7	0243	7	0250	7	0257	7	0264	7	0271	7	0278	7	0285	7	0292	7	0299	6
0.16	1.0305	7	0312	7	0319	7	0326	6	0332	7	0339	7	0346	6	0352	7	0359	6	0365	7
0.17	1.0372	6	0378	7	0385	6	0391	7	0398	6	0404	6	0410	7	0417	6	0423	6	0429	6
0.18	1.0435	6	0441	7	0448	6	0454	6	0460	6	0466	6	0472	6	0478	6	0484	6	0490	6
0.19	1.0496	6	0502	6	0508	5	0513	6	0519	6	0525	6	0531	6	0537	5	0542	6	0548	6
0.2	1.0554	55	0609	54	0663	52	0715	49	0764	49	0813	46	0859	45	0904	44	0948	43	0991	41
0.3	1.1032	41	1073	39	1112	38	1150	38	1188	36	1224	36	1260	35	1295	34	1329	33	1362	33
0.4	1.1395	32	1427	32	1459	31	1490	30	1520	30	1550	29	1579	29	1608	28	1636	27	1663	28
0.5	1.1691	27	1718	26	1744	26	1770	26	1796	25	1821	25	1846	25	1871	24	1895	24	1919	23
0.6	1.1942	24	1966	23	1989	22	2011	23	2034	22	2056	22	2078	21	2099	21	2120	21	2141	21
0.7	1.2162	21	2183	20	2203	20	2223	20	2243	20	2263	20	2283	19	2302	19	2321	19	2340	19
0.8	1.2359	18	2377	18	2395	19	2414	18	2432	17	2449	18	2467	18	2485	17	2502	17	2519	17
0.9	1.2536	17	2553	17	2570	16	2586	17	2603	16	2619	16	2635	16	2651	16	2667	16	2683	16
1.0	1.2699	15	2714	16	2730	15	2745	15	2760	15	2775	15	2790	15	2805	15	2820	14	2834	15
1.1	1.2849	14	2863	15	2878	14	2892	14	2906	14	2920	14	2934	14	2948	13	2961	14	2975	14
1.2	1.2989	13	3002	13	3015	14	3029	13	3042	13	3055	13	3068	13	3081	13	3094	13	3107	12
1.3	1.3119	13	3132	13	3145	12	3157	12	3169	13	3182	12	3194	12	3206	12	3218	12	3230	12
1.4	1.3242	12	3254	12	3266	12	3278	12	3290	11	3301	12	3313	12	3325	11	3336	12	3348	11
1.5	1.3359	11	3370	11	3381	12	3393	11	3404	11	3415	11	3426	11	3437	11	3448	11	3459	10
1.6	1.3469	11	3480	11	3491	10	3501	11	3512	11	3523	10	3533	11	3544	10	3554	10	3564	11
1.7	1.3575	10	3585	10	3595	10	3605	10	3615	10	3625	10	3635	10	3645	10	3655	10	3665	10
1.8	1.3675	10	3685	10	3695	9	3704	10	3714	10	3724	9	3733	10	3743	9	3752	10	3762	9
1.9	1.3771	9	3780	10	3790	9	3799	10	3809	9	3818	9	3827	9	3836	9	3845	9	3854	9
2	1.3863	89	3952	86	4038	82	4120	80	4200	77	4877	75	4352	73	4425	71	4496	69	4565	67
3	1.4632	65	4697	63	4760	63	4823	60	4883	60	4943	58	5001	56	5057	56	5113	55	5108	53
4	1.5221	53	5274	51	5325	51	5376	49	5425	49	5474	48	5522	47	5569	47	5616	46	5662	45
5	1.5707	44	5751	44	5795	43	5838	42	5880	42	5922	41	5963	41	6004	40	6044	40	6084	39
6	1.6123	39	6162	38	6200	38	6238	37	6275	37	6312	36	6348	36	6384	36	6420	35	6455	35
7	1.6490	35	6525	34	6559	34	6593	33	6626	33	6659	33	6692	32	6724	32	6756	32	6788	32
8	1.6820	31	6851	31	6882	31	6913	30	6943	30	6973	30	7003	29	7033	29	7062	29	7091	29
9	1.7120	28	7148	29	7177	28	7205	28	7233	28	7261	27	7288	28	7316	27	7343	27	7370	26
10	1.7396	27	7423	26	7449	26	7475	26	7501	26	7527	25	7552	26	7578	25	7603	25	7628	25
11	1.7653	25	7678	24	7702	25	7727	24	7751	24	7775	24	7799	24	7823	23	7846	24	7870	23
12	1.7893	23	7916	23	7939	23	7962	23	7985	23	8008	22	8030	23	8053	22	8075	22	8097	22
13	1.8119	22	8141	22	8163	21	8184	22	8206	21	8227	22	8249	21	8270	21	8291	21	8312	21
14	1.8333	20	8353	21	8374	21	8395	20	8415	20	8345	21	8456	20	8476	20	8496	20	8516	20
15	1.8536	19	8555	20	8575	20	8595	19	8614	20	8634	19	8653	19	8672	19	8691	19	8710	19
16	1.8729	19	8748	19	8767	18	8785	19	8804	19	8823	18	8841	19	8860	18	8878	18	8896	18
17	1.8914	18	8932	18	8950	18	8968	18	8986	18	9004	18	9022	17	9039	18	9057	17	9074	18
18	1.9092	17	9109	17	9126	18	9144	17	9161	17	9178	17	9195	17	9212	17	9229	17	9246	16
19	1.9262	17	9279	17	9296	16	9312	17	9329	16	9345	17	9362	16	9378	16	9394	17	9411	16
20	1.9427	16	9443	16	9459	16	9475	16	9491	16	9507	16	9523	16	9539	15	9554	16	9570	16

TABLE 4k-6. 1958 He^4 VAPOR-PRESSURE–TEMPERATURE SCALE, T IN K AS A FUNCTION OF P IN MILLIMETERS MERCURY AT 0°C AND STANDARD GRAVITY, 980.665 CM/SEC² (*Continued*)

P	0		1		2		3		4		5		6		7		8		9	
21	1.9586	16	9602	15	9617	15	9632	16	9648	15	9663	16	9679	15	9694	15	9709	15	9724	16
22	1.9740	15	9755	15	9770	15	9785	15	9800	15	9815	15	9830	14	9844	15	9859	15	9874	15
23	1.9889	14	9903	15	9918	14	9932	15	9947	14	9961	15	9976	14	9990	15	0005	14	0019	14
24	2.0033	15	0048	14	0062	14	0076	14	0090	14	0104	14	0118	14	0132	14	0146	14	0160	14
25	2.0174	14	0188	14	0202	13	0215	14	0229	14	0243	14	0257	13	0270	14	0284	13	0297	14
26	2.0311	13	0324	14	0338	13	0351	14	0365	13	0378	13	0391	14	0405	13	0418	13	0431	13
27	2.0444	14	0458	13	0471	13	0484	13	0497	13	0510	13	0523	13	0536	13	0549	13	0562	13
28	2.0575	13	0588	12	0600	13	0613	13	0626	13	0639	13	0652	12	0664	13	0677	13	0690	12
29	2.0702	13	0715	12	0727	13	0740	12	0752	13	0765	12	0777	13	0790	12	0802	12	0814	13
30	2.0827	12	0839	12	0851	12	0863	13	0876	12	0888	12	0900	12	0912	12	0924	12	0936	13
31	2.0949	12	0961	12	0973	12	0985	12	0997	12	1009	12	1021	11	1032	12	1044	12	1056	12
32	2.1068	12	1080	12	1092	11	1103	12	1115	12	1127	12	1139	11	1150	12	1162	12	1174	11
33	2.1185	12	1197	11	1208	12	1220	11	1231	12	1243	11	1254	12	1266	11	1277	12	1289	11
34	2.1300	12	1312	11	1323	11	1334	12	1346	11	1357	11	1368	11	1379	12	1391	11	1402	11
35	2.1413	11	1424	12	1436	11	1447	11	1458	11	1469	11	1480	11	1491	11	1502	11	1513	11
36	2.1524	11	1535	11	1546	11	1557	11	1568	11	1579	11	1590	11	1601	11	1612	11	1623	11
37	2.1634	10	1644	11	1655	11	1666	11	1677	11	1688	10	1698	11	1709	11	1720	11	1731	10
38	2.1741	11	1752	11	1763	10	1773	11	1784	11	1795	10	1805	11	1816	10	1826	11	1837	11
39	2.1848	10	1858	11	1869	11	1880	10	1890	10	1900	10	1910	11	1921	10	1931	11	1942	10
40	2.1952	10	1962	11	1973	10	1983	10	1993	11	2004	10	2014	10	2024	10	2034	10	2044	11
41	2.2055	10	2065	10	2075	10	2085	10	2095	10	2105	10	2115	11	2126	10	2136	10	2146	10
42	2.2156	10	2166	10	2176	10	2186	10	2196	10	2206	10	2216	9	2225	10	2235	10	2245	10
43	2.2255	10	2265	10	2275	10	2285	9	2294	10	2304	10	2314	10	2324	10	2334	9	2343	10
44	2.2353	10	2363	9	2372	10	2382	10	2392	9	2401	10	2411	10	2421	9	2430	10	2440	10
45	2.2450	9	2459	9	2468	10	2478	10	2488	10	2498	9	2507	9	2516	9	2525	10	2535	9
46	2.2544	10	2554	9	2563	10	2573	9	2582	9	2591	10	2601	9	2610	9	2619	10	2629	9
47	2.2638	9	2647	9	2656	10	2666	9	2675	9	2684	9	2693	10	2703	9	2712	9	2721	9
48	2.2730	9	2739	9	2748	9	2757	10	2767	9	2776	9	2785	9	2794	9	2803	9	2812	9
49	2.2821	9	2830	9	2839	9	2848	9	2857	9	2866	9	2875	9	2884	9	2893	9	2902	9
50	2.2911	89	2999	87	3086	86	3172	85	3257	84	3341	83	3424	82	3506	81	3587	79	3666	79
60	2.3745	78	3823	78	3901	76	3977	75	4052	75	4127	74	4201	73	4274	73	4347	71	4418	71
70	2.4489	71	4560	69	4629	69	4698	68	4766	68	4834	67	4901	66	4967	66	5033	66	5099	64
80	2.5163	64	5227	64	5291	63	5354	63	5417	62	5479	61	5540	61	5601	61	5662	60	5722	59
90	2.5781	60	5841	58	5899	59	5958	57	6015	58	6073	57	6130	56	6186	57	6243	55	6298	56
100	2.6354	55	6409	55	6464	54	6518	54	6572	53	6625	54	6679	53	6732	52	6784	52	6836	52
110	2.6888	52	6940	51	6991	51	7042	51	7093	50	7143	50	7193	50	7243	49	7292	49	7341	49
120	2.7300	49	7439	48	7487	48	7535	48	7583	48	7631	47	7678	47	7725	47	7772	46	7818	47
130	2.7865	46	7911	46	7957	45	8002	46	8048	45	8093	45	8138	44	8182	45	8227	44	8271	44
140	2.8315	44	8459	43	8402	44	8446	43	8489	43	8532	43	8575	42	8617	42	8659	43	8702	42
150	2.8744	41	8785	42	8827	42	8869	41	8910	41	8951	41	8992	40	9032	41	9073	40	9113	40
160	2.9153	40	9193	40	9233	40	9273	39	9312	40	9352	39	9391	39	9430	39	9469	39	9508	38
170	2.9546	39	9585	38	9623	38	9661	38	9699	38	9737	37	9774	38	9812	38	9850	36	9886	38
180	2.9924	37	9961	36	9997	37	0034	37	0071	36	0107	36	0143	36	0179	36	0215	36	0251	36
190	3.0287	36	0323	35	0358	35	0393	36	0429	35	0464	35	0499	35	0534	34	0568	35	0603	34
200	3.0637	35	0672	34	0706	34	0740	34	0774	34	0808	34	0842	34	0876	33	0909	34	0943	33
210	3.0976	34	1010	33	1043	33	1076	33	1109	33	1142	32	1174	33	1207	33	1240	32	1272	32
220	3.1304	33	1337	32	1369	32	1401	32	1433	32	1465	31	1496	32	1528	32	1560	31	1591	31
230	3.1622	32	1654	31	1685	31	1716	31	1747	31	1778	31	1809	31	1840	30	1870	31	1901	30
240	3.1931	31	1962	30	1992	30	2022	30	2052	30	2082	30	2112	30	2142	30	2172	30	2202	29
250	3.2231	30	2261	30	2291	29	2320	29	2349	30	2379	29	2408	29	2437	29	2466	29	2495	29
260	3.2524	28	2552	29	2581	29	2610	28	2638	29	2667	28	2695	29	2724	28	2752	28	2780	28
270	3.2808	28	2836	28	2864	28	2892	28	2920	28	2948	28	2976	27	3003	28	3031	27	3058	28
280	3.3086	27	3113	28	3141	27	3168	27	3195	27	3222	27	3249	27	3276	27	3303	27	3330	27
290	3.3357	27	3384	26	3410	27	3437	26	3463	27	3490	26	3516	27	3543	26	3569	26	3595	27
300	3.3622	26	3648	26	3674	26	3700	26	3726	26	3752	26	3778	25	3803	26	3829	26	3855	25
310	3.3880	26	3906	25	3931	26	3957	25	3982	26	4008	25	4033	25	4058	25	4083	26	4109	25
320	3.4134	25	4159	25	4184	25	4209	24	4233	25	4258	25	4283	25	4308	24	4332	25	4357	25
330	3.4382	24	4406	25	4431	24	4455	24	4479	25	4504	24	4528	24	4552	24	4576	25	4601	24

TABLE 4k-6. 1958 He^4 VAPOR-PRESSURE–TEMPERATURE SCALE, T IN K AS A FUNCTION OF P IN MILLIMETERS MERCURY AT 0°C AND STANDARD GRAVITY, 980.665 CM/SEC^2 (*Continued*)

P	0		1		2		3		4		5		6		7		8		9	
340	3.4625	24	4649	24	4673	24	4697	24	4721	23	4744	24	4768	24	4792	24	4816	23	4839	24
350	3.4863	23	4886	24	4910	23	4933	24	4957	23	4980	24	5004	23	5027	23	5050	23	5073	24
360	3.5097	23	5120	23	5143	23	5166	23	5189	23	5212	23	5235	23	5258	22	5280	23	5303	23
370	3.5326	23	5349	22	5371	23	5394	23	5417	22	5439	23	5462	22	5484	22	5506	23	5529	22
380	3.5551	22	5573	23	5596	22	5618	22	5640	22	5662	22	5684	22	5706	22	5728	22	5750	22
390	3.5772	22	5794	22	5816	22	5838	22	5860	21	5881	22	5903	22	5925	22	5947	21	5968	22
400	3.5990	21	6011	22	6033	21	6054	22	6076	21	6097	22	6119	21	6140	21	6161	21	6182	22
410	3.6204	21	6225	21	6246	21	6267	21	6288	21	6309	21	6330	21	6351	21	6372	21	6393	21
420	3.6414	21	6435	21	6456	21	6477	20	6497	21	6518	21	6539	20	6559	21	6580	21	6601	20
430	3.6621	21	6642	20	6662	21	6683	20	6703	21	6724	20	6744	20	6764	21	6785	20	6805	20
440	3.6825	20	6845	21	6866	20	6886	20	6906	20	6926	20	6946	20	6966	20	6986	20	7006	20
450	3.7026	20	7046	20	7066	20	7086	19	7105	20	7125	20	7145	20	7165	19	7184	20	7204	20
460	3.7224	19	7243	20	7263	19	7282	20	7302	20	7322	19	7341	19	7360	20	7380	19	7399	20
470	3.7419	19	7438	19	7457	20	7477	19	7496	19	7515	19	7534	19	7553	20	7573	19	7592	19
480	3.7611	19	7630	19	7649	19	7668	19	7687	19	7706	19	7725	19	7744	19	7763	18	7781	19
490	3.7800	19	7819	19	7838	19	7857	18	7875	19	7894	19	7913	18	7931	19	7950	19	7969	18
500	3.7987	19	8006	18	8024	19	8043	18	8061	19	8080	18	8098	19	8117	18	8135	18	8153	19
510	3.8172	18	8190	18	8208	19	8227	18	8245	18	8263	18	8281	18	8299	18	8317	19	8336	18
520	3.8354	18	8372	18	8390	18	8408	18	8426	18	8444	18	8462	18	8480	18	8498	18	8516	17
530	3.8533	18	8551	18	8569	18	8587	18	8605	17	8622	18	8640	18	8658	18	8676	17	8693	18
540	3.8711	17	8728	18	8746	18	8764	17	8781	18	8799	17	8816	18	8834	17	8851	18	8869	17
550	3.8886	17	8903	18	8921	17	8938	17	8955	18	8973	17	8990	17	9007	18	9025	17	9042	17
560	3.9059	17	9076	17	9093	18	9111	17	9128	17	9145	17	9162	17	9179	17	9196	17	9213	17
570	3.9230	17	9247	17	9264	17	9281	17	9298	17	9315	17	9332	17	9349	16	9365	17	9382	17
580	3.9399	17	9416	17	9433	16	9449	17	9466	17	9483	16	9499	17	9516	17	9533	16	9549	17
590	3.9566	17	9583	16	9599	17	9616	16	9632	17	9649	16	9665	17	9682	16	9698	17	9715	16
600	3.9731	16	9747	17	9764	16	9780	17	9797	16	9813	16	9829	17	9846	16	9862	16	9878	16
610	3.9894	17	9911	16	9927	16	9943	16	9959	16	9975	16	9991	16	0007	17	0024	16	0040	16
620	4.0056	16	0072	16	0088	16	0104	16	0120	16	0136	16	0152	16	0168	16	0184	15	0199	16
630	4.0215	16	0231	16	0247	16	0263	16	0279	16	0295	15	0310	16	0326	16	0342	16	0358	15
640	4.0373	16	0389	16	0405	15	0420	16	0436	16	0452	15	0467	16	0483	15	0498	16	0514	16
650	4.0530	15	0545	16	0561	15	0576	16	0592	15	0607	16	0623	15	0638	15	0653	16	0669	15
660	4.0684	16	0700	15	0715	15	0730	16	0746	15	0761	15	0776	16	0792	15	0807	15	0822	15
670	4.0837	16	0853	15	0868	15	0883	15	0898	15	0913	15	0928	16	0944	15	0959	15	0974	15
680	4.0989	15	1004	15	1019	15	1034	15	1049	15	1064	15	1079	15	1094	15	1109	15	1124	15
690	4.1139	15	1154	15	1169	15	1184	14	1198	15	1213	15	1228	15	1243	15	1258	15	1273	14
700	4.1287	15	1302	15	1317	15	1332	14	1346	15	1361	15	1376	15	1391	14	1405	15	1420	15
710	4.1435	14	1449	15	1464	14	1478	15	1493	15	1508	14	1522	15	1537	14	1551	15	1566	14
720	4.1580	15	1595	14	1609	15	1624	14	1638	15	1653	14	1667	14	1681	15	1696	14	1710	15
730	4.1725	14	1739	14	1753	15	1768	14	1782	14	1796	15	1811	14	1825	14	1839	14	1853	15
740	4.1868	14	1882	14	1896	14	1910	15	1925	14	1939	14	1953	14	1967	14	1981	14	1995	14
750	4.2009	15	2024	14	2038	14	2052	14	2066	14	2080	14	2094	14	2108	14	2122	14	2136	14
760	4.2150	14	2164	14	2178	14	2192	14	2206	14	2220	14	2234	14	2248	14	2262	13	2275	14
770	4.2289	14	2303	14	2317	14	2331	14	2345	14	2358	14	2372	14	2386	14	2400	14	2414	13
780	4.2427	14	2441	14	2455	14	2469	13	2482	13	2496	14	2510	13	2523	14	2537	14	2551	13
790	4.2564	14	2578	14	2592	13	2605	14	2619	13	2632	14	2646	13	2659	14	2673	13	2686	14
800	4.2700	135	2835	133	2968	132	3100	131	3231	131	3362	129	3491	128	3619	127	3746	126	3872	125
900	4.3997	124	4121	123	4244	122	4366	122	4488	120	4608	120	4728	118	4846	118	4964	117	5081	116
1000	4.5197	116	5313	114	5427	114	5541	113	5654	112	5766	112	5878	111	5989	110	6099	109	6208	109
1100	4.6317	108	6425	107	6532	107	6639	106	6745	105	6850	105	6955	104	7059	103	7162	103	7265	102
1200	4.7367	102	7469	101	7570	100	7670	100	7770	100	7870	98	7968	99	8067	97	8164	97	8261	97
1300	4.8358	96	8454	96	8550	95	8645	94	8739	94	8833	94	8927	93	9020	92	9112	92	9204	92
1400	4.9296	91	9387	91	9478	90	9568	90	9658	89	9747	89	9836	89	9925	88	0013	88	0101	87
1500	5.0188	87	0275	86	0361	86	0447	86	0533	85	0618	85	0703	84	0787	84	0871	84	0955	83
1600	5.1038	83	1121	82	1203	83	1286	81	1367	82	1449	81	1530	81	1611	80	1691	80	1771	80
1700	5.1851	79	1930	79	2009	79	2088	78	2166	78										

TABLE 4k-7. T_{62}HE^3 TEMPERATURES IN K AS A FUNCTION OF VAPOR PRESSURE P AT 0°C AND STANDARD GRAVITY, 980.665 CM/SEC^2

P in micrometers (10^{-3} mm) of Mercury

P	0	1	2	3	4	5	6	7	8	9
0.01	0.1974 13	1987 12	1999 11	2010 10	2020 10	2030 9	2039 9	2048 8	2056 7	2063 8
0.02	0.2071 7	2078 7	2085 6	2091 7	2098 6	2104 6	2110 5	2115 6	2121 5	2126 5
0.03	0.2131 6	2137 4	2141 5	2146 5	2151 4	2155 5	2160 4	2164 4	2168 4	2172 4
0.04	0.2176 4	2180 4	2184 4	2188 4	2192 3	2195 4	2199 3	2202 4	2206 3	2209 4
0.05	0.2213 3	2216 3	2219 3	2222 3	2225 3	2228 3	2231 3	2234 3	2237 3	2240 3
0.06	0.2243 3	2246 2	2248 3	2251 3	2254 3	2257 2	2259 3	2262 2	2264 3	2267 2
0.07	0.2269 3	2272 2	2274 2	2276 3	2279 2	2281 2	2283 3	2286 2	2288 2	2290 2
0.08	0.2292 3	2295 2	2297 2	2299 2	2301 2	2303 2	2305 2	2307 2	2309 2	2311 2
0.09	0.2313 2	2315 2	2317 2	2319 2	2321 2	2323 2	2325 2	2327 1	2328 2	2330 2
0.10	0.2332 18	2350 16	2366 15	2381 14	2395 13	2408 12	2420 12	2432 11	2443 11	2454 10
0.20	0.2464 10	2474 9	2483 9	2492 9	2501 8	2509 9	2518 8	2526 7	2533 8	2541 7
0.30	0.2548 7	2555 7	2562 6	2568 7	2575 6	2581 6	2587 6	2593 6	2599 6	2605 5
0.40	0.2610 6	2616 5	2621 5	2626 6	2632 5	2637 5	2642 5	2647 4	2651 5	2656 5
0.50	0.2661 4	2665 5	2670 4	2674 5	2679 4	2683 4	2687 4	2691 4	2695 4	2699 4
0.60	0.2703 4	2707 4	2711 4	2715 4	2719 3	2722 4	2726 4	2730 3	2733 4	2737 3
0.70	0.2740 4	2744 3	2747 3	2750 4	2754 3	2757 3	2760 4	2764 3	2767 3	2770 3
0.80	0.2773 3	2776 3	2779 3	2782 3	2785 3	2788 3	2791 3	2794 3	2797 3	2800 3
0.90	0.2803 2	2805 3	2808 3	2811 3	2814 2	2816 3	2819 3	2822 2	2824 3	2827 2
1	0.2829 25	2854 23	2877 21	2898 20	2918 19	2937 18	2955 17	2972 16	2988 16	3004 14
2	0.3018 14	3032 14	3046 13	3059 13	3072 12	3084 12	3096 11	3107 11	3118 11	3129 11
3	0.3140 10	3150 10	3160 9	3169 10	3179 9	3188 9	3197 9	3206 8	3214 9	3223 8
4	0.3231 8	3239 8	3247 8	3255 7	3262 8	3270 7	3277 7	3284 8	3292 7	3299 6
5	0.3305 7	3312 7	3319 6	3325 7	3332 6	3338 6	3344 6	3350 6	3356 6	3362 6
6	0.3368 6	3374 6	3380 6	3386 5	3391 6	3397 5	3402 6	3408 5	3413 5	3418 5
7	0.3423 5	3428 6	3434 5	3439 4	3443 5	3448 5	3453 5	3458 5	3463 5	3468 4
8	0.3472 5	3477 4	3481 5	3486 4	3490 5	3495 4	3499 5	3504 4	3508 4	3512 4
9	0.3516 5	3521 4	3525 4	3529 4	3533 4	3537 4	3541 4	3545 4	3549 4	3553 4
10	0.3557 37	3594 34	3628 33	3661 30	3691 29	3720 27	3747 26	3773 24	3797 24	3821 23
20	0.3844 21	3865 21	3886 21	3907 19	3926 19	3945 18	3963 18	3981 17	3998 17	4015 16
30	0.4031 16	4047 15	4062 15	4077 15	4092 15	4107 14	4121 13	4134 14	4148 13	4161 13
40	0.4174 13	4187 12	4199 12	4211 12	4223 12	4235 11	4246 12	4258 11	4269 11	4280 11
50	0.4291 10	4301 11	4312 10	4322 10	4332 10	4342 10	4352 10	4362 10	4372 9	4381 10
60	0.4391 9	4400 9	4409 9	4418 9	4427 9	4436 8	4444 9	4453 8	4461 9	4470 8
70	0.4478 8	4486 9	4495 8	4503 7	4510 8	4518 8	4526 8	4534 7	4541 8	4549 7
80	0.4556 8	4564 7	4571 7	4578 8	4586 7	4593 7	4600 7	4607 7	4614 7	4621 7
90	0.4628 6	4634 7	4641 7	4648 6	4654 7	4661 6	4667 7	4674 6	4680 6	4686 7

P in millimeters of Mercury

0.1	0.4693 60	4753 56	4809 53	4862 50	4912 47	4959 44	5003 43	5046 41	5087 39	5126 37
0.2	0.5163 37	5200 34	5234 34	5268 33	5301 31	5332 31	5363 30	5393 29	5422 28	5450 27
0.3	0.5477 27	5504 26	5530 26	5556 24	5580 25	5605 24	5629 23	5652 23	5675 23	5698 22
0.4	0.5720 21	5741 22	5763 20	5783 21	5804 20	5824 20	5844 19	5863 20	5883 19	5902 18
0.5	0.5920 19	5939 18	5957 18	5975 17	5992 18	6010 17	6027 17	6044 16	6060 17	6077 16
0.6	0.6093 16	6109 16	6125 16	6141 15	5156 16	6172 15	6187 15	6202 14	6216 15	6231 15
0.7	0.6246 14	6260 14	6274 14	6288 14	6302 14	6316 14	6330 13	6343 14	6357 13	6370 13
0.8	0.6383 13	6396 13	6409 13	6422 12	6434 13	6447 12	6459 13	6472 12	6484 12	6496 12
0.9	0.6508 12	6520 12	6532 12	6544 12	6556 11	6567 12	6579 11	6590 11	6601 12	6613 11
1.0	0.6624 11	6635 11	6646 11	6657 11	6668 10	6678 11	6689 11	6700 10	6710 11	6721 10
1.1	0.6731 11	6742 10	6752 10	6762 10	6772 10	6782 10	6792 10	6802 10	6812 10	6822 10
1.2	0.6832 10	6842 9	6851 10	6861 9	6870 10	6880 9	6889 10	6899 9	6908 9	6917 9
1.3	0.6926 10	6936 9	6945 9	6954 9	6963 9	6972 9	6981 9	6990 8	6998 9	7007 9
1.4	0.7016 9	7025 8	7033 9	7042 9	7051 8	7059 9	7068 8	7076 8	7084 9	7093 8
1.5	0.7101 8	7109 9	7118 8	7126 8	7134 8	7142 8	7150 8	7158 8	7166 8	7174 8
1.6	0.7182 8	7190 8	7198 8	7206 7	7213 8	7221 8	7229 8	7237 7	7224 8	7252 8
1.7	0.7260 7	7267 8	7275 7	7282 8	7290 7	7297 8	7305 7	7312 7	7319 8	7327 7
1.8	0.7334 7	7341 7	7348 8	7356 7	7363 7	7370 7	7377 7	7384 7	7391 7	7398 7
1.9	0.7405 7	7412 7	7419 7	7426 7	7433 7	7440 7	7447 7	7454 6	7460 7	7467 7

TABLE 4k-7. $T_{62}He^3$ TEMPERATURES IN K AS A FUNCTION OF VAPOR PRESSURE P AT 0°C AND STANDARD GRAVITY, 980.665 CM/SEC² (*Continued*)

P in millimeters of Mercury

P	0	1	2	3	4	5	6	7	8	9
2.0	0.7474 7	7481 7	7488 6	7494 7	7501 7	7508 6	7514 7	7521 6	7527 7	7534 6
2.1	0.7540 7	7547 6	7553 7	7560 6	7566 7	7573 6	7579 7	7586 6	7592 6	7598 7
2.2	0.7605 6	7611 6	7617 6	7623 7	7630 6	7636 6	7642 6	7648 6	7654 7	7661 6
2.3	0.7667 6	7673 6	7679 6	7685 6	7691 6	7697 6	7703 6	7709 6	7715 6	7721 6
2.4	0.7727 6	7733 6	7739 6	7745 5	7750 6	7756 6	7762 6	7768 6	7774 6	7780 5
2.5	0.7785 6	7791 6	7797 6	7803 5	7808 6	7814 6	7820 5	7825 6	7831 6	7837 5
2.6	0.7842 6	7848 5	7853 6	7859 5	7864 6	7870 6	7876 5	7881 6	7887 5	7892 5
2.7	0.7897 6	7903 5	7908 6	7914 5	7919 6	7925 5	7930 5	7935 6	7941 5	7946 5
2.8	0.7951 6	7957 5	7962 5	7967 6	7973 5	7978 5	7983 5	7988 6	7994 5	7999 5
2.9	0.8004 5	8009 5	8014 5	8019 6	8025 5	8030 5	8035 5	8040 5	8045 5	8050 5
3	0.8055 50	8105 49	8154 48	8202 47	8249 46	8295 45	8340 44	8384 43	8427 43	8470 42
4	0.8512 41	8553 40	8593 40	8633 39	8672 38	8710 38	8748 38	8786 36	8822 37	8859 35
5	0.8894 36	8930 34	8964 35	8999 33	9032 34	9066 33	9099 32	9131 33	9164 31	9195 32
6	0.9227 31	9258 31	9289 30	9319 30	9349 30	9379 29	9408 29	9437 29	9466 29	9495 28
7	0.9523 28	9551 28	9579 27	9606 27	9633 27	9660 27	9687 26	9713 27	9740 26	9766 25
8	0.9791 26	9817 25	9842 25	9867 25	9892 25	9917 24	9941 25	9966 24	9990 24	0014 24
9	1.0038 23	0061 24	0085 23	0108 23	0131 23	0154 22	0176 23	0199 22	0221 23	0244 22
10	1.0266 22	0288 22	0310 21	0331 22	0353 21	0374 21	0395 21	0416 21	0437 21	0458 21
11	1.0479 21	0500 20	0520 20	0540 21	0561 20	0581 20	0601 19	0620 20	0640 20	0660 19
12	1.0679 20	0699 19	0718 19	0737 19	0756 19	0775 19	0794 19	0813 19	0832 18	0850 19
13	1.0869 18	0887 18	0905 18	0924 18	0942 18	0960 18	0978 18	0996 17	1013 18	1031 18
14	1.1049 17	1066 17	1083 18	1101 17	1118 17	1135 17	1152 17	1169 17	1186 17	1203 17
15	1.1220 17	1237 16	1253 17	1270 16	1286 17	1303 16	1319 16	1335 17	1352 16	1368 16
16	1.1384 16	1400 16	1416 16	1432 15	1447 16	1463 16	1479 15	1494 16	1510 15	1525 16
17	1.1541 15	1556 15	1571 16	1587 15	1602 15	1617 15	1632 15	1647 15	1662 15	1677 15
18	1.1692 15	1707 14	1721 15	1736 15	1751 14	1765 15	1780 14	1794 15	1809 14	1823 14
19	1.1837 14	1851 15	1866 14	1880 14	1894 14	1908 14	1922 14	1936 14	1950 14	1964 14
20	1.1978 13	1991 14	2005 14	2019 13	2032 14	2046 14	2060 13	2073 14	2087 13	2100 13
21	1.2113 14	2127 13	2140 13	2153 13	2166 14	2180 13	2193 13	2206 13	2219 13	2232 13
22	1.2245 13	2258 13	2271 13	2284 12	2296 13	2309 13	2322 13	2335 12	2347 13	2360 13
23	1.2373 12	2385 13	2398 12	2410 13	2423 12	2435 12	2447 13	2460 12	2472 12	2484 12
24	1.2496 13	2509 12	2521 12	2533 12	2545 12	2557 12	2569 12	2581 12	2593 12	2605 12
25	1.2617 12	2629 12	2641 12	2653 11	2664 12	2676 12	2688 12	2700 11	2711 12	2723 11
26	1.2734 12	2746 12	2758 11	2769 12	2781 11	2792 11	2803 12	2815 11	2826 12	2838 11
27	1.2849 11	2860 11	2871 12	2883 11	2894 11	2905 11	2916 11	2927 11	2938 11	2949 11
28	1.2960 11	2971 11	2982 11	2993 11	3004 11	3015 11	3026 11	3037 11	3048 11	3059 10
29	1.3069 11	3080 11	3091 11	3102 10	3112 11	3123 11	3134 10	3144 11	3155 10	3165 11
30	1.3176 11	3187 10	3197 10	3207 11	3218 10	3228 11	3239 10	3249 11	3260 10	3270 10
31	1.3280 10	3290 11	3301 10	3311 10	3321 10	3331 11	3342 10	3352 10	3362 10	3372 10
32	1.3382 10	3392 10	3402 10	3412 10	3422 10	3432 10	3442 10	3452 10	3462 10	3472 10
33	1.3482 10	3492 10	3502 10	3512 10	3522 9	3531 10	3541 10	3551 10	3561 9	3570 10
34	1.3580 10	3590 9	3599 10	3609 10	3619 9	3628 10	3638 9	3647 10	3657 10	3667 9
35	1.3676 10	3686 9	3695 10	3705 9	3714 9	3723 10	3733 9	3742 10	3752 9	3761 9
36	1.3770 10	3780 9	3789 9	3798 10	3808 9	3817 9	3826 9	3835 9	3844 10	3854 9
37	1.3863 9	3872 9	3881 9	3890 9	3899 10	3909 9	3918 9	3927 9	3936 9	3945 9
38	1.3954 9	3963 9	3972 9	3981 9	3990 9	3999 9	4008 8	4016 9	4025 9	4034 9
39	1.4043 9	4052 9	4061 9	4070 8	4078 9	4087 9	4096 9	4105 8	4113 9	4122 9
40	1.4131 9	4140 8	4148 9	4157 9	4166 8	4174 9	4183 9	4192 8	4200 9	4209 8
41	1.4217 9	4226 8	4234 9	4243 8	4251 9	4260 8	4268 9	4277 8	4285 9	4294 8
42	1.4302 9	4311 8	4319 9	4328 8	4336 8	4344 9	4353 8	4361 8	4369 9	4378 8
43	1.4386 8	4394 9	4403 8	4411 8	4419 8	4427 9	4436 8	4444 8	4452 8	4460 8
44	1.4468 9	4477 8	4485 8	4493 8	4501 8	4509 8	4517 8	4525 8	4533 8	4541 9

TABLE 4k-7. $T_{62}He^3$ TEMPERATURES IN K AS A FUNCTION OF VAPOR PRESSURE P AT 0°C AND STANDARD GRAVITY, 980.665 CM/SEC² (*Continued*)

P in millimeters of Mercury

P	0	1	2	3	4	5	6	7	8	9
45	1.4550 8	4558 8	4566 8	4574 8	4582 8	4590 8	4598 8	4606 8	4614 8	4622 8
46	1.4630 7	4637 8	4645 8	4653 8	4661 8	4669 8	4677 8	4685 8	4693 8	4701 7
47	1.4708 8	4716 8	4724 8	4732 8	4740 7	4747 8	4755 8	4763 8	4771 7	4778 8
48	1.4786 8	4794 8	4802 7	4809 8	4817 8	4825 7	4832 8	4840 8	4848 7	4855 8
49	1.4863 7	4870 8	4878 8	4886 7	4893 8	4901 7	4908 8	4916 8	4924 7	4931 8
50	1.4939 74	5013 74	5087 73	5160 72	5232 71	5303 70	5373 69	5442 69	5511 68	5579 67
60	1.5645 66	5712 66	5778 65	5843 64	5907 64	5971 62	6033 63	6096 62	6158 61	6219 60
70	1.6279 60	6339 60	6399 59	6458 58	6516 58	6574 57	6631 57	6688 56	6744 56	6800 56
80	1.6856 55	6911 54	6965 55	7020 53	7073 54	7127 52	7179 53	7232 52	7284 52	7336 51
90	1.7387 51	7438 51	7489 50	7539 50	7589 49	7638 49	7687 49	7736 49	7785 48	7833 48
100	1.7881 47	7928 48	7976 47	8023 46	8069 47	8116 46	8162 46	8208 45	8253 45	8298 45
110	1.8343 45	8388 45	8433 44	8477 44	8521 43	8564 44	8608 43	8651 43	8694 43	8737 42
120	1.8779 43	8822 42	8864 41	8905 42	8947 41	8988 42	9030 41	9071 40	9111 41	9152 40
130	1.9192 40	9232 40	9272 40	9312 39	9351 40	9391 39	9430 39	9469 39	9508 38	9546 39
140	1.9585 38	9623 38	9661 38	9699 38	9737 37	9774 38	9812 37	9849 37	9886 37	9923 36
150	1.9959 37	9996 36	0032 37	0069 36	0105 36	0141 35	0176 36	0212 36	0248 35	0283 35
160	2.0318 35	0353 35	0388 35	0423 35	0458 34	0492 34	0526 35	0561 34	0595 34	0629 34
170	2.0663 33	0696 34	0730 33	0763 34	0797 33	0830 33	0863 33	0896 33	0929 32	0961 33
180	2.0994 33	1027 32	1059 32	1091 32	1123 32	1155 32	1187 32	1219 32	1251 31	1282 32
190	2.1314 31	1345 31	1376 32	1408 31	1439 30	1469 31	1500 31	1531 31	1562 30	1592 31
200	2.1623 30	1653 30	1683 30	1713 30	1743 30	1773 30	1803 30	1833 30	1863 29	1892 30
210	2.1922 29	1951 29	1980 30	2010 29	2039 29	2068 29	2097 29	2126 28	2154 29	2183 29
220	2.2212 28	2240 28	2268 29	2297 28	2325 28	2353 28	2381 28	2409 28	2437 28	2465 28
230	2.2493 28	2521 27	2548 28	2576 27	2603 28	2631 27	2658 27	2685 27	2712 28	2740 27
240	2.2767 26	2793 27	2820 27	2847 27	2874 27	2901 26	2927 27	2954 26	2980 26	3006 27
250	2.3033 26	3059 26	3085 26	3111 26	3137 26	3163 26	3189 26	3215 26	3241 25	3266 26
260	2.3292 26	3318 25	3343 26	3369 25	3394 25	3419 26	3445 25	3470 25	3495 25	3520 25
270	2.3545 25	3570 25	3595 25	3620 25	3645 24	3669 25	3694 24	3718 25	3743 25	3768 24
280	2.3792 24	3816 25	3841 24	3865 24	3889 24	3913 24	3937 24	3961 24	3985 24	4009 24
290	2.4033 24	4057 24	4081 23	4104 24	4128 24	4152 23	4175 24	4199 23	4222 24	4246 23
300	2.4269 23	4292 24	4316 23	4339 23	4362 23	4385 23	4408 23	4431 23	4454 23	4477 23
310	2.4500 23	4523 22	4545 23	4568 23	4591 22	4613 23	4636 22	4658 23	4681 22	4703 23
320	2.4726 22	4748 22	4770 23	4793 22	4815 22	4837 22	4859 22	4881 22	4903 22	4925 22
330	2.4947 22	4969 22	4991 22	5013 21	5034 22	5056 22	5078 21	5099 22	5121 22	5143 21
340	2.5164 21	5185 22	5207 21	5228 22	5250 21	5271 21	5292 21	5313 22	5335 21	5356 21
350	2.5377 21	5398 21	5419 21	5440 21	5461 21	5482 21	5503 21	5524 20	5544 21	5565 21
360	2.5586 20	5606 21	5627 21	5648 20	5668 21	5689 20	5709 21	5730 20	5750 21	5771 20
370	2.5791 20	5811 20	5831 21	5852 20	5872 20	5892 20	5912 20	5932 20	5952 20	5972 20
380	2.5992 20	6012 20	6032 20	6052 20	6072 20	6092 20	6112 19	6131 20	6151 20	6171 19
390	2.6190 20	6210 20	6230 19	6249 20	6269 19	6288 20	6308 19	6327 19	6346 20	6366 19
400	2.6385 19	6404 20	6424 19	6443 19	6462 19	6481 19	6500 20	6520 19	6539 19	6558 19
410	2.6577 19	6596 19	6615 19	6634 18	6652 19	6671 19	6690 19	6709 19	6728 18	6746 19
420	2.6765 19	6784 18	6802 19	6821 19	6840 18	6858 19	6877 18	6895 19	6914 18	6932 19
430	2.6951 18	6969 18	6987 19	7006 18	7024 18	7042 19	7061 18	7079 18	7097 18	7115 18
440	2.7133 18	7151 19	7170 18	7188 18	7206 18	7224 18	7242 18	7260 18	7278 17	7295 18
450	2.7313 18	7331 18	7349 18	7367 18	7385 17	7402 18	7420 18	7438 17	7455 18	7473 18
460	2.7491 17	7508 18	7526 17	7543 18	7561 17	7578 18	7596 17	7613 18	7631 17	7648 17
470	2.7665 18	7683 17	7700 17	7717 18	7735 17	7752 17	7769 17	7786 17	7803 18	7821 17
480	2.7838 17	7855 17	7872 17	7889 17	7906 17	7923 17	7940 17	7957 17	7974 17	7991 17
490	2.8008 17	8025 16	8041 17	8058 17	8075 17	8092 16	8108 17	8125 17	8142 17	8159 16
500	2.8175 17	8192 17	8209 16	8225 17	8242 16	8258 17	8275 16	8291 17	8308 16	8324 17
510	2.8341 16	8357 16	8373 17	8390 16	8406 17	8423 16	8439 16	8455 16	8471 17	8488 16
520	2.8504 16	8520 16	8536 16	8552 17	8569 16	8585 16	8601 16	8617 16	8633 16	8649 16
530	2.8665 16	8681 16	8697 16	8713 16	8729 16	8745 16	8761 16	8777 15	8792 16	8808 16
540	2.8824 16	8840 16	8856 15	8871 16	8887 16	8903 16	8919 15	8934 16	8950 16	8966 15

TABLE 4k-7. T_{62}HE^3 TEMPERATURES IN K AS A FUNCTION OF VAPOR PRESSURE P AT 0°C AND STANDARD GRAVITY, 980.665 CM/SEC^2 (*Continued*)

P in millimeters of Mercury

P	0	1	2	3	4	5	6	7	8	9
550	2.8981 16	8997 15	9012 16	9028 16	9044 15	9059 16	9075 15	9090 16	9106 15	9121 15
560	2.9136 16	9152 15	9167 16	9183 15	9198 15	9213 16	9229 15	9244 15	9259 16	9275 15
570	2.9290 15	9305 15	9320 15	9335 16	9351 15	9366 15	9381 15	9396 15	9411 15	9426 15
580	2.9441 15	9456 15	9471 15	9486 15	9501 15	9516 15	9531 15	9546 15	9561 15	9576 15
590	2.9591 15	9606 15	9621 15	9636 14	9650 15	9665 15	9680 15	9695 15	9710 14	9724 15
600	2.9739 15	9754 15	9769 14	9783 15	9798 14	9812 15	9827 15	9842 14	9856 15	9871 14
610	2.9885 15	9900 15	9915 14	9929 15	9944 14	9958 14	9972 15	9987 14	0001 15	0016 14
620	2.0030 15	0045 14	0059 14	0073 15	0088 14	0102 14	0116 15	0131 14	0145 14	0159 14
630	3.0173 15	0188 14	0202 14	0216 14	0230 14	0244 14	0258 15	0273 14	0287 14	0301 14
640	3.0315 14	0329 14	0343 14	0357 14	0371 14	0385 14	0399 14	0413 14	0427 14	0441 14
650	3.0455 14	0469 14	0483 14	0497 14	0511 13	0524 14	0538 14	0552 14	0566 14	0580 14
660	3.0594 13	0607 14	0621 14	0635 14	0649 13	0662 14	0676 14	0690 13	0703 14	0717 14
670	3.0731 13	0744 14	0758 14	0772 13	0785 14	0799 13	0812 14	0826 13	0839 14	0853 13
680	3.0866 14	0880 13	0893 14	0907 13	0920 14	0934 13	0947 14	0961 13	0974 13	0987 14
690	3.1001 13	1014 13	1027 14	1041 13	1054 13	1067 14	1081 13	1094 13	1107 13	1120 14
700	3.1134 13	1147 13	1160 13	1173 14	1187 13	1200 13	1213 13	1226 13	1239 13	1252 13
710	3.1265 13	1278 14	1292 13	1305 13	1318 13	1331 13	1344 13	1357 13	1370 13	1383 13
720	3.1396 13	1409 13	1422 13	1435 13	1448 12	1460 13	1473 13	1486 13	1499 13	1512 13
730	3.1525 13	1538 12	1550 13	1563 13	1576 13	1589 13	1602 12	1614 13	1627 13	1640 13
740	3.1653 12	1665 13	1678 13	1691 12	1703 13	1716 13	1729 12	1741 13	1754 13	1767 12
750	3.1779 13	1792 12	1804 13	1817 13	1830 12	1842 13	1855 12	1867 13	1880 12	1892 13
760	3.1905 12	1917 13	1930 12	1942 13	1955 12	1967 12	1979 13	1992 12	2004 13	2017 12
770	3.2029 12	2041 13	2054 12	2066 12	2078 13	2091 12	2103 12	2115 13	2128 12	2140 12
780	3.2152 12	2164 13	2177 12	2189 12	2201 12	2213 13	2226 12	2238 12	2250 12	2262 12
790	3.2274 12	2286 12	2298 13	2311 12	2323 12	2335 12	2347 12	2359 12	2371 12	2383 12
800	3.2395 12	2407 12	2419 12	2431 12	2443 12	2455 12	2467 12	2479 12	2491 12	2503 12
810	3.2515 12	2527 12	2539 12	2551 12	2563 11	2574 12	2586 12	2598 12	2610 12	2622 12
820	3.2634 12	2646 11	2657 12	2669 12	2681 12	2693 11	2704 12	2716 12	2728 12	2740 11
830	3.2751 12	2763 12	2775 12	2787 11	2798 12	2810 12	2822 11	2833 12	2845 12	2857 11
840	3.2868 12	2880 11	2891 12	2903 12	2915 11	2926 12	2938 11	2949 12	2961 11	2972 12
850	3.2984 11	2995 12	3007 11	3018 12	3030 11	3041 12	3053 11	3064 12	3076 11	3087 12
860	3.3099 11	3110 11	3121 12	3133 11	3144 12	3156 11	3167 11	3178 12	3190 11	3201 11
870	3.3212 12	3224 11	3235 11	3246						

and for normal hydrogen (75% ortho-H_2 and 25% para-H_2),

$$\log P \text{ (mm)} = 4.658334 - \frac{44.8793}{T} + 0.021276T - 0.0000021T^2$$

The equation for equilibrium hydrogen is within experimental accuracy in agreement with the vapor-pressure data of Hoge and Arnold[1] over the whole temperature region (14 to 33 K). The equation for normal hydrogen is in agreement with the vapor-pressure data of Woolley, Scott, and Brickwedde.[2]

For solid equilibrium hydrogen the vapor-pressure–temperature relation is based on the equation,

$$\log P \text{ (mm)} = 4.62438 - \frac{47.0172}{T} + 0.03635T$$

[1] H. J. Hoge and R. D. Arnold, *J. Research NBS*, **47**, 63 (1951).
[2] H. W. Woolley, R. B. Scott, and F. G. Brickwedde, *J. Research NBS* **41**, 379 (1948).

and for solid normal hydrogen,

$$\log P \text{ (mm)} = 4.56488 - \frac{47.2059}{T} + 0.03939T$$

These equations were obtained by Woolley, Scott, and Brickwedde[1] from their measurements on the vapor pressure of hydrogen.

Tables 4k-8 to 4k-11 give the temperature in kelvins for integral values of vapor pressure in millimeters of mercury at 0°C and standard gravity, 980.665 cm/sec², as calculated from the above equations.

TABLE 4k-8. SOLID EQUILIBRIUM HYDROGEN TEMPERATURES IN K FOR INTEGRAL VALUES OF VAPOR PRESSURE P, IN MILLIMETERS OF MERCURY AT 0°C AND STANDARD GRAVITY, 980.665 CM/SEC²

P	0	1	2	3	4	5	6	7	8	9
0	.....	9.463	10.029	10.391	10.662	10.881	11.067	11.228	11.371	11.501
10	11.619	11.727	11.828	11.922	12.010	12.093	12.172	12.247	12.318	12.386
20	12.452	12.514	12.575	12.633	12.689	12.743	12.795	12.846	12.896	12.944
30	12.990	13.035	13.080	13.123	13.165	13.206	13.246	13.285	13.323	13.361
40	13.398	13.434	13.469	13.504	13.538	13.571	13.604	13.636	13.668	13.699
50	13.730	13.760	13.789	13.819						

TABLE 4k-9. SOLID NORMAL HYDROGEN TEMPERATURES IN K FOR INTEGRAL VALUES OF VAPOR PRESSURE P, IN MILLIMETERS OF MERCURY AT 0°C AND STANDARD GRAVITY, 980.665 CM/SEC²

P	0	1	2	3	4	5	6	7	8	9
0	.....	9.554	10.124	10.488	10.761	10.982	11.160	11.331	11.475	11.605
10	11.723	11.832	11.933	12.028	12.116	12.200	12.279	12.354	12.426	12.494
20	12.559	12.622	12.683	12.741	12.797	12.852	12.904	12.955	13.004	13.052
30	13.099	13.145	13.189	13.232	13.274	13.315	13.355	13.394	13.433	13.470
40	13.507	13.543	13.579	13.613	13.647	13.681	13.713	13.740	13.777	13.808
50	13.839	13.869	13.899	13.928	13.957	13.985				

The vapor-pressure–temperature relation for neon is based on the equation

$$\log P \text{ (mm)} = 8.746376 - \frac{126.780}{T} - 0.0436834T$$

This equation was obtained by Henning and Otto[2] from their experimental measurements on the vapor pressure of neon.

Table 4k-12 gives the temperature in K for integral values of vapor pressure in millimeters of mercury at 0°C and standard gravity, 980.665 cm/sec².

The vapor-pressure–temperature relation for nitrogen is based on the equation

$$\log P \text{ (mm)} = 6.49594 - \frac{255.821}{T - 6.600}$$

This equation was obtained by Armstrong[3] from his experimental measurements on the vapor pressure of nitrogen.

[1] H. W. Woolley, R. B. Scott, and F. G. Brickwedde, *J. Research NBS* **41**, 379 (1948).
[2] F. Henning and J. Otto, *Physik. Z.* **37**, 633 (1936).
[3] G. T. Armstrong, *J. Research NBS* **53**, 263 (1954).

TABLE 4k-10. LIQUID EQUILIBRIUM HYDROGEN TEMPERATURES IN K FOR INTEGRAL VALUES OF VAPOR PRESSURE P, IN MILLIMETERS OF MERCURY AT 0°C AND STANDARD GRAVITY, 980.665 CM/SEC^2

P	0	1	2	3	4	5	6	7	8	9
50	.....	.....	13.774	13.806	13.839	13.870	13.901	13.932	13.963	13.993
60	14.022	14.051	14.080	14.109	14.137	14.165	14.192	14.219	14.246	14.273
70	14.299	14.325	14.351	14.376	14.401	14.426	14.451	14.475	14.499	14.523
80	14.547	14.570	14.594	14.617	14.640	14.662	14.685	14.707	14.729	14.751
90	14.772	14.794	14.815	14.836	14.857	14.878	14.898	14.919	14.939	14.959
100	14.979	14.999	15.019	15.038	15.058	15.077	15.096	15.115	15.134	15.152
110	15.171	15.189	15.208	15.226	15.244	15.262	15.280	15.298	15.315	15.333
120	15.350	15.367	15.384	15.401	15.418	15.435	15.452	15.469	15.485	15.502
130	15.518	15.534	15.550	15.567	15.582	15.598	15.614	15.630	15.646	15.661
140	15.677	15.692	15.707	15.722	15.738	15.753	15.768	15.783	15.797	15.812
150	15.827	15.841	15.856	15.870	15.885	15.899	15.913	15.928	15.942	15.956
160	15.970	15.984	15.997	16.011	16.025	16.039	16.052	16.066	16.079	16.093
170	16.106	16.119	16.133	16.146	16.159	16.172	16.185	16.198	16.211	16.224
180	16.237	16.249	16.262	16.275	16.287	16.300	16.312	16.325	16.337	16.349
190	16.362	16.374	16.386	16.398	16.410	16.422	16.434	16.446	16.458	16.470
200	16.482	16.494	16.506	16.517	16.529	16.541	16.552	16.564	16.575	16.587
210	16.598	16.609	16.621	16.632	16.643	16.654	16.666	16.677	16.688	16.699
220	16.710	16.721	16.732	16.743	16.753	16.764	16.775	16.786	16.797	16.807
230	16.818	16.829	16.839	16.850	16.860	16.871	16.881	16.891	16.902	16.912
240	16.923	16.933	16.943	16.954	16.964	16.974	16.984	16.994	17.004	17.014
250	17.024	17.034	17.044	17.054	17.064	17.074	17.084	17.093	17.103	17.113
260	17.123	17.132	17.142	17.152	17.161	17.171	17.180	17.190	17.200	17.209
270	17.219	17.228	17.237	17.247	17.256	17.265	17.275	17.284	17.293	17.302
280	17.312	17.321	17.330	17.339	17.348	17.357	17.366	17.376	17.385	17.394
290	17.403	17.411	17.420	17.429	17.438	17.447	17.456	17.465	17.474	17.482
300	17.491	17.500	17.509	17.517	17.526	17.534	17.543	17.552	17.560	17.569
310	17.577	17.586	17.594	17.603	17.611	17.620	17.628	17.637	17.645	17.653
320	17.662	17.670	17.678	17.687	17.695	17.703	17.711	17.720	17.728	17.736
330	17.744	17.752	17.760	17.768	17.777	17.785	17.793	17.801	17.809	17.817
340	17.825	17.833	17.841	17.849	17.856	17.864	17.872	17.880	17.888	17.896
350	17.904	17.911	17.919	17.927	17.935	17.942	17.950	17.958	17.966	17.973
360	17.981	17.988	17.996	18.004	18.011	18.019	18.026	18.034	18.041	18.049
370	18.056	18.064	18.071	18.079	18.086	18.094	18.101	18.108	18.116	18.123
380	18.131	18.138	18.145	18.153	18.160	18.167	18.174	18.182	18.189	18.196
390	18.203	18.210	18.218	18.225	18.232	18.239	18.246	18.254	18.261	18.268
400	18.275	18.282	18.289	18.296	18.303	18.310	18.317	18.324	18.331	18.338
410	18.345	18.352	18.359	18.366	18.373	18.379	18.386	18.393	18.400	18.407
420	18.414	18.421	18.427	18.434	18.441	18.448	18.455	18.461	18.468	18.475
430	18.481	18.488	18.495	18.502	18.508	18.515	18.522	18.528	18.535	18.541
440	18.548	18.555	18.561	18.568	18.574	18.581	18.587	18.594	18.600	18.607
450	18.613	18.620	18.626	18.633	18.639	18.646	18.652	18.659	17.665	18.671
460	18.678	18.684	18.691	18.697	18.703	18.710	18.716	18.722	18.729	18.735
470	18.741	18.748	18.754	18.760	18.766	18.773	18.779	18.785	18.791	18.798
480	18.804	18.810	18.816	18.822	18.828	18.834	18.841	18.847	18.853	18.859
490	18.865	18.871	18.877	18.883	18.889	18.896	18.902	18.908	18.914	18.920
500	18.926	18.932	18.938	18.944	18.950	18.956	18.962	18.968	18.974	18.979

TABLE 4k-10. LIQUID EQUILIBRIUM HYDROGEN TEMPERATURES IN K FOR INTEGRAL VALUES OF VAPOR PRESSURE P, IN MILLIMETERS OF MERCURY AT 0°C AND STANDARD GRAVITY, 980.665 CM/SEC² (*Continued*)

P	0	1	2	3	4	5	6	7	8	9
510	18.985	18.991	18.997	19.003	19.009	19.015	19.021	19.027	19.033	19.038
520	19.044	19.050	19.056	19.062	19.068	19.073	19.079	19.085	19.091	19.096
530	19.102	19.108	19.114	19.120	19.125	19.131	19.137	19.142	19.148	19.154
540	19.160	19.165	19.171	19.177	19.182	19.188	19.193	19.199	19.205	19.210
550	19.216	19.222	19.227	19.233	19.238	19.244	19.249	19.255	19.261	19.266
560	19.272	19.277	19.283	19.288	19.294	19.299	19.305	19.310	19.316	19.321
570	19.327	19.332	19.338	19.343	19.349	19.354	19.359	19.365	19.370	19.376
580	19.381	19.386	19.392	19.397	19.403	19.408	19.413	19.419	19.424	19.429
590	19.435	19.440	19.445	19.451	19.456	19.461	19.467	19.472	19.477	19.482
600	19.488	19.493	19.498	19.503	19.509	19.514	19.519	19.524	19.530	19.535
610	19.540	19.545	19.550	19.556	19.561	19.566	19.571	19.576	19.581	19.587
620	19.592	19.597	19.602	19.607	19.612	19.617	19.623	19.628	19.633	19.638
630	19.643	19.648	19.653	19.658	19.663	19.668	19.673	19.678	19.683	19.688
640	19.693	19.699	19.704	19.709	19.714	19.719	19.724	19.729	19.734	19.738
650	19.743	19.748	19.753	19.758	19.763	19.768	19.773	19.778	19.783	19.788
660	19.793	19.798	19.803	19.808	19.813	19.817	19.822	19.827	19.832	19.837
670	19.842	19.847	19.852	19.856	19.861	19.866	19.871	19.876	19.881	19.885
680	19.890	19.895	19.900	19.905	19.909	19.914	19.919	19.924	19.928	19.933
690	19.938	19.943	19.948	19.952	19.957	19.962	19.967	19.971	19.976	19.981
700	19.985	19.990	19.995	20.000	20.004	20.009	20.014	20.018	20.023	20.028
710	20.032	20.037	20.042	20.046	20.051	20.056	20.060	20.065	20.069	20.074
720	20.079	20.083	20.088	20.093	20.097	20.102	20.106	20.111	20.116	20.120
730	20.125	20.129	20.134	20.138	20.143	20.147	20.152	20.157	20.161	20.166
740	20.170	20.175	20.179	20.184	20.188	20.193	20.197	20.202	20.206	20.211
750	20.215	20.220	20.224	20.229	20.233	20.238	20.242	20.246	20.251	20.255
760	20.260	20.264	20.269	20.273	20.278	20.282	20.286	20.291	20.295	20.300
770	20.304	20.308	20.313	20.317	20.322	20.326	20.330	20.335	20.339	20.343
780	20.348	20.352	20.356	20.361	20.365	20.370	20.374	20.378	20.383	20.387
790	20.391	20.396	20.400	20.404	20.409	20.413	20.417	20.421	20.426	20.430
800	20.434	20.438	20.443	20.447	20.451	20.456	20.460	20.464	20.468	20.473
810	20.477	20.481	20.485	20.490	20.494	20.498	20.502	20.506	20.511	20.515
820	20.519	20.523	20.527	20.532	20.536	20.540	20.544	20.548	20.553	20.557
830	20.561	20.565	20.569	20.573	20.578	20.582	20.586	20.590	20.594	20.598
840	20.602	20.607	20.611	20.615	20.619	20.623	20.627	20.631	20.635	20.640
850	20.644	20.648	20.652	20.656	20.660	20.664	20.668	20.672	20.676	20.680
860	20.684	20.688	20.693	20.696	20.701	20.705	20.709	20.713	20.717	20.721
870	20.725	20.729	20.733	20.737	20.741	20.745	20.749	20.753	20.757	20.761
880	20.765	20.769	20.773	20.777	20.781	20.785	20.789	20.793	20.797	20.801
890	20.805	20.809	20.813	20.817	20.821	20.825	20.829	20.832	20.836	20.840
900	20.844	20.848	20.852	20.856	20.860	20.864	20.868	20.872	20.876	20.880
910	20.884	20.887	20.891	20.895	20.899	20.903	20.907	20.911	20.915	20.918
920	20.922	20.926	20.930	20.934	20.938	20.942	20.945	20.949	20.953	20.957
930	20.961	20.965	20.969	20.972	20.976	20.980	20.984	20.988	20.992	20.995
940	20.999	21.003	21.007	21.011	21.014	21.018	21.022	21.026	21.030	21.033
950	21.037	21.041	21.045	21.049	21.052	21.056	21.060	21.064	21.067	21.071
960	21.075	21.079	21.082	21.086	21.090	21.094	21.097	21.101	21.105	21.109
970	21.112	21.116	21.120	21.124	21.127	21.131	21.135	21.138	21.142	21.146
980	21.149	21.153	21.157	21.160	21.164	21.168	21.172	21.175	21.179	21.183
990	21.186	21.190	21.194	21.197	21.201	21.205	21.208	21.212	21.216	21.219

TABLE 4k-11. LIQUID NORMAL HYDROGEN TEMPERATURES IN K FOR INTEGRAL VALUES OF VAPOR PRESSURE P, IN MILLIMETERS OF MERCURY AT 0°C AND STANDARD GRAVITY, 980.665 CM/SEC^2

P	0	1	2	3	4	5	6	7	8	9
50					13.944	13.976	14.007	14.038	14.068	14.099
60	14.128	14.157	14.186	14.215	14.243	14.271	14.299	14.326	14.353	14.379
70	14.406	14.432	14.458	14.483	14.508	14.533	14.558	14.582	14.607	14.631
80	14.654	14.678	14.701	14.724	14.747	14.770	14.792	14.815	14.837	14.859
90	14.880	14.902	14.923	14.944	14.965	14.986	15.007	15.027	15.048	15.068
100	15.088	15.108	15.127	15.147	15.166	15.186	15.205	15.224	15.243	15.261
110	15.280	15.298	15.317	15.335	15.353	15.371	15.389	15.407	15.424	15.442
120	15.459	15.477	15.494	15.511	15.528	15.545	15.562	15.578	15.595	15.611
130	15.628	15.644	15.660	15.676	15.692	15.708	15.724	15.740	15.756	15.771
140	15.787	15.802	15.817	15.833	15.848	15.863	15.878	15.893	15.908	15.923
150	15.937	15.952	15.966	15.981	15.995	16.010	16.024	16.038	16.052	16.066
160	16.081	16.094	16.108	16.122	16.136	16.150	16.163	16.177	16.190	16.204
170	16.217	16.230	16.244	16.257	16.270	16.283	16.296	16.309	16.322	16.335
180	16.348	16.361	16.373	16.386	16.399	16.411	16.424	16.436	16.449	16.461
190	16.473	16.486	16.498	16.510	16.522	16.534	16.546	16.558	16.570	16.582
200	16.594	16.606	16.617	16.629	16.641	16.652	16.664	16.676	16.687	16.698
210	16.710	16.721	16.733	16.744	16.755	16.766	16.778	16.789	16.800	16.811
220	16.822	16.833	16.844	16.855	16.866	16.877	16.887	16.898	16.909	16.920
230	16.930	16.941	16.952	16.962	16.973	16.983	16.994	17.004	17.015	17.025
240	17.035	17.046	17.056	17.066	17.076	17.087	17.097	17.107	17.117	17.127
250	17.137	17.147	17.157	17.167	17.177	17.187	17.197	17.206	17.216	17.226
260	17.236	17.245	17.255	17.265	17.275	17.284	17.294	17.303	17.313	17.322
270	17.332	17.341	17.351	17.360	17.369	17.379	17.388	17.397	17.407	17.416
280	17.425	17.434	17.443	17.453	17.462	17.471	17.480	17.489	17.498	17.507
290	17.516	17.525	17.534	17.543	17.552	17.561	17.570	17.578	17.587	17.596
300	17.605	17.613	17.622	17.631	17.639	17.648	17.657	17.666	17.674	17.683
310	17.691	17.700	17.708	17.717	17.725	17.734	17.742	17.751	17.759	17.767
320	17.776	17.784	17.792	17.801	17.809	17.817	17.825	17.834	17.842	17.850
330	17.858	17.866	17.875	17.883	17.891	17.899	17.907	17.915	17.923	17.931
340	17.939	17.947	17.955	17.963	17.971	17.979	17.987	17.994	18.002	18.010
350	18.018	18.026	18.034	18.041	18.049	18.057	18.064	18.072	18.080	18.088
360	18.095	18.103	18.111	18.118	18.126	18.133	18.141	18.148	18.156	18.163
370	18.171	18.179	18.186	18.193	18.201	18.208	18.216	18.223	18.231	18.238
380	18.245	18.253	18.260	18.267	18.275	18.282	18.289	18.297	18.304	18.311
390	18.318	18.326	18.333	18.340	18.347	18.354	18.361	18.368	18.376	18.383
400	18.390	18.397	18.404	18.411	18.418	18.425	18.432	18.439	18.446	18.453
410	18.460	18.467	18.474	18.481	18.488	18.495	18.502	18.508	18.515	18.522
420	18.529	18.536	18.543	18.549	18.556	18.563	18.570	18.577	18.583	18.590
430	18.597	18.604	18.610	18.617	18.624	18.630	18.637	18.644	18.650	18.657
440	18.663	18.670	18.677	18.683	18.690	18.696	18.703	18.709	18.716	18.722
450	18.729	18.735	18.742	18.748	18.755	18.761	18.768	18.774	18.781	18.787
460	18.794	18.800	18.806	18.813	18.819	18.825	18.832	18.838	18.844	18.851
470	18.857	18.863	18.870	18.876	18.882	18.888	18.895	18.901	18.907	18.913
480	18.919	18.926	18.932	18.938	18.944	18.950	18.957	18.963	18.969	18.975
490	18.981	18.987	18.993	18.999	19.005	19.011	19.018	19.024	19.030	19.036
500	19.042	19.048	19.054	19.060	19.066	19.072	19.078	19.084	19.090	19.095

TABLE 4k-11. LIQUID NORMAL HYDROGEN TEMPERATURES IN K FOR INTEGRAL VALUES OF VAPOR PRESSURE P, IN MILLIMETERS OF MERCURY AT 0°C AND STANDARD GRAVITY, 980.665 CM/SEC² (*Continued*)

P	0	1	2	3	4	5	6	7	8	9
510	19.102	19.107	19.113	19.119	19.125	19.131	19.137	19.143	19.149	19.154
520	19.160	19.166	19.172	19.178	19.184	19.190	19.195	19.201	19.207	19.213
530	19.219	19.224	19.230	19.236	19.242	19.247	19.253	19.259	19.264	19.270
540	19.276	19.282	19.287	19.293	19.299	19.304	19.310	19.316	19.321	19.327
550	19.332	19.338	19.344	19.349	19.355	19.360	19.366	19.371	19.377	19.383
560	19.388	19.394	19.399	19.405	19.410	19.416	19.421	19.427	19.432	19.438
570	19.443	19.449	19.454	19.460	19.465	19.471	19.476	19.482	19.487	19.492
580	19.498	19.503	19.509	19.514	19.519	19.525	19.530	19.535	19.541	19.546
590	19.551	19.557	19.562	19.567	19.573	19.578	19.583	19.589	19.594	19.599
600	19.604	19.610	19.615	19.620	19.626	19.631	19.636	19.641	19.646	19.652
610	19.657	19.662	19.667	19.673	19.678	19.683	19.688	19.693	19.698	19.704
620	19.709	19.714	19.719	19.724	19.729	19.734	19.740	19.745	19.750	19.755
630	19.760	19.765	19.770	19.775	19.780	19.785	19.790	19.795	19.801	19.806
640	19.811	19.816	19.821	19.826	19.831	19.836	19.841	19.846	19.851	19.856
650	19.861	19.866	19.871	19.876	19.880	19.885	19.890	19.895	19.900	19.905
660	19.910	19.915	19.920	19.925	19.930	19.935	19.940	19.944	19.949	19.954
670	19.959	19.964	19.969	19.974	19.979	19.983	19.988	19.993	19.998	20.003
680	20.008	20.012	20.017	20.022	20.027	20.032	20.036	20.041	20.046	20.051
690	20.055	20.060	20.065	20.070	20.075	20.079	20.084	20.089	20.093	20.098
700	20.103	20.108	20.112	20.117	20.122	20.126	20.131	20.136	20.140	20.145
710	20.150	20.155	20.159	20.164	20.168	20.173	20.178	20.182	20.187	20.192
720	20.196	20.201	20.206	20.210	20.215	20.219	20.224	20.229	20.233	20.238
730	20.242	20.247	20.252	20.256	20.261	20.265	20.270	20.274	20.279	20.283
740	20.288	20.292	20.297	20.301	20.306	20.310	20.315	20.320	20.324	20.329
750	20.333	20.337	20.342	20.346	20.351	20.355	20.360	20.364	20.369	20.373
760	20.378	20.382	20.387	20.391	20.395	20.400	20.404	20.409	20.413	20.418
770	20.422	20.426	20.431	20.435	20.440	20.444	20.448	20.453	20.457	20.461
780	20.466	20.470	20.474	20.479	20.483	20.488	20.492	20.496	20.501	20.505
790	20.509	20.514	20.518	20.522	20.527	20.531	20.535	20.539	20.544	20.548
800	20.552	20.557	20.561	20.565	20.569	20.574	20.578	20.582	20.586	20.591
810	20.595	20.599	20.603	20.608	20.612	20.616	20.620	20.625	20.629	20.633
820	20.637	20.642	20.646	20.650	20.654	20.658	20.663	20.667	20.671	20.675
830	20.679	20.683	20.688	20.692	20.696	20.700	20.704	20.708	20.712	20.717
840	20.721	20.725	20.729	20.733	20.737	20.741	20.745	20.750	20.754	20.758
850	20.762	20.766	20.770	20.774	20.778	20.782	20.787	20.791	20.795	20.799
860	20.803	20.807	20.811	20.815	20.819	20.823	20.827	20.831	20.835	20.839
870	20.843	20.847	20.851	20.855	20.859	20.863	20.867	20.871	20.875	20.880
880	20.884	20.888	20.891	20.895	20.900	20.904	20.908	20.911	20.915	20.919
890	20.923	20.927	20.931	20.935	20.939	20.943	20.947	20.951	20.955	20.959
900	20.963	20.967	20.971	20.975	20.979	20.983	20.986	20.990	20.994	20.998
910	21.002	21.006	21.010	21.014	21.018	21.022	21.026	21.029	21.033	21.037
920	21.041	21.045	21.049	21.053	21.057	21.060	21.064	21.068	21.072	21.076
930	21.080	21.084	21.087	21.091	21.095	21.099	21.103	21.107	21.110	21.114
940	21.118	21.122	21.126	21.129	21.133	21.137	21.141	21.145	21.149	21.152
950	21.156	21.160	21.164	21.167	21.171	21.175	21.179	21.182	21.186	21.190
960	21.194	21.198	21.201	21.205	21.209	21.213	21.216	21.220	21.224	21.227
970	21.231	21.235	21.239	21.242	21.246	21.250	21.254	21.257	21.261	21.265
980	21.268	21.272	21.276	21.280	21.283	21.287	21.291	21.294	21.298	21.302
990	21.305	21.309	21.313	21.316	21.320	21.324	21.327	21.331	21.335	21.338

TABLE 4k-12. LIQUID NEON TEMPERATURES IN K FOR INTEGRAL VALUES OF VAPOR PRESSURE P, IN MILLIMETERS OF MERCURY AT 0°C AND STANDARD GRAVITY, 980.665 CM/SEC²

P	0	1	2	3	4	5	6	7	8	9
320					24.554	24.562	24.570	24.578	24.586	24.594
330	24.602	24.610	24.618	24.626	24.634	24.642	24.650	24.657	24.665	24.673
340	24.681	24.689	24.696	24.704	24.712	24.719	24.727	24.735	24.742	24.750
350	24.758	24.765	24.773	24.780	24.788	24.796	24.803	24.811	24.818	24.825
360	24.833	24.840	24.848	24.855	24.863	24.870	24.877	24.885	24.892	24.899
370	24.907	24.914	24.921	24.929	24.936	24.943	24.950	24.958	24.965	24.972
380	24.979	24.986	24.993	25.001	25.008	25.015	25.022	25.029	25.036	25.043
390	25.050	25.057	25.064	25.071	25.078	25.085	25.092	25.099	25.106	25.113
400	25.120	25.127	25.134	25.140	25.147	25.154	25.161	25.168	25.175	25.181
410	25.188	25.195	25.202	25.208	25.215	25.222	25.229	25.235	25.242	25.249
420	25.255	25.262	25.269	25.275	25.282	25.289	25.295	25.302	25.308	25.315
430	25.322	25.328	25.335	25.341	25.348	25.354	25.361	25.367	25.374	25.380
440	25.387	25.393	25.399	25.406	25.412	25.419	25.425	25.431	25.438	25.444
450	25.451	25.457	25.463	25.470	25.476	25.482	25.488	25.495	25.501	25.507
460	25.514	25.520	25.526	25.532	25.538	25.545	25.551	25.557	25.563	25.569
470	25.576	25.582	25.588	25.594	25.600	25.606	25.612	25.618	25.624	25.631
480	25.637	25.643	25.649	25.655	25.661	25.667	25.673	25.679	25.685	25.691
490	25.697	25.703	25.709	25.715	25.721	25.727	25.733	25.738	25.744	25.750
500	25.756	25.762	25.768	25.774	25.780	25.786	25.791	25.797	25.803	25.809
510	25.815	25.820	25.826	25.832	25.838	25.844	25.849	25.855	25.861	25.867
520	25.872	25.878	25.884	25.890	25.895	25.901	25.907	25.912	25.918	25.924
530	25.929	25.935	25.941	25.946	25.952	25.957	25.963	25.969	25.974	25.980
540	25.985	25.991	25.997	26.002	26.008	26.013	26.019	26.024	26.030	26.035
550	26.041	26.046	26.052	26.057	26.063	26.068	26.074	26.079	26.085	26.090
560	26.096	26.101	26.107	26.112	26.117	26.123	26.128	26.134	26.139	26.144
570	26.150	26.155	26.161	26.166	26.171	26.177	26.182	26.187	26.193	26.198
580	26.203	26.209	26.214	26.219	26.224	26.230	26.235	26.240	26.246	26.251
590	26.256	26.261	26.267	26.272	26.277	26.282	26.287	26.293	26.298	26.303
600	26.308	26.313	26.319	26.324	26.329	26.334	26.339	26.344	26.350	26.355
610	26.360	26.365	26.370	26.375	26.380	26.385	26.391	26.396	26.401	26.406
620	26.411	26.416	26.421	26.426	26.431	26.436	26.441	26.446	26.451	26.456
630	26.461	26.466	26.471	26.476	26.481	26.486	26.491	26.496	26.501	26.506
640	26.511	26.516	26.521	26.526	26.531	26.536	26.541	26.546	26.551	26.556
650	26.561	26.566	26.570	26.575	26.580	26.585	26.590	26.595	26.600	26.605
660	26.609	26.614	26.619	26.624	26.629	26.634	26.639	26.643	26.648	26.653
670	26.658	26.663	26.667	26.672	26.677	26.682	26.687	26.691	26.696	26.701
680	26.706	26.710	26.715	26.720	26.725	26.729	26.734	26.739	26.744	26.748
690	26.753	26.758	26.763	26.767	26.772	26.777	26.781	26.786	26.791	26.795
700	26.800	26.805	26.809	26.814	26.819	26.823	26.828	26.833	26.837	26.842
710	26.847	26.851	26.856	26.860	26.865	26.870	26.874	26.879	26.883	26.888
720	26.893	26.897	26.902	26.906	26.911	26.915	26.920	26.925	26.929	26.934
730	26.938	26.943	26.947	26.952	26.956	26.961	26.965	26.970	26.974	26.979
740	26.983	26.988	26.992	26.997	27.001	27.006	27.010	27.015	27.019	27.024
750	27.028	27.033	27.037	27.042	27.046	27.050	27.055	27.059	27.064	27.068
760	27.073	27.077	27.081	27.086	27.090	27.095	27.099	27.103	27.108	27.112
770	27.117	27.121	27.125	27.130	27.134	27.138	27.143	27.147	27.151	27.156
780	27.160	27.165	27.169	27.173	27.178	27.182	27.186	27.191	27.195	27.199
790	27.203	27.208	27.212	27.216	27.221	27.225	27.229	27.234	27.238	27.242
800	27.246	27.251	27.255	27.259	27.263	27.268	27.272	27.276	27.280	27.285

TABLE 4k-12. LIQUID NEON TEMPERATURES IN K FOR INTEGRAL VALUES OF VAPOR PRESSURE P, IN MILLIMETERS OF MERCURY AT 0°C AND STANDARD GRAVITY, 980.665 CM/SEC² (*Continued*)

P	0	1	2	3	4	5	6	7	8	9
810	27.289	27.293	27.297	27.302	27.306	27.310	27.314	27.318	27.323	27.327
820	27.331	27.335	27.339	27.344	27.348	27.352	27.356	27.360	27.365	27.369
830	27.373	27.377	27.381	27.385	27.390	27.394	27.398	27.402	27.406	27.410
840	27.414	27.419	27.423	27.427	27.431	27.435	27.439	27.443	27.447	27.452
850	27.456	27.460	27.464	27.468	27.472	27.476	27.480	27.484	27.488	27.492
860	27.497	27.501	27.505	27.509	27.513	27.517	27.521	27.525	27.529	27.533
870	27.537	27.541	27.545	27.549	27.553	27.557	27.561	27.565	27.569	27.573
880	27.577	27.581	27.585	27.589	27.593	27.597	27.601	27.605	27.609	27.613
890	27.617	27.621	27.625	27.629	27.633	27.637	27.641	27.645	27.649	27.653
900	27.657	27.661	27.665	27.669	27.673	27.677	27.681	27.685	27.689	27.692
910	27.696	27.700	27.704	27.708	27.712	27.716	27.720	27.724	27.728	27.732
920	27.735	27.739	27.743	27.747	27.751	27.755	27.759	27.763	27.767	27.770
930	27.774	27.778	27.782	27.786	27.790	27.794	27.798	27.801	27.805	27.809
940	27.813	27.817	27.821	27.824	27.828	27.832	27.836	27.840	27.844	27.847
950	27.851	27.855	27.859	27.863	27.866	27.870	27.874	27.878	27.882	27.885
960	27.889	27.893	27.897	27.901	27.904	27.908	27.912	27.916	27.919	27.923
970	27.927	27.931	27.935	27.938	27.942	27.946	27.950	27.953	27.957	27.961
980	27.965	27.968	27.972	27.976	27.980	27.983	27.987	27.991	27.994	27.998

Table 4k-13 gives the temperature in kelvins for integral values of vapor pressure in millimeters of mercury at 0°C and standard gravity, 980.665 cm/sec².

The following interpolation equation has been derived for oxygen by a least-squares fit of the vapor-pressure data of Hoge[1]

$$\log P \text{ (mm)} = 8.01602 - \frac{415.6909}{T} - 0.0058382T$$

the equation being valid for the region from the triple point (54.363 K) to 90.827 K. Table 4k-14 gives the temperature in kelvins for integral values of vapor pressure P, in millimeters of mercury at 0°C and standard gravity, 980.665 cm/sec².

[1] H. J. Hoge, *J. Research NBS* **44**, 326 (1950).

TABLE 4k-13. LIQUID NITROGEN TEMPERATURES IN K FOR INTEGRAL VALUES OF VAPOR PRESSURE P, IN MILLIMETERS OF MERCURY AT 0°C AND STANDARD GRAVITY, 980.665 CM/SEC²

P	0	1	2	3	4	5	6	7	8	9
90					63.162	63.220	63.277	63.333	63.389	63.445
100	63.500	63.555	63.609	63.663	63.717	63.770	63.822	63.875	63.926	63.978
110	64.029	64.080	64.130	64.180	64.230	64.279	64.328	64.376	64.425	64.473
120	64.520	64.568	64.615	64.661	64.708	64.754	64.799	64.845	64.890	64.935
130	64.980	65.024	65.068	65.112	65.156	65.199	65.242	65.285	65.327	65.370
140	65.412	65.453	65.495	65.536	65.578	65.618	65.659	65.700	65.740	65.780
150	65.820	65.859	65.899	65.938	65.977	66.015	66.054	66.092	66.131	66.169
160	66.206	66.244	66.281	66.319	66.356	66.393	66.429	66.466	66.502	66.538
170	66.574	66.610	66.646	66.681	66.717	66.752	66.787	66.822	66.856	66.891
180	66.925	66.960	66.994	67.028	67.061	67.095	67.129	67.162	67.195	67.228
190	67.261	67.294	67.327	67.359	67.392	67.424	67.456	67.488	67.520	67.552
200	67.583	67.615	67.646	67.677	67.709	67.740	67.771	67.801	67.832	67.862
210	67.893	67.923	67.953	67.984	68.013	68.043	68.073	68.103	68.132	68.162
220	68.191	68.220	68.249	68.278	68.307	68.336	68.365	68.393	68.422	68.450
230	68.479	68.507	68.535	68.563	68.591	68.619	68.647	68.674	68.702	68.729
240	68.757	68.784	68.811	68.838	68.865	68.892	68.919	68.946	68.972	68.999
250	69.025	69.052	69.078	69.104	69.131	69.157	69.183	69.209	69.235	69.260
260	69.286	69.312	69.337	69.363	69.388	69.413	69.439	69.464	69.489	69.514
270	69.539	69.564	69.588	69.613	69.638	69.662	69.687	69.711	69.736	69.760
280	69.784	69.808	69.833	69.857	69.881	69.904	69.928	69.952	69.976	69.999
290	70.023	70.047	70.070	70.093	70.117	70.140	70.163	70.186	70.209	70.232
300	70.255	70.278	70.301	70.324	70.347	70.369	70.392	70.414	70.437	70.459
310	70.482	70.504	70.526	70.549	70.571	70.593	70.615	70.637	70.659	70.681
320	70.702	70.724	70.746	70.768	70.789	70.811	70.832	70.854	70.875	70.897
330	70.918	70.939	70.960	70.981	71.003	71.024	71.045	71.066	71.086	71.107
340	71.128	71.149	71.170	71.190	71.211	71.232	71.252	71.273	71.293	71.313
350	71.334	71.354	71.374	71.394	71.415	71.435	71.455	71.475	71.495	71.515
360	71.535	71.555	71.574	71.594	71.614	71.634	71.653	71.673	71.692	71.712
370	71.731	71.751	71.770	71.790	71.809	71.828	71.847	71.867	71.886	71.905
380	71.924	71.943	71.962	71.981	72.000	72.019	72.038	72.057	72.075	72.094
390	72.113	72.131	72.150	72.169	72.187	72.206	72.224	72.243	72.261	72.279
400	72.298	72.316	72.334	72.353	72.371	72.389	72.407	72.425	72.443	72.461
410	72.479	72.497	72.515	72.533	72.551	72.569	72.586	72.604	72.622	72.640
420	72.657	72.675	72.692	72.710	72.728	72.745	72.762	72.780	72.797	72.815
430	72.832	72.849	72.867	72.884	72.901	72.918	72.935	72.952	72.970	72.987
440	73.004	73.021	73.038	73.055	73.071	73.088	73.105	73.122	73.139	73.156
450	73.172	73.189	73.206	73.222	73.239	73.256	73.272	73.289	73.305	73.322
460	73.338	73.354	73.371	73.387	73.404	73.420	73.436	73.452	73.469	73.485
470	73.501	73.517	73.533	73.549	73.566	73.582	73.598	73.614	73.630	73.646
480	73.661	73.677	73.693	73.709	73.725	73.741	73.756	73.772	73.788	73.804
490	73.819	73.835	73.850	73.866	73.882	73.897	73.913	73.928	73.944	73.959
500	73.975	73.990	74.005	74.021	74.036	74.051	74.067	74.082	74.097	74.112
510	74.127	74.143	74.158	74.173	74.188	74.203	74.218	74.233	74.248	74.263
520	74.278	74.293	74.308	74.323	74.338	74.353	74.367	74.382	74.397	74.412
530	74.427	74.441	74.456	74.471	74.485	74.500	74.515	74.529	74.544	74.558
540	74.573	74.587	74.602	74.616	74.631	74.645	74.660	74.674	74.688	74.703
550	74.717	74.731	74.746	74.760	74.774	74.788	74.803	74.817	74.831	74.845

TABLE 4k-13. LIQUID NITROGEN TEMPERATURES IN K FOR INTEGRAL VALUES OF VAPOR PRESSURE P, IN MILLIMETERS OF MERCURY AT 0°C AND STANDARD GRAVITY, 980.665 CM/SEC^2 (*Continued*)

P	0	1	2	3	4	5	6	7	8	9
560	74.859	74.873	74.888	74.902	74.916	74.930	74.944	74.958	74.972	74.986
570	75.000	75.014	75.027	75.041	75.055	75.069	75.083	75.097	75.111	75.124
580	75.138	75.152	75.165	75.179	75.193	75.207	75.220	75.234	75.247	75.261
590	75.275	75.288	75.302	75.315	75.329	75.342	75.356	75.369	75.383	75.396
600	75.409	75.423	75.436	75.450	75.463	75.476	75.490	75.503	75.516	75.529
610	75.543	75.556	75.569	75.582	75.595	75.609	75.622	75.635	75.648	75.661
620	75.674	75.687	75.700	75.713	75.726	75.739	75.752	75.765	75.778	75.791
630	75.804	75.817	75.830	75.843	75.855	75.868	75.881	75.894	75.907	75.919
640	75.932	75.945	75.958	75.970	75.983	75.996	76.008	76.021	76.034	76.046
650	76.059	76.071	76.084	76.097	76.109	76.122	76.134	76.147	76.159	76.172
660	76.184	76.197	76.209	76.221	76.234	76.246	76.259	76.271	76.283	76.296
670	76.308	76.320	76.333	76.345	76.357	76.369	76.382	76.394	76.406	76.418
680	76.430	76.443	76.455	76.467	76.479	76.491	76.503	76.515	76.527	76.539
690	76.551	76.564	76.576	76.588	76.600	76.612	76.623	76.635	76.647	76.659
700	76.671	76.683	76.695	76.707	76.719	76.731	76.742	76.754	76.766	76.778
710	76.790	76.801	76.813	76.825	76.837	76.848	76.860	76.872	76.883	76.895
720	76.907	76.918	76.930	76.942	76.953	76.965	76.977	76.988	77.000	77.011
730	77.023	77.034	77.046	77.057	77.069	77.080	77.092	77.103	77.115	77.126
740	77.137	77.149	77.160	77.172	77.183	77.194	77.206	77.217	77.228	77.240
750	77.251	77.262	77.274	77.285	77.296	77.307	77.319	77.330	77.341	77.352
760	77.363	77.375	77.386	77.397	77.408	77.419	77.430	77.441	77.453	77.464

TABLE 4k-14. LIQUID OXYGEN TEMPERATURES IN K FOR INTEGRAL VALUES OF VAPOR PRESSURE P, IN MILLIMETERS OF MERCURY AT 0°C AND STANDARD GRAVITY, 980.665 CM/SEC^2

P	0	1	2	3	4	5	6	7	8	9
0		53.980	56.278	57.719	58.790	59.650	60.373	60.998	61.551	62.048
10	62.499	62.913	63.297	73.654	63.989	64.303	64.601	64.883	65.151	65.407
20	65.652	65.887	66.112	66.329	66.539	66.741	66.936	67.125	67.308	67.486
30	67.659	67.827	67.991	68.150	68.305	68.457	68.605	68.749	68.891	69.029
40	69.164	69.297	69.427	69.554	69.679	69.802	69.922	70.040	70.156	70.270
50	70.383	70.493	70.601	70.708	70.813	70.917	71.019	71.120	71.219	71.316
60	71.413	71.508	71.601	71.694	71.785	71.875	71.964	72.052	72.139	72.225
70	72.309	72.393	72.476	72.558	72.639	72.719	72.798	72.876	72.953	73.030
80	73.106	73.181	73.255	73.329	73.402	73.474	73.545	73.616	73.686	73.756
90	73.824	73.893	73.960	74.027	74.094	74.159	74.225	74.289	74.354	74.417
100	74.480	74.543	74.605	74.667	74.728	74.788	74.849	74.908	74.968	75.026
110	75.085	75.143	75.200	75.257	75.314	75.370	75.426	75.482	75.537	75.591
120	75.646	75.700	75.753	75.807	75.860	75.912	75.964	76.016	76.068	76.119
130	76.170	76.221	76.271	76.321	76.371	76.420	76.469	76.518	76.566	76.615
140	76.663	76.710	76.758	76.805	76.852	76.898	76.945	76.991	77.036	77.082
150	77.127	77.172	77.217	77.262	77.306	77.350	77.394	77.438	77.481	77.525
160	77.568	77.611	77.653	77.695	77.738	77.780	77.821	77.863	77.904	77.945
170	77.986	78.027	78.068	78.108	78.148	78.188	78.228	78.268	78.307	78.347
180	78.386	78.425	78.463	78.502	78.540	78.579	78.617	78.655	78.693	78.730
190	78.768	78.805	78.842	78.879	78.916	78.953	78.989	79.025	79.062	79.098
200	79.134	79.169	79.205	79.241	79.276	79.311	79.346	79.381	79.416	79.451
210	79.485	79.520	79.554	79.588	79.622	79.656	79.690	79.724	79.757	79.791
220	79.824	79.857	79.890	79.923	79.956	79.989	80.021	80.054	80.086	80.118
230	80.150	80.182	80.214	80.246	80.278	80.309	80.341	80.372	80.403	80.435
240	80.466	80.497	80.527	80.558	80.589	80.619	80.650	80.680	80.710	80.741
250	80.771	80.801	80.831	80.860	80.890	80.920	80.949	80.979	81.008	81.037
260	81.066	81.095	81.124	81.153	81.182	81.211	81.239	81.268	81.296	81.324
270	81.353	81.381	81.409	81.437	81.465	81.493	81.521	81.548	81.576	81.604
280	81.631	81.658	81.686	81.713	81.740	81.767	81.794	81.821	81.848	81.875
290	81.902	81.928	81.955	81.981	82.008	82.034	82.060	82.087	82.113	82.139
300	82.165	82.191	82.217	82.242	82.268	82.294	82.319	82.345	82.370	82.396
310	82.421	82.446	82.472	82.497	82.522	82.547	82.572	82.597	82.622	82.646
320	82.671	82.696	82.720	82.745	82.769	82.794	82.818	82.842	82.867	82.891
330	82.915	82.939	82.963	82.987	83.011	83.035	83.058	83.082	83.106	83.129
340	83.153	83.177	83.200	83.223	83.247	83.270	83.293	83.316	83.340	83.363
350	83.386	83.409	83.432	83.454	83.477	83.500	83.523	83.545	83.568	83.591
360	83.613	83.636	83.658	83.680	83.703	83.725	83.747	83.769	83.792	83.814
370	83.836	83.858	83.880	83.902	83.923	83.945	83.967	83.989	84.010	84.032
380	84.054	84.075	84.097	84.118	84.139	84.161	84.182	84.203	84.225	84.246
390	84.267	84.288	84.309	84.330	84.351	84.372	84.393	84.414	84.435	84.455
400	84.476	84.497	84.518	84.538	84.559	84.579	84.600	84.620	84.641	84.661

TABLE 4k-14. LIQUID OXYGEN TEMPERATURES IN K FOR INTEGRAL VALUES OF VAPOR PRESSURE P, IN MILLIMETERS OF MERCURY AT 0°C AND STANDARD GRAVITY, 980.665 CM/SEC² (*Continued*)

P	0	1	2	3	4	5	6	7	8	9
410	84.681	84.702	84.722	84.742	84.762	84.783	84.803	84.823	84.843	84.863
420	84.883	84.903	84.922	84.942	84.962	84.982	85.002	85.021	85.041	85.061
430	85.080	85.100	85.119	85.139	85.158	85.178	85.197	85.216	85.236	85.255
440	85.274	85.293	85.313	85.332	85.351	85.370	85.389	85.408	85.427	85.446
450	85.465	85.484	85.503	85.521	85.540	85.559	85.578	85.596	85.615	85.634
460	85.652	85.671	85.689	85.708	85.726	85.745	85.763	85.782	85.800	85.818
470	85.836	85.855	85.873	85.891	85.909	85.927	85.946	85.964	85.982	86.000
480	86.018	86.036	86.054	86.071	86.089	86.107	86.125	86.143	86.161	86.178
490	86.196	86.214	86.231	86.249	86.266	86.284	86.302	86.319	86.337	86.354
500	86.371	86.389	86.406	86.424	86.441	86.458	86.475	86.493	86.510	86.527
510	86.544	86.561	86.578	86.596	86.613	86.630	86.647	86.664	86.681	86.697
520	86.714	86.731	86.748	86.765	86.782	86.799	86.815	86.832	86.849	86.865
530	86.882	86.899	86.915	86.932	86.948	86.965	86.981	86.998	87.014	87.031
540	87.047	87.064	87.080	87.096	87.113	87.129	87.145	87.162	87.178	87.194
550	87.210	87.226	87.242	87.259	87.275	87.291	87.307	87.323	87.339	87.355
560	87.371	87.387	87.403	87.419	87.434	87.450	87.466	87.482	87.498	87.513
570	87.529	87.545	87.561	87.576	87.592	87.608	87.623	87.639	87.654	87.670
580	87.686	87.701	87.717	87.732	87.747	87.763	87.778	87.794	87.809	87.824
590	87.840	87.855	87.870	87.886	87.901	87.916	87.931	87.947	87.962	87.977
600	87.992	88.007	88.022	88.037	88.052	88.067	88.082	88.097	88.112	88.127
610	88.142	88.157	88.172	88.187	88.202	88.217	88.232	88.246	88.261	88.276
620	88.291	88.306	88.320	88.335	88.350	88.364	88.379	88.394	88.408	88.423
630	88.437	88.452	88.466	88.481	88.496	88.510	88.524	88.539	88.553	88.568
640	88.582	88.597	88.611	88.625	88.640	88.654	88.668	88.683	88.697	88.711
650	88.725	88.740	88.754	88.768	88.782	88.796	88.810	88.824	88.839	88.853
660	88.867	88.881	88.895	88.909	88.923	88.937	88.951	88.965	88.979	88.993
670	89.007	89.020	89.034	89.048	89.062	89.076	89.090	89.103	89.117	89.131
680	89.145	89.158	89.172	89.186	89.200	89.213	89.227	89.241	89.254	89.268
690	89.281	89.295	89.309	89.322	89.336	89.349	89.363	89.376	89.390	89.403
700	89.417	89.430	89.443	89.457	89.470	89.484	89.497	89.510	89.524	89.537
710	89.550	89.564	89.577	89.590	89.603	89.617	89.630	89.643	89.656	89.669
720	89.683	89.696	89.709	89.722	89.735	89.748	89.761	89.774	89.787	89.800
730	89.813	89.826	89.839	89.852	89.865	89.878	89.891	89.904	89.917	89.930
740	89.943	89.956	89.969	89.982	89.994	90.007	90.020	90.033	90.046	90.058
750	90.071	90.084	90.097	90.109	90.122	90.135	90.147	90.160	90.173	90.185
760	90.198	90.211	90.223	90.236	90.248	90.261	90.274	90.286	90.299	90.311
770	90.324	90.336	90.349	90.361	90.374	90.386	90.398	90.411	90.423	90.436
780	90.448	90.460	90.473	90.485	90.497	90.510	90.522	90.534	90.547	90.559
790	90.571	90.584	90.596	90.608	90.620	90.632	90.645	90.657	90.669	90.681
800	90.693	90.705	90.718	90.730	90.742	90.754	90.766	90.778	90.790	90.802
810	90.814	90.826	90.838	90.850	90.862	90.874	90.886	90.898	90.910	90.922

TABLE 4k-15. VAPOR PRESSURES OF THE CHEMICAL ELEMENTS

Pressure, atm	10^{-10}	10^{-9}	10^{-8}	10^{-7}	10^{-6}	10^{-5}	10^{-4}	10^{-3}	10^{-2}	10^{-1}	1	ΔH_{v298}	T_m, °C	ΔH_m	T_t, °C	ΔH_t	Trans.
Element	Temperature, °C																
Actinium Ac	(1025) ⊙	(1111)	(1211)	(1325)	(1459)	(1617)	(1806)	(2038)	(2328)	(2702)	3200	(95,000)*	1050	3400			
Aluminum Al	744	812	889	979	1084	1209	1360	1546	1782	2093	2520	78,700	660	2580			
Americium Am	625	689	767	855	958 ⊙	1085	1245	1444	1710	2074	2614	66,000	995	2900	600		α-β
Antimony Sb	308	343	38[illegible]	426	476	534	603 ⊙	738	947	1220	1587	12,340	631	4750			
Argon Ar	−245	−243	−240	−238	−234	−230	−226	−220	−212	−201 ⊙	−186	1,558*	−189	281			
Arsenic As	123	145	170	198	231	269	313	366	429	508	612	8,600	817	6620			
Astatine At	−10	+5	2[illegible]	40	62	87	121	156	201	259 ⊙	335	(21,600)*	(300)	(5,700)			
Barium Ba	360	409	466	533	614	712 ⊙	843	1015	1250	1590	2125	40,490†	729	2300			
Beryllium Be	747	812	887	974	1074	1193 ⊙	1336	1520	1752	2056	2472	77,500	1287	(2919)	1245	(611)	α-β
Bismuth Bi	366	409	459	518	586	669	768	893	1053	1266	1564	50,100	271	2700			
Boron B	1450	1560	1620	1750	1900 ⊙	2076	2291	2550	2870	3275	3802	136,500	2027	5290			
Bromine Br	−139	−131	−122	−111	−100	−86	−71	−52	−28 ⊙	+4	58	7,170*	−7	2520			
Cadmium Cd	91	115	143	175	213	257	310 ⊙	382	473	595	767	26,720	321	1480			
Calcium Ca	314	354	399	453 ⊙	516	591	683	799 ⊙	955	1171	1484	42,600	839	2040	447	220	α-β
Carbon C	1750	1859	1980	2115	2267	2439	2636	2864	3130	3446	3827	171,290	(3850)				
Cerium Ce	1091	1183	1288	1410	1552	1721	1923	2172	2483	2886	3426	101,000	798	1305	726	715	γ-δ
Cesium Cs	0	22 ⊙	47	75	109	159	202	269	359	486	682	18,670	29	520			
Chlorine Cl	−184	−179	−172	−165	−157	−147	−135	−120	−103 ⊙	−76	−34	4,878*	−101	1531			
Chromium Cr	902	974	1056	1149	1257	1384	1535	1719 ⊙	1952	2259	2672	95,000	1857	4047			
Cobalt Co	995	1072	1161	1262	1379 ⊙	1517	1686	1894	2152	2484	2928	102,400	1495	3870	427	108	α-β
Copper Cu	774	841	918	1006 ⊙	1109	1237	1389	1578	1818	2133	2566	80,500	1083	3140			
Dysprosium Dy	667	731	803	888	987	1150	1259 ⊙	1432	1683	2033	2562	69,400	1409	2643	1384	995	α-β
Erbium Er	757	827	907	1001	1111	1242	1403 ⊙	1610	1893	2283	2863	75,800	1522	4757			
Europium Eu	588	356	404	459	524	602	699 ⊙	821	991	1230	1597	41,900	817	2202			
Fluorine F								−223 ⊙	−215	−205	−188	1,562*	−220	122			
Francium Fa	−15	+4 ⊙	30	57	90	131	182	246	334	467	(674)	(15,200)*	(27)	(500)			
Gadolinium Gd	987	1070	1165 ⊙	1270 ⊙	1406	1564	1757	1996	2302	2706	3266	95,000	1312	2403	1260	935	α-β
Gallium Ga	617	678	748	830	926	1038	1176	1348	1565	1855	2247	55,300	30	1335			
Germanium Ge	851	926 ⊙	1013	1114	1232	1372	1542	1751	2016	2362	2834	89,500	937	8830			
Gold Au	863	938	1024 ⊙	1122	1237	1374	1542	1750	2010	2348	2808	87,300	1063	2955			
Hafnium Hf	1608	1726 ⊙	1862	2017	2197 ⊙	2417	2682	3000	3406	3896	4603	118,000	2227	5750	1740	1610	α-β
Helium He								0.95	1.23	2.49	4.22	20*	(3.5)	5			
Holmium Ho	703	769	844	932	1035	1159	1311 ⊙	1503	1769	2139	2695	71,900	1470	2911	1428	1121	α-β
Hydrogen H	−269	−269	−268	−268	−267	−266	−265	−264	−262 ⊙	−259	−253	216	−259	28			
Indium In	533	589	654	729	819	924	1053	1213	1419	1691	2070	58,000	156	780			
Iodine I	−86	−75	−63	−49	−32	−14	+9	35	67	109 ⊙	183	9,970	114	3770			

Iridium Ir	1673	1789	1921	2070	2242	2441 ⊙	2685	2980	3343	3800	4389	160,000	2454	6390	911	215	α–γ
															1392	200	γ–δ
Iron Fe	948	1024	1109	1208	1321 ⊙	1455 ⊙	1617	1820	2075	2407	2862	99,300	1536	3390			
Krypton Kr	−234	−231	−228	−224	−220	−214	−208	−199	−189	−174 ⊙	−153	2,158	−157	391			
															277	87	α–β
Lanthanum La	1102	1194	1299	1421	1564	1733	1937	2187	2501	2908	3457	103,000	920	1481	861	746	β–γ
Lead Pb	404	425	478	573	616	706	817	957	1140	1389	1750	46,620	327	1147			
Lithium Li	265	303	344	397	456	531	619	730	871	1068	1324	38,584	180	717			
Lutetium Lu	1056	1141	1239	1351	1481	1635 ⊙	1829	2071	2383	2800	3395	102,200	1663	4457			
Magnesium Mg	204	236	273	315	365	424	496	584 ⊙	699	860	1090	35,000	649	2140			
															707	532	α–β
															1087	507	β–γ
Manganese Mn	586	640	700 ⊙	774	858	956	1074 ⊙	1222 ⊙	1419	1683	2062	67,700	1244	2882	1137	449	γ–δ
Mercury Hg	−60	−46 ⊙	−29	−9	+14	42	77	120	176	251	357	14,692	−39	549			
Molybdenum Mo	1670	1862	1925	2080	2259	2469 ⊙	2722	3041	3436	3942	4610	157,300	2617	6650			
Neodymium Nd	796 ⊙	869	954 ⊙	1054	1173	1318	1498	1725	2026	2443	3068	78,300	1016	1707	853	724	α–β
Neon Ne	−265	−265	−264	−263	−262	−261	−260	−258	−255	−252 ⊙	−246	422	−249	80			
Nickel Ni	994	1070	1155	1259	1373 ⊙	1511	1678	1883	2139	2469	2914	102,800	1453	4176			
Niobium Nb	1833	1959	2101	2262	2448 ⊙	2671	2935	3252	3640	4124	4744	172,400	2467	6302			
Nitrogen N	−248	−246	−244	−242	−239 ⊙	−236	−232	−227	−220	−211 ⊙	−196	1,335	−210	172	−238	55	α–β
Osmium Os	2002	2140	2288	2464	2662	2888 ⊙	3151	3483	3874	4370	4987	187,400	3045	7000			
															−249	22	α–β
Oxygen O	−243	−241	−239	−237	−234	−230 ⊙	−226	−220 ⊙	−212	−200	−183	1,630	−219	106	−229	178	β–γ
Palladium Pd	917	995	1085	1188	1308	1450 ⊙	1625	1844	2124	2483	2964	90,000	1552	(4197)			
Phosphorus P	57	86	106	126	153	182	216	256	303	362	431	42,700	597	4500			
Platinum Pt	1385	1484	1600	1731 ⊙	1882	2058	2278	2544	2871	3286	3824	134,970	1770	4700			
															122	809	α–β
															207	140	β–γ
															315	130	γ–δ
Plutonium Pu	895	979	1076	1189	1323	1485	1681	1927	2240	2656	3230	84,100	640	680	457	20	δ–δ′
															480	440	δ′–ε
Polonium Po	132	156	183	216 ⊙	258	308	373	458	572	744	947	34,500	254	3000			
Potassium K	39	62 ⊙	88	120	157	203	260	333	430	563	758	21,415	63	562			
Praseodymium Pr	902 ⊙	985	1082	1196	1331	1495	1698	1958	2301	2782	3512	85,000	931	1646	795	757	α–β
Radium Ra	275	312	359	410	474	547	634 ⊙	769	928	1181	1527	32,700*	700	2000			
Rhenium Re	2052	2196	2362	2552	2771	3032 ⊙	3344	3737	4232	4857	5687	186,100	3180	7900			
Rhodium Rh	1358	1456	1567	1694	1841 ⊙	2017	2223	2476	2793	3196	3727	133,100	1966	5150			
Rubidium Rb	16	35 ⊙	59	88	123	165	218	286	376	503	694	19,600	39	540			

ΔH_v Heat of vaporization, kcal/mol.
ΔH_m Heat of melting, kcal/mol.
ΔH_t Heat of transition, kcal/mol.
⊙ Change of phase.
* At the normal boiling point.
† ΔH_v at 627°C.

TABLE 4k-15. VAPOR PRESSURES OF THE CHEMICAL ELEMENTS (*Continued*)

Pressure, atm	10^{-10}	10^{-9}	10^{-8}	10^{-7}	10^{-6}	10^{-5}	10^{-4}	10^{-3}	10^{-2}	10^{-1}	1	ΔH_{v298}	T_m, °C	ΔH_m	T_t, °C	ΔH_t	Trans.
Element	Temperature, °C																
Ruthenium Ru	1592	1702	1826	1967	2128	2316 ⊙	2540	2815	3153	3575	4119	155,000	2427	3210			
Samarium Sm	407	453	507	568	641	728	834 ⊙	968 ⊙	1148	1405	1791	49,400	1072	2060	917	744	α–β
Scandium Sc	879	952	1035	1130	1241 ⊙	1372	1531 ⊙	1734	1996	2343	2831	90,320	1539	3369	1335	958	α–β
Selenium Se	80	104	130	160	194 ⊙	237	290	354	435	538	679	55,000	217	1300			
Silicon Si	1071	1154	1244	1348 ⊙	1476	1636	1830	2067	2365	2750	3267	108,900	1412	12,082			
Silver Ag	617	674	740	815	904 ⊙	1010	1141	1304	1510	1783	2163	67,900	961	2700			
Sodium Na	95 ⊙	121	152	188	231	282	347	428	535	681	883	25,852	98	622			
Strontium Sr	270	307	350	400	458	528 ⊙	614	721 ⊙	867	1074	1375	39,300	770	2400	589	200	α–γ
Sulfur S	1	15	35	52	77 ⊙	105 ⊙	142	183	238	321	445	66,000	115	337	96	90	α–β
Tantalum Ta	2079	2222	2381	2568	2779 ⊙	3025	3327	3686	4124	4670	5365	186,900	2977	7475			
Technetium Tc	1664	1772	1910	2058 ⊙	2233	2458	2721	3053	3463	3958	4627	138,000	2127	5500			
Tellurium Te	196	223	253	289	327	373	428 ⊙	505	617	768	988	20,120	449	4180			
Terbium Tb	950	1030	1122	1228 ⊙	1352 ⊙	1507	1695	1931	2234	2642	3223	92,900	1357	9580	1287	1200	α–β
Thallium Tl	321	362	410	465	530	609	706	825	980	1190	1487	43,550	304	975	234	90	α–β
Thorium Th	1527	1646 ⊙	1782	1944	2134	2361	2636	2978	3413	3989	4788	137,500	1755	8853	1363	654	α–β
Thulium Tm	487	539	599	667	748	845	963	1109	1298 ⊙	1559	1947	55,500	1545	4025			
Tin Sn	736	807	888	982	1093	1225	1385	1584	1836	2167	2623	72,200	13	500			
Titanium Ti	1124	1211	1310	1423	1554 ⊙	1709	1900	2132	2421	2793	3289	112,300	1670	3692	882	1017	α–β
Tungsten W	2235	2383	2550	2739	2955	3205 ⊙	3502	3866	4309	4857	5555	203,000	3407	8460			
															668	667	α–β
Uranium U	1320	1426	1548	1689	1855	2053	2292	2588	2964	3457	4134	125,000	1132	2036	775	1137	β–γ
Vanadium V	1228	1318	1420	1537	1675	1827 ⊙	2017	2252	2543	2916	3409	122,900	1902	5002			
Xenon Xe	−219	−215	−211	−206	−200	−192	−183	−171	−157	−137 ⊙	−108	3,021	−112	549			
Ytterbium Yb	228	262	301	346	400	463	541	638 ⊙	775 ⊙	934	1194	36,350	824	1830	760	418	α–β
Yttrium Y	1040	1124	1220	1331	1458 ⊙	1616	1809	2049	2356	2765	3338	101,500	1526	2724	1479	1193	α–β
Zinc Zn	148	176	208	244	286	338	398 ⊙	479	581	718	911	31,245	420	1765			
Zirconium Zr	1574	1690	1822 ⊙	1976	2156	2367	2620	2926	3304	3783	4409	145,500	1852	4038			

TABLE 4k-16. VAPOR PRESSURE OF ICE
(Pressure of aqueous vapor over ice from −120 to 0°C)

Temp., °C	Bars	mm of Hg	Temp., °C	Bars	mm of Hg
−120	0.000 000 0001	0.000 000 09	−70	0.000 002 577	0.001 933
−119	0.000 000 0002	0.000 000 11	−69	0.000 002 992	0.002 245
−118	0.000 000 0002	0.000 000 15	−68	0.000 003 469	0.002 603
−117	0.000 000 0003	0.000 000 19	−67	0.000 004 017	0.003 013
−116	0.000 000 0003	0.000 000 25	−66	0.000 004 643	0.003 483
−115	0.000 000 0004	0.000 000 32	−65	0.000 005 360	0.004 021
−114	0.000 000 0005	0.000 000 41	−64	0.000 006 179	0.004 635
−113	0.000 000 0007	0.000 000 52	−63	0.000 007 113	0.005 336
−112	0.000 000 0009	0.000 000 66	−62	0.000 008 178	0.006 135
−111	0.000 000 0011	0.000 000 84	−61	0.000 009 389	0.007 043
−110	0.000 000 0014	0.000 001 07	−60	0.000 010 765	0.008 076
−109	0.000 000 0018	0.000 001 35	−59	0.000 012 328	0.009 248
−108	0.000 000 0023	0.000 001 69	−58	0.000 014 098	0.010 576
−107	0.000 000 0028	0.000 002 13	−57	0.000 016 103	0.012 080
−106	0.000 000 0035	0.000 002 66	−56	0.000 018 369	0.013 780
−105	0.000 000 0044	0.000 003 32	−55	0.000 020 93	0.015 70
−104	0.000 000 0055	0.000 004 13	−54	0.000 023 82	0.017 87
−103	0.000 000 0068	0.000 005 13	−53	0.000 027 07	0.020 31
−102	0.000 000 0085	0.000 006 36	−52	0.000 030 73	0.023 05
−101	0.000 000 0105	0.000 007 85	−51	0.000 034 85	0.026 14
−100	0.000 000 0129	0.000 009 68	−50	0.000 039 47	0.029 61
−99	0.000 000 0159	0.000 011 90	−49	0.000 044 66	0.033 50
−98	0.000 000 0194	0.000 014 59	−48	0.000 050 47	0.037 86
−97	0.000 000 0238	0.000 017 85	−47	0.000 056 97	0.042 74
−96	0.000 000 0290	0.000 021 78	−46	0.000 064 24	0.048 19
−95	0.000 000 0354	0.000 026 53	−45	0.000 072 36	0.054 28
−94	0.000 000 0430	0.000 032 24	−44	0.000 081 42	0.061 08
−93	0.000 000 0521	0.000 039 09	−43	0.000 091 52	0.068 66
−92	0.000 000 0630	0.000 047 29	−42	0.000 102 77	0.077 09
−91	0.000 000 0761	0.000 057 10	−41	0.000 115 28	0.086 48
−90	0.000 000 0917	0.000 068 79	−40	0.000 129 18	0.096 91
−89	0.000 000 1103	0.000 082 71	−39	0.000 144 62	0.108 49
−88	0.000 000 1323	0.000 099 24	−38	0.000 161 74	0.121 33
−87	0.000 000 1584	0.000 118 85	−37	0.000 180 72	0.135 57
−86	0.000 000 1894	0.000 142 05	−36	0.000 201 72	0.151 33
−85	0.000 000 2259	0.000 1694	−35	0.000 2250	0.1688
−84	0.000 000 2689	0.000 2018	−34	0.000 2506	0.1880
−83	0.000 000 3196	0.000 2398	−33	0.000 2790	0.2093
−82	0.000 000 3792	0.000 2844	−32	0.000 3103	0.2328
−81	0.000 000 4490	0.000 3368	−31	0.000 3447	0.2586
−80	0.000 000 5307	0.000 3981	−30	0.000 3827	0.2871
−79	0.000 000 6262	0.000 4697	−29	0.000 4245	0.3184
−78	0.000 000 7376	0.000 5533	−28	0.000 4704	0.3529
−77	0.000 000 8673	0.000 6506	−27	0.000 5209	0.3907
−76	0.000 001 0182	0.000 7638	−26	0.000 5762	0.4323
−75	0.000 001 1934	0.000 8952	−25	0.000 6370	0.4778
−74	0.000 001 3964	0.001 0476	−24	0.000 7035	0.5277
−73	0.000 001 6314	0.001 2238	−23	0.000 7764	0.5824
−72	0.000 001 9030	0.001 4275	−22	0.000 8561	0.6422
−71	0.000 002 2162	0.001 6625	−21	0.000 9433	0.7076

TABLE 4k-16. VAPOR PRESSURE OF ICE (*Continued*)

Temp., °C	Bars	mm of Hg	Temp., °C	Bars	mm of Hg
−20	0.001 0385	0.7790	−5	0.004 023	3.018
−19	0.001 1424	0.8570	−4	0.004 379	3.285
−18	0.001 2558	0.9421	−3	0.004 763	3.573
−17	0.001 3794	1.0348	−2	0.005 178	3.884
−16	0.001 5140	1.1358	1	0.005 625	4.220
−15	0.001 661	1.246	0	0.006 107	4.581
−14	0.001 820	1.365			
−13	0.001 993	1.495			
−12	0.002 181	1.636			
−11	0.002 386	1.790			
−10	0.002 607	1.956			
−9	0.002 847	2.136			
−8	0.003 107	2.331			
−7	0.003 389	2.542			
−6	0.003 694	2.771			

TABLE 4k-17. VAPOR PRESSURE OF WATER BELOW 100°C
(Pressure of aqueous vapor over water from −15.0 to 100.0°C)

Temp., °C	Bars	mm of Hg	Temp., °C	Bars	mm of Hg
−15.0	0.001 914	1.436	−5.0	0.004 216	3.162
−14.8	0.001 946	1.459	−4.8	0.004 280	3.210
−14.6	0.001 978	1.484	−4.6	0.004 345	3.259
−14.4	0.002 011	1.508	−4.4	0.004 411	3.308
−14.2	0.002 044	1.533	−4.2	0.004 478	3.359
−14.0	0.002 078	1.558	−4.0	0.004 545	3.409
−13.8	0.002 112	1.584	−3.8	0.004 614	3.461
−13.6	0.002 147	1.610	−3.6	0.004 684	3.513
−13.4	0.002 182	1.637	−3.4	0.004 754	3.566
−13.2	0.002 218	1.663	−3.2	0.004 826	3.620
−13.0	0.002 254	1.691	−3.0	0.004 898	3.674
−12.8	0.002 291	1.718	−2.8	0.004 972	3.729
−12.6	0.002 328	1.746	−2.6	0.005 046	3.785
−12.4	0.002 366	1.775	−2.4	0.005 121	3.841
−12.2	0.002 404	1.803	−2.2	0.005 198	3.899
−12.0	0.002 443	1.833	−2.0	0.005 275	3.957
−11.8	0.002 483	1.862	−1.8	0.005 353	4.015
−11.6	0.002 523	1.893	−1.6	0.005 433	4.075
−11.4	0.002 564	1.923	−1.4	0.005 513	4.135
−11.2	0.002 605	1.954	−1.2	0.005 595	4.196
−11.0	0.002 647	1.985	−1.0	0.005 677	4.258
−10.8	0.002 689	2.017	−0.8	0.005 761	4.321
−10.6	0.002 732	2.049	−0.6	0.005 846	4.385
−10.4	0.002 776	2.082	−0.4	0.005 932	4.449
−10.2	0.002 820	2.115	−0.2	0.006 019	4.515
−10.0	0.002 865	2.149	0.0	0.006 107	4.581
−9.8	0.002 911	2.183	0.2	0.006 196	4.648
−9.6	0.002 957	2.218	0.4	0.006 287	4.716
−9.4	0.003 003	2.253	0.6	0.006 379	4.785
−9.2	0.003 051	2.288	0.8	0.006 472	4.854
−9.0	0.003 099	2.324	1.0	0.006 566	4.925
−8.8	0.003 148	2.361	1.2	0.006 661	4.996
−8.6	0.003 197	2.398	1.4	0.006 758	5.069
−8.4	0.003 248	2.436	1.6	0.006 856	5.142
−8.2	0.003 298	2.474	1.8	0.006 955	5.217
−8.0	0.003 350	2.513	2.0	0.007 055	5.292
−7.8	0.003 402	2.552	2.2	0.007 157	5.368
−7.6	0.003 455	2.592	2.4	0.007 260	5.445
−7.4	0.003 509	2.632	2.6	0.007 364	5.523
−7.2	0.003 564	2.673	2.8	0.007 469	5.602
−7.0	0.003 619	2.715	3.0	0.007 576	5.683
−6.8	0.003 675	2.757	3.2	0.007 684	5.764
−6.6	0.003 732	2.799	3.4	0.007 794	5.846
−6.4	0.003 790	2.842	3.6	0.007 905	5.929
−6.2	0.003 848	2.886	3.8	0.008 017	6.013
−6.0	0.003 907	2.931	4.0	0.008 131	6.099
−5.8	0.003 967	2.976	4.2	0.008 246	6.185
−5.6	0.004 028	3.021	4.4	0.008 363	6.273
−5.4	0.004 090	3.067	4.6	0.008 481	6.361
−5.2	0.004 152	3.114	4.8	0.008 600	6.451

TABLE 4k-17. VAPOR PRESSURE OF WATER BELOW 100°C (*Continued*)

Temp., °C	Bars	mm of Hg	Temp., °C	Bars	mm of Hg
5.0	0.008 721	6.542	15.0	0.017 049	12.788
5.2	0.008 844	6.633	15.2	0.017 270	12.954
5.4	0.008 968	6.726	15.4	0.017 493	13.121
5.6	0.009 093	6.821	15.6	0.017 719	13.290
5.8	0.009 220	6.916	15.8	0.017 947	13.462
6.0	0.009 349	7.012	16.0	0.018 178	13.635
6.2	0.009 479	7.110	16.2	0.018 412	13.810
6.4	0.009 611	7.209	16.4	0.018 648	13.987
6.6	0.009 745	7.309	16.6	0.018 887	14.166
6.8	0.009 880	7.410	16.8	0.019 128	14.347
7.0	0.010 016	7.513	17.0	0.019 373	14.531
7.2	0.010 155	7.617	17.2	0.019 620	14.716
7.4	0.010 295	7.722	17.4	0.019 869	14.903
7.6	0.010 437	7.828	17.6	0.020 122	15.093
7.8	0.010 580	7.936	17.8	0.020 377	15.284
8.0	0.010 725	8.045	18.0	0.020 635	15.478
8.2	0.010 872	8.155	18.2	0.020 890	15.673
8.4	0.011 021	8.267	18.4	0.021 160	15.871
8.6	0.011 172	8.379	18.6	0.021 427	16.071
8.8	0.011 324	8.494	18.8	0.021 696	16.274
9.0	0.011 478	8.609	19.0	0.021 969	16.478
9.2	0.011 634	8.726	19.2	0.022 245	16.685
9.4	0.011 792	8.845	19.4	0.022 523	16.894
9.6	0.011 952	8.965	19.6	0.022 805	17.105
9.8	0.012 113	9.086	19.8	0.023 090	17.319
10.0	0.012 277	9.209	20.0	0.023 378	17.535
10.2	0.012 442	9.333	20.2	0.023 669	17.753
10.4	0.012 610	9.458	20.4	0.023 963	17.974
10.6	0.012 779	9.585	20.6	0.024 261	18.197
10.8	0.012 951	9.714	20.8	0.024 562	18.423
11.0	0.013 124	9.844	21.0	0.024 866	18.651
11.2	0.013 300	9.976	21.2	0.025 173	18.881
11.4	0.013 477	10.109	21.4	0.025 483	19.114
11.6	0.013 657	10.243	21.6	0.025 797	19.350
11.8	0.013 838	10.380	21.8	0.026 115	19.588
12.0	0.014 022	10.518	22.0	0.026 435	19.828
12.2	0.014 208	10.657	22.2	0.026 759	20.071
12.4	0.014 396	10.798	22.4	0.027 087	20.317
12.6	0.014 587	10.941	22.6	0.027 418	20.565
12.8	0.014 779	11.085	22.8	0.027 753	20.816
13.0	0.014 974	11.231	23.0	0.028 091	21.070
13.2	0.015 171	11.379	23.2	0.028 433	21.326
13.4	0.015 370	11.529	23.4	0.028 778	21.585
13.6	0.015 572	11.680	23.6	0.029 127	21.847
13.8	0.015 776	11.833	23.8	0.029 480	22.112
14.0	0.015 982	11.988	24.0	0.029 836	22.379
14.2	0.016 191	12.144	24.2	0.030 197	22.649
14.4	0.016 402	12.302	24.4	0.030 561	22.922
14.6	0.016 615	12.462	24.6	0.030 928	23.198
14.8	0.016 831	12.624	24.8	0.031 300	23.477

TABLE 4k-17. VAPOR PRESSURE OF WATER BELOW 100°C (*Continued*)

Temp., °C	Bars	mm of Hg	Temp., °C	Bars	mm of Hg
25.0	0.031 676	23.759	35.0	0.056 237	42.181
25.2	0.032 055	24.043	35.2	0.056 862	42.650
25.4	0.032 439	24.331	35.4	0.057 493	43.123
25.6	0.032 826	24.621	35.6	0.058 130	43.601
25.8	0.033 217	24.915	35.8	0.058 773	44.083
26.0	0.033 613	25.212	36.0	0.059 422	44.570
26.2	0.034 013	25.512	36.2	0.060 077	45.062
26.4	0.034 416	25.814	36.4	0.060 739	45.558
26.6	0.034 824	26.120	36.6	0.061 407	46.059
26.8	0.035 236	26.429	36.8	0.062 081	46.565
27.0	0.035 653	26.742	37.0	0.062 762	47.075
27.2	0.036 073	27.057	37.2	0.063 449	47.591
27.4	0.036 498	27.376	37.4	0.064 143	48.111
27.6	0.036 928	27.698	37.6	0.064 843	48.636
27.8	0.037 361	28.023	37.8	0.065 549	49.166
28.0	0.037 800	28.352	38.0	0.066 263	49.701
28.2	0.038 242	28.684	38.2	0.066 983	50.241
28.4	0.038 689	29.019	38.4	0.067 710	50.786
28.6	0.039 141	29.358	38.6	0.068 443	51.337
28.8	0.039 597	29.700	38.8	0.069 184	51.892
29.0	0.040 058	30.046	39.0	0.069 931	52.453
29.2	0.040 524	30.395	39.2	0.070 686	53.019
29.4	0.040 994	30.748	39.4	0.071 447	53.590
29.6	0.041 469	31.104	39.6	0.072 216	54.166
29.8	0.041 948	31.464	39.8	0.072 991	54.748
30.0	0.042 433	31.827	40.0	0.073 774	55.335
30.2	0.042 922	32.195	40.2	0.074 564	55.928
30.4	0.043 417	32.565	40.4	0.075 362	56.526
30.6	0.043 916	32.940	40.6	0.076 166	57.130
30.8	0.044 421	33.318	40.8	0.076 979	57.739
31.0	0.044 930	33.700	41.0	0.077 798	58.354
31.2	0.045 444	34.086	41.2	0.078 626	58.974
31.4	0.045 964	34.476	41.4	0.079 460	59.600
31.6	0.046 488	34.869	41.6	0.080 303	60.232
31.8	0.047 018	35.267	41.8	0.081 153	60.870
32.0	0.047 553	35.668	42.0	0.082 011	61.513
32.2	0.048 094	36.073	42.2	0.082 876	62.162
32.4	0.048 639	36.483	42.4	0.083 750	62.818
32.6	0.049 190	36.896	42.6	0.084 631	63.479
32.8	0.049 747	37.313	42.8	0.085 521	64.146
33.0	0.050 309	37.735	43.0	0.086 418	64.819
33.2	0.050 876	38.160	43.2	0.087 324	65.498
33.4	0.051 449	38.590	43.4	0.088 237	66.184
33.6	0.052 028	39.024	43.6	0.089 159	66.875
33.8	0.052 612	39.462	43.8	0.090 090	67.573
34.0	0.053 201	39.904	44.0	0.091 028	68.277
34.2	0.053 797	40.351	44.2	0.091 975	68.987
34.4	0.054 398	40.802	44.4	0.092 931	69.704
34.6	0.055 005	41.257	44.6	0.093 894	70.427
34.8	0.055 618	41.717	44.8	0.094 867	71.156

TABLE 4k-17. VAPOR PRESSURE OF WATER BELOW 100°C (*Continued*)

Temp., °C	Bars	mm of Hg	Temp., °C	Bars	mm of Hg
45.0	0.095 848	71.892	55.0	0.157 45	118.09
45.2	0.096 838	72.635	55.2	0.158 96	119.23
45.4	0.097 837	73.384	55.4	0.160 49	120.38
45.6	0.098 844	74.139	55.6	0.162 03	121.53
45.8	0.099 861	74.902	55.8	0.163 58	122.70
46.0	0.100 886	75.671	56.0	0.165 15	123.87
46.2	0.101 921	76.447	56.2	0.166 72	125.05
46.4	0.102 964	77.230	56.4	0.168 31	126.25
46.6	0.104 017	78.019	56.6	0.169 92	127.45
46.8	0.105 079	78.816	56.8	0.171 53	128.66
47.0	0.106 150	79.619	57.0	0.173 16	129.88
47.2	0.107 231	80.430	57.2	0.174 81	131.12
47.4	0.108 321	81.248	57.4	0.176 46	132.36
47.6	0.109 421	82.072	57.6	0.178 13	133.61
47.8	0.110 530	82.904	57.8	0.179 81	134.87
48.0	0.111 649	83.744	58.0	0.181 51	136.14
48.2	0.112 777	84.590	58.2	0.183 22	137.43
48.4	0.113 916	85.444	58.4	0.184 94	138.72
48.6	0.115 064	86.305	58.6	0.186 68	140.02
48.8	0.116 222	87.174	58.8	0.188 43	141.34
49.0	0.117 390	88.050	59.0	0.190 20	142.66
49.2	0.118 568	88.934	59.2	0.191 98	144.00
49.4	0.119 757	89.825	59.4	0.193 77	145.34
49.6	0.120 955	90.724	59.6	0.195 58	146.70
49.8	0.122 164	91.630	59.8	0.197 40	148.06
50.0	0.123 38	92.545	60.0	0.199 24	149.44
50.2	0.124 61	93.467	60.2	0.201 09	150.83
50.4	0.125 85	94.398	60.4	0.202 96	152.23
50.6	0.127 10	95.336	60.6	0.204 84	153.64
50.8	0.128 37	96.282	60.8	0.206 73	155.06
51.0	0.129 64	97.236	61.0	0.208 64	156.50
51.2	0.130 92	98.198	61.2	0.210 57	157.94
51.4	0.132 21	99.169	61.4	0.212 51	159.40
51.6	0.133 52	100.147	61.6	0.214 47	160.86
51.8	0.134 83	101.134	61.3	0.216 44	162.34
52.0	0.136 16	102.129	62.0	0.218 42	163.83
52.2	0.137 50	103.133	62.2	0.220 43	165.33
52.4	0.138 85	104.145	62.4	0.222 44	166.85
52.6	0.140 21	105.166	62.6	0.224 48	168.37
52.8	0.141 58	106.195	62.8	0.226 53	169.91
53.0	0.142 96	107.232	63.0	0.228 59	171.46
53.2	0.144 36	108.278	63.2	0.230 67	173.02
53.4	0.145 77	109.333	63.4	0.232 77	174.59
53.6	0.147 18	110.397	63.6	0.234 88	176.18
53.8	0.148 61	111.470	63.8	0.237 01	177.77
54.0	0.150 06	112.551	64.0	0.239 16	179.38
54.2	0.151 51	113.642	64.2	0.241 32	181.00
54.4	0.152 98	114.741	64.4	0.243 50	182.64
54.6	0.154 45	115.850	64.6	0.245 69	184.29
54.8	0.155 94	116.967	64.8	0.247 91	185.94

TABLE 4k-17. VAPOR PRESSURE OF WATER BELOW 100°C (*Continued*)

Temp., °C	Bars	mm of Hg	Temp., °C	Bars	mm of Hg
65.0	0.250 13	187.62	75.0	0.385 53	289.17
65.2	0.252 38	189.30	75.2	0.388 77	291.60
65.4	0.254 64	191.00	75.4	0.392 03	294.05
65.6	0.256 92	192.71	75.6	0.395 32	296.51
65.8	0.259 22	194.43	75.8	0.398 62	298.99
66.0	0.261 54	196.17	76.0	0.401 95	301.49
66.2	0.263 87	197.92	76.2	0.405 31	304.00
66.4	0.266 22	199.68	76.4	0.408 68	306.54
66.6	0.268 59	201.46	76.6	0.412 08	309.09
66.8	0.270 97	203.25	76.8	0.415 51	311.66
67.0	0.273 38	205.05	77.0	0.418 96	314.24
67.2	0.275 80	206.87	77.2	0.422 43	316.85
67.4	0.278 24	208.70	77.4	0.425 92	319.47
67.6	0.280 70	210.54	77.6	0.429 45	322.11
67.8	0.283 17	212.40	77.8	0.432 99	324.77
68.0	0.285 67	214.27	78.0	0.436 56	327.45
68.2	0.288 18	216.15	78.2	0.440 15	330.14
68.4	0.290 71	218.05	78.4	0.443 77	332.86
68.6	0.293 27	219.27	78.6	0.447 42	335.59
68.8	0.295 84	221.00	78.8	0.451 09	338.34
69.0	0.298 43	223.84	79.0	0.454 78	341.12
69.2	0.301 03	225.79	79.2	0.458 50	343.91
69.4	0.303 66	227.76	79.4	0.462 25	346.71
69.6	0.303 31	229.75	79.6	0.466 02	349.54
69.8	0.308 97	231.75	79.8	0.469 82	352.39
70.0	0.311 66	233.76	80.0	0.473 64	355.26
70.2	0.314 37	235.79	80.2	0.477 49	358.15
70.4	0.317 09	237.84	80.4	0.481 37	361.05
70.6	0.319 84	239.90	80.6	0.485 27	363.98
70.8	0.322 60	241.97	80.8	0.489 20	366.93
71.0	0.325 39	244.06	81.0	0.493 15	369.89
71.2	0.328 20	246.17	81.2	0.497 13	372.88
71.4	0.331 02	248.29	81.4	0.501 14	375.89
71.6	0.333 87	250.42	81.6	0.505 18	378.92
71.8	0.336 74	252.57	81.8	0.509 24	381.96
72.0	0.339 63	254.74	82.0	0.513 33	385.03
72.2	0.342 54	256.92	82.2	0.517 45	388.12
72.4	0.345 47	259.12	82.4	0.521 60	391.23
72.6	0.348 42	261.34	82.6	0.525 77	394.36
72.8	0.351 39	263.57	82.8	0.529 97	397.51
73.0	0.354 39	265.81	83.0	0.534 20	400.68
73.2	0.357 40	268.07	83.2	0.538 46	403.88
73.4	0.360 44	270.35	83.4	0.542 75	407.09
73.6	0.363 50	272.65	83.6	0.547 06	410.33
73.8	0.366 58	274.96	83.8	0.551 40	413.59
74.0	0.369 68	277.29	84.0	0.555 78	416.87
74.2	0.372 81	279.63	84.2	0.560 18	420.17
74.4	0.375 96	281.99	84.4	0.564 61	423.49
74.6	0.379 13	284.37	84.6	0.569 07	426.84
74.8	0.382 32	286.76	84.8	0.573 56	430.20

TABLE 4k-17. VAPOR PRESSURE OF WATER BELOW 100°C (*Continued*)

Temp., °C	Bars	mm of Hg	Temp., °C	Bars	mm of Hg
85.0	0.578 08	433.59	93.0	0.784 91	588.73
85.2	0.582 62	437.00	93.2	0.790 78	593.14
85.4	0.587 20	440.44	93.4	0.796 69	597.57
85.6	0.591 81	443.89	93.6	0.802 63	602.02
85.8	0.596 45	447.37	93.8	0.808 61	606.51
86.0	0.601 12	450.88	94.0	0.814 63	611.02
86.2	0.605 82	454.40	94.2	0.820 68	615.56
86.4	0.610 55	457.95	94.4	0.826 78	620.13
86.6	0.615 31	461.52	94.6	0.832 90	624.73
86.8	0.620 10	465.11	94.8	0.839 07	629.36
87.0	0.624 92	468.73	95.0	0.845 28	634.01
87.2	0.629 78	472.37	95.2	0.851 52	638.69
87.4	0.634 67	476.04	95.4	0.857 80	643.40
87.6	0.639 58	479.73	95.6	0.864 12	648.14
87.8	0.644 53	483.44	95.8	0.870 48	652.91
88.0	0.649 51	487.18	96.0	0.876 87	657.71
88.2	0.654 53	490.94	96.2	0.883 31	662.54
88.4	0.659 57	494.72	96.4	0.889 79	667.39
88.6	0.664 65	498.53	96.6	0.896 30	672.28
88.8	0.669 76	502.36	96.8	0.902 85	677.20
89.0	0.674 91	506.22	97.0	0.909 45	682.14
89.2	0.680 08	510.10	97.2	0.916 08	687.12
89.4	0.685 29	514.01	97.4	0.922 76	692.12
89.6	0.690 53	517.94	97.6	0.929 47	697.16
89.8	0.695 81	521.90	97.8	0.936 22	702.23
90.0	0.701 12	525.88	98.0	0.943 02	707.32
90.2	0.706 46	529.89	98.2	0.949 86	712.45
90.4	0.711 84	533.93	98.4	0.956 73	717.61
90.6	0.717 25	537.98	98.6	0.963 65	722.80
90.8	0.722 70	542.07	98.8	0.970 61	728.02
91.0	0.728 18	546.18	99.0	0.977 61	733.27
91.2	0.733 69	550.32	99.2	0.984 66	738.55
91.4	0.739 24	554.48	99.4	0.991 74	743.87
91.6	0.744 83	558.67	99.6	0.998 87	749.21
91.8	0.750 45	562.88	99.8	1.006 04	754.59
92.0	0.756 10	567.12	100.0	1.013 25	760.00
92.2	0.761 79	571.39			
92.4	0.767 52	575.69			
92.6	0.773 28	580.01			
92.8	0.779 08	584.36			

TABLE 4k-18. VAPOR PRESSURE OF WATER ABOVE 100°C

(Pressure of aqueous vapor over water from 100° to the critical temperature, 374.15°C)

Temp., °C	Bars	mm of Hg	Temp., °C	Bars	mm of Hg
100	1.0133	760.0	150	4.7597	3,570.1
101	1.0500	787.5	151	4.8887	3,666.8
102	1.0878	815.9	152	5.0205	3,765.7
103	1.1267	845.1	153	5.1551	3,866.7
104	1.1667	875.1	154	5.2926	3,969.8
105	1.2080	906.1	155	5.4331	4,075.1
106	1.2504	937.9	156	5.5765	4,182.7
107	1.2941	970.6	157	5.7228	4,292.5
108	1.3390	1,004.3	158	5.8723	4,404.6
109	1.3851	1,038.9	159	6.0248	4,519.0
110	1.4326	1,074.5	160	6.1805	4,635.8
111	1.4814	1,111.1	161	6.3393	4,754.9
112	1.5316	1,148.8	162	6.5014	4,876.5
113	1.5831	1,187.4	163	6.6668	5,000.5
114	1.6361	1,227.2	164	6.8355	5,127.1
115	1.6905	1,268.0	165	7.0076	5,256.1
116	1.7064	1,309.9	166	7.1831	5,387.8
117	1.8038	1,353.0	167	7.3621	5,522.0
118	1.8627	1,397.2	168	7.5446	5,658.9
119	1.9232	1,442.5	169	7.7306	5,798.4
120	1.9853	1,489.1	170	7.9203	5,940.7
121	2.0490	1,536.9	171	8.1136	6,085.7
122	2.1144	1,585.9	172	8.3107	6,233.5
123	2.1815	1,636.2	173	8.5115	6,384.2
124	2.2503	1,687.8	174	8.7161	6,537.6
125	2.3208	1,740.7	175	8.9247	6,694.0
126	2.3931	1,795.0	176	9.1371	6,853.4
127	2.4673	1,850.6	177	9.3535	7,015.7
128	2.5433	1,907.7	178	9.5730	7,181.1
129	2.6213	1,966.1	179	9.7985	7,349.5
130	2.7011	2,026.0	180	10.0271	7,520.9
131	2.7829	2,087.4	181	10.2599	7,695.6
132	2.8667	2,150.2	182	10.4969	7,873.4
133	2.9525	2,214.6	183	10.7383	8,054.4
134	3.0405	2,280.5	184	10.9839	8,238.6
135	3.1305	2,348.1	185	11.234	8,426
136	3.2226	2,417.2	186	11.489	8,617
137	3.3170	2,487.9	187	11.748	8,811
138	3.4136	2,560.4	188	12.011	9,009
139	3.5124	2,634.5	189	12.279	9,210
140	3.6135	2,710.3	190	12.552	9,415
141	3.7170	2,787.9	191	12.830	9,623
142	3.8228	2,867.3	192	13.112	9,835
143	3.9310	2,948.5	193	13.399	10,050
144	4.0417	3,031.5	194	13.692	10,270
145	4.1549	3,116.4	195	13.989	10,492
146	4.2706	3,203.2	196	14.291	10,719
147	4.3889	3,292.0	197	14.598	10,949
148	4.5098	3,382.7	198	14.910	11,184
149	4.6334	3,475.4	199	15.228	11,422

TABLE 4k-18. VAPOR PRESSURE OF WATER ABOVE 100°C (*Continued*)

Temp., °C	Bars	mm of Hg	Temp., °C	Bars	mm of Hg
200	15.550	11,664	250	39.776	29,834
201	15.879	11,910	251	40.452	30,341
202	16.212	12,160	252	41.137	30,855
203	16.551	12,414	253	41.830	31,375
204	16.895	12,672	254	42.533	31,902
205	17.245	12,935	255	43.244	32,436
206	17.601	13,202	256	43.965	32,976
207	17.962	13,472	257	44.695	33,524
208	18.329	13.748	258	45.434	34,078
209	18.701	14,027	259	46.182	34,640
210	19.080	14,311	260	46.940	35,208
211	19.464	14,599	261	47.707	35,783
212	19.855	14,892	262	48.484	36,366
213	20.251	15,190	263	49.270	36,955
214	20.654	15,492	264	50.066	37,553
215	21.062	15,798	265	50.872	38,157
216	21.477	16,109	266	51.087	38,769
217	21.899	16,425	267	52.513	39,388
218	22.326	16,746	268	53.349	40,015
219	22.760	17,072	269	54.195	40,650
220	23.201	17,402	270	55.051	41,292
221	23.648	17,738	271	55.917	41,941
222	24.102	18,078	272	56.794	42,599
223	24.562	18,423	273	57.681	43,264
224	25.030	18,774	274	58.579	43,938
225	25.504	19,129	275	59.487	44.619
226	25.985	19,490	276	60.406	45,308
227	26.473	19,856	277	61.336	46,006
228	26.968	20,227	278	62.277	46,712
229	27.470	20.604	279	63.229	47,426
230	27.979	20,986	280	64.192	48,148
231	28.495	21.373	281	65.166	48,878
232	29.019	21,766	282	66.151	49,617
233	29.550	22,164	283	67.147	50,365
234	30.088	22,568	284	68.155	51,121
235	30.634	22,978	285	69.175	51,885
236	31.188	23,393	286	70.206	52,659
237	31.749	23,814	287	71.249	53,441
238	32.318	24,241	288	72.304	54,232
239	32.895	24,674	289	73.370	55,032
240	33.480	25,112	290	74.449	55,841
241	34.073	25,557	291	75.539	56,659
242	34.673	26,007	292	76.642	57,486
243	35.282	26,464	293	77.757	58,322
244	35.899	26,926	294	78.884	59,168
245	36.524	27,395	295	80.024	60,023
246	37.157	27,870	296	81.177	60,888
247	37.799	28,352	297	82.342	61,762
248	38.450	28,840	298	83.521	62,646
249	39.109	29,334	299	84.712	63,539

TABLE 4k-18. VAPOR PRESSURE OF WATER ABOVE 100°C (*Continued*)

Temp., °C	Bars	mm of Hg	Temp., °C	Bars	mm of Hg
300	85.916	64,442	340	146.08	109,569
301	87.133	65,355	341	147.92	110,949
302	88.363	66,278	342	149.78	112,344
303	89.606	67,210	343	151.66	113,753
304	90.863	68,153	344	153.56	115,177
305	92.134	69.106	345	155.48	115,616
306	93.419	70,070	346	157.41	118,070
307	94.717	71,044	347	159.37	119,539
308	96.029	72,028	348	161.35	121,023
309	97.356	73,023	349	163.35	122,523
310	98.696	74,028	350	165.37	124,038
311	100.050	75,044	351	167.40	125,563
312	101.418	76,070	352	169.46	127,106
313	102.801	77.107	353	171.54	128,665
314	104.199	78,156	354	173.64	130,242
315	105.611	79,215	355	175.77	131,835
316	107.039	80,286	356	177.91	133.446
317	108.481	81,368	357	180.08	135.075
318	109.939	82,461	358	182.28	136,721
319	111.412	83,566	359	184.50	138,385
320	112.900	84,682	360	186.74	140,067
321	114.403	85,809	361	189.00	141,761
322	115.921	86,948	362	191.28	143,475
323	117.456	88,099	363	193.60	145,209
324	119.006	89,262	364	195.93	146,963
325	120.57	90,437	365	198.30	148,736
326	122.15	91,624	366	200.69	150,530
327	123.75	92,823	367	203.11	152,344
328	125.37	94,035	368	205.55	154,179
329	127.00	95.259	369	208.03	156,034
330	128.65	96,495	370	210.53	157,911
331	130.31	97,743	371	213.06	159,808
332	131.99	99,003	372	215.62	161,728
333	133.69	100,277	373	218.21	163,671
334	135.41	101,564	374	220.84	165,644
335	137.14	102,864	374.15	221.23	165,936
336	138.89	104,178			
337	140.66	105,505			
338	142.45	106,846			
339	144.26	108,201			

TABLE 4k-19. VAPOR PRESSURE OF MERCURY*

(Vapor pressure of mercury in mm of Hg for temperatures from −38 to 400°C. Note that the values for the first four lines only are to be multiplied by 10^{-6})

Temp., °C	0	2	4	6	8
	10^{-6}	10^{-6}	10^{-6}	10^{-6}	10^{-6}
−30	4.78	3.59	2.66	1.97	1.45
−20	18.1	14.0	10.8	8.28	6.30
−10	60.6	48.1	38.0	29.8	23.2
− 0	185	149	119	95.4	76.2
+ 0	0.000185	0.000228	0.000276	0.000335	0.000406
+10	0.000490	0.000588	0.000706	0.000846	0.001009
20	0.001201	0.001426	0.001691	0.002000	0.002359
30	0.002777	0.003261	0.003823	0.004471	0.005219
40	0.006079	0.007067	0.008200	0.009497	0.01098
50	0.01267	0.01459	0.01677	0.01925	0.02206
60	0.02524	0.02883	0.03287	0.03740	0.04251
70	0.04825	0.05469	0.06189	0.06993	0.07889
80	0.08880	0.1000	0.1124	0.1261	0.1413
90	0.1582	0.1769	0.1976	0.2202	0.2453
100	0.2729	0.3032	0.3366	0.3731	0.4132
110	0.4572	0.5052	0.5576	0.6150	0.6776
120	0.7457	0.8198	0.9004	0.9882	1.084
130	1.186	1.298	1.419	1.551	1.692
140	1.845	2.010	2.188	2.379	2.585
150	2.807	3.046	3.303	3.578	3.873
160	4.189	4.528	4.890	5.277	5.689
170	6.128	6.596	7.095	7.626	8.193
180	8.796	9.436	10.116	10.839	11.607
190	12.423	13.287	14.203	15.173	16.200
200	17.287	18.437	19.652	20.936	22.292
210	23.723	25.233	26.826	28.504	30.271
220	32.133	34.092	36.153	38.318	40.595
230	42.989	45.503	48.141	50.909	53.812
240	56.855	60.044	63.384	66.882	70.543
250	74.375	78.381	82.568	86.944	91.518
260	96.296	101.28	106.48	111.91	117.57
270	123.47	129.62	136.02	142.69	149.64
280	156.87	164.39	172.21	180.34	188.79
290	197.57	206.70	216.17	226.00	236.21
300	246.80	257.78	269.17	280.98	293.21
310	305.89	319.02	332.62	346.70	361.26
320	376.33	391.92	408.04	424.71	441.94
330	459.74	478.13	497.12	516.74	537.00
340	557.90	579.45	601.69	624.64	648.30
350	672.69	697.83	723.73	750.43	777.92
360	806.23	835.38	865.36	896.23	928.02
370	960.66	994.34	1028.9	1064.4	1100.9
380	1138.4	1177.0	1216.6	1257.3	1299.1
390	1341.9	1386.1	1431.3	1477.7	1525.2
400	1574.1				

* From the compilation of J. Johnston, F. Fenwick, and H. G. Leopold. "International Critical Tables," Vol. III, p. 206, McGraw-Hill Book Company, New York, 1928.

TABLE 4k-20. VAPOR PRESSURE OF CARBON DIOXIDE*

SOLID

Pressure, Microns of Mercury

Temp., °C	0	1	2	3	4	5	6	7	8	9
−180	0.013	0.008	0.006	0.004	0.003	0.0017	0.0011	0.0007	0.0005	0.0003
−170	0.37	0.27	0.20	0.14	0.10	0.074	0.052	0.037	0.026	0.018
−160	5.9	4.6	3.6	2.7	2.1	1.58	1.19	0.90	0.67	0.50
−150	60.5	48.8	39.2	31.4	25.1	19.9	15.8	12.4	9.8	7.6
−140	431	359	298	247	204	168	138	113	92	75

Pressure, Mm of Mercury

−130	2.31	1.97	1.68	1.43	1.22	1.03	0.87	0.73	0.61	0.51
−120	9.81	8.57	7.46	6.49	5.63	4.88	4.22	3.64	3.13	2.69
−110	34.63	30.76	27.27	24.14	21.34	18.83	16.58	14.58	12.80	11.22
−100	104.81	94.40	84.91	76.27	68.43	61.30	54.84	48.99	43.71	38.94
− 90	279.5	254.7	231.8	210.8	191.4	173.6	157.3	142.4	128.7	116.2
− 80	672.2	618.3	568.2	521.7	478.5	438.6	401.6	367.4	335.7	306.5
− 70	1486.1	1377.3	1275.6	1180.5	1091.7	1008.9	931.7	859.7	792.7	730.3
− 60	3073.1	2865.1	2669.7	2480.3	2314.2	2152.8	2001.5	1859.7	1726.9	1602.5
− 50	.....	.....	.....	.....	.....	.....	.....	3780.9	3530.2	3294.6

LIQUID

Temp., °C	0	1	2	3	4	5	6	7	8	9
−50	5127.8	4922.7	4723.9	4531.1	4344.3	4163.2	3987.9	3818.2†	3653.9†	3495.0†
−40	7545	7271	7005	6746	6494	6250	6012	5781	5557	5339
−30	10718	10363	10017	9679	9350	9029	8716	8412	8115	7826
−20	14781	14331	13891	13461	13040	12630	12229	11838	11455	11082
−10	19872	19312	18764	18228	17703	17189	16686	16194	15712	15241
− 0	26142	25457	24786	24127	23482	22849	22229	21622	21026	20443
0	26142	26840	27552	28277	29017	29771	30539	31323	32121	32931
10	33763	34607	35467	36343	37236	38146	39073	40017	40980	41960
20	42959	43977	45014	46072	47150	48250	49370	50514	51680	52871
30	54086	55327								

* From C. H. Meyers and M. S. Van Dusen. *Natl. Bur. Standards J. Research* **10**, 409 (1933). Mercury column density = 13.5951 g/cm³; g = 980.665 cm/sec².

† Undercooled liquid.

Critical temperature = 31.0°C. Triple point, −56.602 ± 0.005°C; 3885.2 ± 0.4 mm.

TABLE 4k-21. VAPOR PRESSURE OF ETHYL ALCOHOL*

Temp., °C	0	1	2	3	4	5	6	7	8	9
	Vapor pressure, mm Hg at 0°C									
0	12.24	13.18	14.15	15.16	16.21	17.31	18.46	19.68	20.98	22.34
10	23.78	25.31	27.94	28.67	30.50	32.44	34.49	36.67	38.97	41.40
20	44.00	46.66	49.47	52.44	55.56	58.86	62.33	65.97	69.80	73.83
30	78.06	82.50	87.17	92.07	97.21	102.60	108.24	114.15	120.35	126.86
40	133.70	140.75	148.10	155.80	163.80	172.20	181.00	190.10	199.65	209.60
50	220.00	230.80	242.50	253.80	265.90	278.60	291.85	305.65	319.95	334.85
60	350.30	366.40	383.10	400.40	418.35	437.00	456.45	476.45	497.25	518.85
70	541.20	564.35	588.35	613.20	638.95	665.55	693.10	721.55	751.00	781.45

* Ramsay and Young, *Trans. Roy. Soc.* (*London*) **177**, part 1, 123 (1886).

TABLE 4k-22. VAPOR PRESSURE OF METHYL ALCOHOL*

Temp., °C	0	1	2	3	4	5	6	7	8	9
	Vapor pressure, mm Hg at 0°C									
0	29.97	31.6	33.6	35.6	37.8	40.2	42.6	45.2	47.9	50.8
10	53.8	57.0	60.3	63.8	67.5	71.4	75.5	79.8	84.3	89.0
20	94.0	99.2	104.7	110.4	116.5	122.7	129.3	136.2	143.4	151.0
30	158.9	167.1	175.7	184.7	194.1	203.9	214.1	224.7	235.8	247.4
40	259.4	271.9	285.0	298.5	312.6	327.3	342.5	358.3	374.7	391.7
50	409.4	427.7	446.6	466.3	486.6	507.7	529.5	552.0	575.3	599.4
60	624.3	650.0	676.5	703.8	732.0	761.1	791.1	822.0		

* Ramsay and Young, *Trans. Roy. Soc.* (*London*), **178**, 313 (1887); see also Young, *Sci. Proc. Roy. Dublin Soc.*, **12**, 374–443 (1910).

Table 4k-23 concerns the evaporation of metals. The rate of evaporation W of a metal is given by the equation

$$\log W = A - \frac{B}{T} - \frac{1}{2}\log T + c$$

where W is expressed in g/sec cm^2. The values of A, B, and c given in Table 4k-23 are chosen to yield the value of W in these units.

TABLE 4k-23. CONSTANTS IN THE EQUATION FOR THE RATE OF EVAPORATION OF METALS*

Metal	A	$10^{-3} \times B$	$c + 4$	Metal	A	$10^{-3} \times B$	$c + 4$
Li.....	10.50(l)	7.480	0.1867	Si.....	13.20(s)	19.72	0.4900
Na.....	10.71(l)	5.480	0.4468		12.55(l)	18.55	0.4900
K.....	10.36(l)	4.503	0.5621	Ti.....	11.25(s)	18.64	0.6061
Rb.....	10.42(l)	4.132	0.7319		11.98(l)	20.11	
	[10.53(l)	4.291]		Zr.....	12.38(s)	25.87	0.7460
Cs.....	9.86(l)	3.774	0.8278		13.04(l)	27.43	
	[10.02(l)	3.883]		Th.....	12.52(l)	28.44	0.9488
				Ge.....	10.94(l)	15.15	0.6965
Cu.....	12.81(s)	18.06	0.6678				
	11.72(l)	16.58		Sn.....	9.97(l)	13.11	0.8032
Ag.....	12.28(s)	14.85	0.7825	Pb.....	10.69(l)	9.60	0.9242
	11.66(l)	14.09		V.....	13.32	26.62	0.6195
Au.....	11.65(l)	18.52	0.9135	Nb.....	14.37(s)	40.40	0.7500
Be.....	12.99(s)	18.22	0.2436	Ta.....	13.00(s)	40.21	0.8947
	11.95(l)	16.59					
Mg.....	11.82(s)	7.741	0.4590	Sb_2.....	11.42	9.913	0.9592
				Bi.....	11.14(l)	9.824	0.9260
Ca.....	11.30(s)	9.055	0.5675	Cr.....	12.88(s)	17.56	0.6240
Sr.....	11.13(s)	8.324	0.7373	Mo.....	11.80(s)	30.31	0.7570
Ba.....	10.88	8.908	0.8349	W.....	12.24(s)	40.26	0.8983
Zn.....	11.94(s)	6.744	0.6737				
Cd.....	11.78(s)	5.798	0.7914	U.....	12.88(l)	25.80	0.9544
				Mn.....	12.25(s)	14.10	0.6359
B.....	14.13(s)	21.37	0.2831	Fe.....	12.63(s)	20.00	0.6395
Al.....	11.99(l)	15.63	0.4814		13.41(l)	21.40	
Sc.....	11.94	18.57	0.5931	Co.....	12.43	21.90	0.6512
Y.....	12.43	21.97	0.7405	Ni.....	13.28(s)	21.84	0.6503
La.....	11.88(l)	18.00	0.8374		12.55(l)	20.60	
Ce.....	13.74(l)	20.10	0.8392	Ru.....	13.50	33.80	0.7696
Ga.....	10.79(l)	13.36	0.6877	Rh.....	13.55	30.40	0.7722
In.....	10.93(l)	12.15	0.7959	Pd.....	11.46	19.23	0.7801
Tl.....	11.15(l)	8.92	0.9212	Os.....	13.59	37.00	0.9056
C.....	14.06(s)	38.57	0.3056	Ir.....	13.06	34.11	0.9089
				Pt.....	12.633	27.50	0.9112

* From Saul Dushman, "Scientific Foundations of Vacuum Technique," pp. 752–754, John Wiley & Sons, Inc., New York, 1949.