Table B.2: Constants for the Antoine Equation for Vapor Pressures of Pure Species

$$\ln P^{\mathrm{sat}}/\mathrm{kPa} = \mathrm{A} - \frac{B}{t/^{\circ}\mathrm{C} + C}$$

Latent heat of vaporization at the normal boiling point (ΔH_n), and normal boiling point (t_n)

		Parameters for Antoine Eqn.			Temp. Range	ΔH_n	
Name	Formula	A[†]	B	C	°C	kJ/mol	t_n/°C
Acetone	C_3H_6O	14.3145	2756.22	228.060	−26—77	29.10	56.2
Acetic acid	$C_2H_4O_2$	15.0717	3580.80	224.650	24—142	23.70	117.9
Acetonitrile*	C_2H_3N	14.8950	3413.10	250.523	−27—81	30.19	81.6
Benzene	C_6H_6	13.7819	2726.81	217.572	6—104	30.72	80.0
iso-Butane	C_4H_{10}	13.8254	2181.79	248.870	−83—7	21.30	−11.9
n-Butane	C_4H_{10}	13.6608	2154.70	238.789	−73—19	22.44	−0.5
1-Butanol	$C_4H_{10}O$	15.3144	3212.43	182.739	37—138	43.29	117.6
2-Butanol*	$C_4H_{10}O$	15.1989	3026.03	186.500	25—120	40.75	99.5
iso-Butanol	$C_4H_{10}O$	14.6047	2740.95	166.670	30—128	41.82	107.8
tert-Butanol	$C_4H_{10}O$	14.8445	2658.29	177.650	10—101	39.07	82.3
Carbon tetrachloride	CCl_4	14.0572	2914.23	232.148	−14—101	29.82	76.6
Chlorobenzene	C_6H_5Cl	13.8635	3174.78	211.700	29—159	35.19	131.7
1-Chlorobutane	C_4H_9Cl	13.7965	2723.73	218.265	−17—79	30.39	78.5
Chloroform	$CHCl_3$	13.7324	2548.74	218.552	−23—84	29.24	61.1
Cyclohexane	C_6H_{12}	13.6568	2723.44	220.618	9—105	29.97	80.7
Cyclopentane	C_5H_{10}	13.9727	2653.90	234.510	−35—71	27.30	49.2
n-Decane	$C_{10}H_{22}$	13.9748	3442.76	193.858	65—203	38.75	174.1
Dichloromethane	CH_2Cl_2	13.9891	2463.93	223.240	−38—60	28.06	39.7
Diethyl ether	$C_4H_{10}O$	14.0735	2511.29	231.200	−43—55	26.52	34.4
1,4-Dioxane	$C_4H_8O_2$	15.0967	3579.78	240.337	20—105	34.16	101.3
n-Eicosane	$C_{20}H_{42}$	14.4575	4680.46	132.100	208—379	57.49	343.6
Ethanol	C_2H_6O	16.8958	3795.17	230.918	3—96	38.56	78.2
Ethylbenzene	C_8H_{10}	13.9726	3259.93	212.300	33—163	35.57	136.2
Ethylene glycol*	$C_2H_6O_2$	15.7567	4187.46	178.650	100—222	50.73	197.3
n-Heptane	C_7H_{16}	13.8622	2910.26	216.432	4—123	31.77	98.4
n-Hexane	C_6H_{14}	13.8193	2696.04	224.317	−19—92	28.85	68.7
Methanol	CH_4O	16.5785	3638.27	239.500	−11—83	35.21	64.7
Methyl acetate	$C_3H_6O_2$	14.2456	2662.78	219.690	−23—78	30.32	56.9
Methyl ethyl ketone	C_4H_8O	14.1334	2838.24	218.690	−8—103	31.30	79.6
Nitromethane*	CH_3NO_2	14.7513	3331.70	227.600	56—146	33.99	101.2
n-Nonane	C_9H_{20}	13.9854	3311.19	202.694	46—178	36.91	150.8
iso-Octane	C_8H_{18}	13.6703	2896.31	220.767	2—125	30.79	99.2
n-Octane	C_8H_{18}	13.9346	3123.13	209.635	26—152	34.41	125.6
n-Pentane	C_5H_{12}	13.7667	2451.88	232.014	−45—58	25.79	36.0
Phenol	C_6H_6O	14.4387	3507.80	175.400	80—208	46.18	181.8
1-Propanol	C_3H_8O	16.1154	3483.67	205.807	20—116	41.44	97.2
2-Propanol	C_3H_8O	16.6796	3640.20	219.610	8—100	39.85	82.2

Table B.2 (Continued)

Name	Formula	Parameters for Antoine Eqn. A†	B	C	Temp. Range °C	ΔH_n kJ/mol	t_n/°C
Toluene	C_7H_8	13.9320	3056.96	217.625	13—136	33.18	110.6
Water	H_2O	16.3872	3885.70	230.170	0—200	40.66	100.0
o-Xylene	C_8H_{10}	14.0415	3358.79	212.041	40—172	36.24	144.4
m-Xylene	C_8H_{10}	14.1387	3381.81	216.120	35—166	35.66	139.1
p-Xylene	C_8H_{10}	14.0579	3331.45	214.627	35—166	35.67	138.3

Based primarily on data presented by B. E. Poling, J. M. Prausnitz, and J. P. O'Connell, *The Properties of Gases and Liquids*, 5th ed., App. A, McGraw-Hill, New York, 2001.

*Antoine parameters adapted from J. Gmehling, U. Onken, and W. Arlt, *Vapor-Liquid Equilibrium Data Collection*, Chemistry Data Series, vol. I, parts 1–8, DECHEMA, Frankfurt/Main, 1974–1990.

†Antoine parameters A are adjusted to reproduce the listed values of t_n.