

CHAPTER 5

Thermochemical Data

Tables I and II

The format for the presentation of the tables of data for the thermodynamic properties of inorganic compounds (Table I) and for metallic solutions (Table II) has been changed in this edition to facilitate their use. Table I presents all of the data, with some additions, which were displayed in Tables A to C2 in the 5th edition. The data for a given element or compound are now assembled together, and can be applied with simple computer programs to calculate the vapour pressures previously given in Table D and the Gibbs energy change in Table E. These latter tables have therefore been omitted from this edition.

The Table II has not been altered from the 5th edition content for metallic alloys except for the conversion to S.I. units.

We wish to express our gratitude to Dr Rajiv Doshi of the University of Notre Dame who has carried out the programming, conversion and reprinting of data in Table I and II in the form in which they are now presented.

TABLE I

Substance	$S_{298} \pm \delta S$ (J/deg mol)	$-\Delta H_{298} \pm \delta H$ (kJ/mol)	Phase	T K	$C_p = A + BT + C/T^2 + DT^2$				H_f (kJ/mol)
					A	$B \times 10^3$ (J/deg mol)	$C \times 10^{-5}$ (J/deg mol)	$D \times 10^6$	
Ag	42.6	0.0	fcc	298	21.30	8.54	1.51	—	—
			liq	1235	33.47	—	—	—	11.3
Ag(g)	172.9	-284.9	gas	298	20.79	—	—	—	—
AgBr	107.1 ± 0.4	100.7 ± 0.8	cubic	298	33.18	64.43	—	—	—
			liq	700	62.34	—	—	—	13.0
AgBr(g)	257.0	-96.4	gas	298	37.49	—	-0.79	—	—
AgBrO ₃	154.0	26.4	tetrag	298	66.94	125.52	—	—	—
AgCl	96.2	127.0	cubic	298	62.26	4.18	-11.30	—	—
			liq	728	66.94	—	—	—	13.2
AgCl(g)	246.1 ± 0.2	-92.6	gas	298	37.24	—	-1.42	—	—
AgF	83.7 ± 5.0	205.9 ± 3.8	cubic	298	53.05	16.15	-8.79	—	—
AgF(g)	235.8	-7.1	gas	298	35.56	—	-1.42	—	—
AgI	115.5 ± 1.3	61.9 ± 0.4	α	298	35.77	71.13	—	—	—
			β	420	56.48	—	—	—	6.3
			liq	830	58.58	—	—	—	9.4
AgI(g)	264.2	-159.3	gas	298	37.40	—	-0.54	—	—
Ag ₂ O	120.9 ± 0.4	31.1 ± 0.6	cubic	298	59.33	40.79	-4.60	—	—
Ag ₂ CO ₃	167.4 ± 4.2	505.8 ± 2.5	cryst	298	79.37	108.16	—	—	—
Ag ₂ CrO ₄	218.0 ± 1.3	721.3	orth	298	132.21	66.94	-8.91	—	—
AgNO ₃	140.9 ± 0.4	124.5 ± 1.0	orth	298	36.65	189.12	—	—	—
			hex	433	106.69	—	—	—	2.5
			liq	483	128.03	—	—	—	11.7
			monocl	298	64.60	39.96	—	—	—
Ag ₂ S	143.5 ± 1.3	31.8 ± 0.8	cubic	449	81.34	2.93	—	—	3.9
			cubic	859	82.72	—	—	—	0.5
			liq	1103	93.09	—	—	—	7.9
			orth	298	96.65	116.73	—	—	—
Ag ₂ SO ₄	199.8 ± 0.4	717.1 ± 1.3	hex	700	96.65	116.73	—	—	15.7
			liq	933	205.02	—	—	—	18.0
			orth	298	65.14	54.89	—	—	—
Ag ₂ Se	150.7 ± 0.8	43.5 ± 0.8	orth	298	65.14	54.89	—	—	—
			cubic	406	80.50	9.50	—	—	7.1
Ag ₂ Te	153.6 ± 1.7	36.0 ± 0.6	orth	298	49.20	109.62	2.76	—	—
			cubic	421	78.87	3.85	10.42	—	6.6
			cubic	620	84.01	—	—	—	—

Ag ₂ WO ₄	205.0	925.5 ± 22.6	cryst	298	132.47	69.20	—	—	—
Al	28.3	0.0	fcc	298	31.38	-16.40	-3.60	20.75	—
			liq	934	31.76	—	—	—	10.7
Al(g)	164.4	-330.0	gas	298	20.75	—	0.54	—	—
AlAs	60.2 ± 4.2	116.3 ± 6.3	cubic	298	43.93	6.28	—	—	—
AlBr(g)	239.5 ± 0.2	-15.9 ± 14.6	gas	298	37.26	0.59	-1.63	—	—
AlBr ₃	180.2 ± 0.4	511.3	monocl	298	49.96	169.58	—	—	—
			liq	371	124.98	—	—	—	11.3
AlBr ₃ (g)	349.1 ± 2.9	410.9	gas	298	82.55	0.31	-6.44	—	—
Al ₂ Br ₆ (g)	547.3	937.2	gas	298	182.00	0.46	-13.77	—	—
Al ₄ C ₃	88.9 ± 0.8	209.2 ± 6.3	hex	298	154.68	28.74	-41.84	—	—
AlCl(g)	227.9 ± 0.2	51.5 ± 9.2	gas	298	36.59	1.26	-2.06	—	—
			gas	800	37.38	0.46	-3.05	—	—
			gas	298	57.78	0.22	-4.95	—	—
AlCl ₂ (g)	287.9	288.7	monocl	298	64.94	87.86	—	—	—
AlCl ₃	109.3 ± 0.8	705.6 ± 1.7	gas	298	81.96	0.63	-9.92	—	—
AlCl ₃ (g)	314.3 ± 1.3	584.5 ± 2.5	gas	298	180.92	1.05	-20.42	—	—
Al ₂ Cl ₆ (g)	475.5	1295.4 ± 3.3	gas	298	33.56	4.08	-2.53	—	—
AlF(g)	215.1 ± 0.2	265.7 ± 3.3	gas	800	37.28	0.44	-7.66	—	—
			gas	298	51.76	6.13	-6.92	—	—
AlF ₂ (g)	263.2	732.2	gas	800	57.93	0.10	-16.16	—	—
			hex	298	90.96	17.66	-18.79	—	—
AlF ₃	66.5 ± 0.4	1510.4 ± 1.3	hex	500	3.79	126.82	62.68	—	—
			β	728	92.68	9.06	-8.94	—	0.6
AlF ₃ (g)	277.8 ± 1.3	1207.9 ± 3.3	gas	298	79.16	2.26	-15.44	—	—
Al ₂ F ₆ (g)	387.0	2633.6	gas	298	162.90	22.09	-31.67	-6.49	—
AlH ₃	30.0 ± 0.4	11.4 ± 0.8	hex	298	45.19	—	—	—	—
AlI ₃	189.5 ± 8.4	309.2 ± 5.9	hex	298	70.63	94.81	—	—	—
			liq	462	121.34	—	—	—	15.9
Al ₂ I ₆ (g)	582.8	514.2	gas	298	182.42	0.26	-10.21	—	—
AlN	20.2 ± 0.2	318.4 ± 2.1	hex	298	32.26	22.68	-7.91	—	—
			hex	600	50.21	1.17	-26.07	—	—
			hex	1000	50.12	0.39	-17.41	—	—
Al ₂ O ₃	50.9 ± 0.2	1675.7 ± 1.3	hex	298	117.49	10.38	-37.11	—	—
			liq	2325	184.10	—	—	—	107.0
Al ₂ O(g)	256.9 ± 6.7	130.5 ± 16.7	gas	298	50.84	3.97	-8.70	-2.38	—
Al ₄ B ₂ O ₉	155.6 ± 5.0	4690.7 ± 6.7	orth	298	270.29	108.57	-71.13	—	—
9Al ₂ O ₃ ·2B ₂ O ₃	654.0	17727.6 ± 30.1	orth	298	980.31	613.37	-288.28	-176.56	—
AlOCl	54.4 ± 4.2	793.3 ± 1.3	orth	298	55.35	34.35	-7.78	—	—
AlOCl(g)	248.8 ± 2.9	353.1 ± 10.5	gas	298	58.74	3.47	-8.70	-0.84	—
AlOOH	35.2 ± 0.4	1002.1 ± 4.2	diasp	298	52.76	—	—	—	—

TABLE I—continued

Substance	$S_{298} \pm \delta S$ (J/deg mol)	$-\Delta H_{298} \pm \delta H$ (kJ/mol)	Phase	T K	$C_p = A + BT + C/T^2 + DT^2$				H_f (kJ/mol)	
					A	$B \times 10^3$ (J/deg mol)	$C \times 10^{-5}$	$D \times 10^6$		
AlOOH(b)	48.4	985.3	boch	298	60.42	17.57	—	—	—	
Al ₂ O ₃ ·3H ₂ O	140.2 ± 1.3	2586.5 ± 4.6	monocl	298	72.38	381.58	—	—	—	
AlCl ₃ ·6H ₂ O	318.0 ± 2.5	2691.6 ± 1.7	hex	298	297.06	—	—	—	—	
AlOF(g)	237.2 ± 16.7	581.6 ± 29.3	gas	298	58.66	2.05	-11.13	—	—	
AlP	47.3 ± 1.3	164.4 ± 2.5	cubic	298	40.17	6.28	—	—	—	
AlPO ₄	90.8 ± 0.4	1733.0 ± 2.1	hex	298	51.46	139.33	—	—	—	
				853	167.36	—	—	—	1.3	
				978	163.18	—	—	—	1.1	
AlS(g)	230.5 ± 0.4	-238.9	gas	298	36.84	0.69	-3.26	—	—	
Al ₂ S ₃	123.4	723.4	hex	298	102.17	36.07	—	—	—	
				liq	1370	156.90	—	—	—	56.5
				hex	298	366.31	62.59	-111.63	—	—
Al ₂ (SO ₄) ₃	239.2 ± 1.3	3441.3 ± 2.1	hex	298	43.51	9.62	—	—	—	
AlSb	64.9 ± 0.8	50.2 ± 1.0	cubic	298	58.99	—	—	—	—	
AlSe(g)	243.1	-221.3 ± 12.6	gas	1333	58.99	—	—	—	82.0	
				298	107.74	34.31	—	—	—	
				298	107.74	34.31	—	—	—	
Al ₂ Se ₃	154.8 ± 25.1	566.9 ± 25.1	hex	298	107.74	34.31	—	—	—	
Al ₆ Si ₂ O ₁₃	274.9 ± 0.4	6820.8 ± 8.4	mullit	298	233.59	633.88	-55.86	-385.77	—	
				600	503.46	35.10	-230.12	-2.51	—	
Al ₂ SiO ₅	83.8 ± 0.4	2589.5 ± 2.1	kyanit	298	177.99	23.89	-57.95	—	—	
Al ₂ SiO ₅ (a)	93.2 ± 0.2	2587.0 ± 2.1	andal	298	173.64	26.11	-52.63	-0.63	—	
Al ₂ SiO ₅ (s)	96.1 ± 0.4	2584.0 ± 2.1	sillim	298	169.74	28.74	-50.84	—	—	
Al ₂ Te ₃	188.3 ± 18.8	318.8 ± 9.2	hex	298	110.88	34.73	—	—	—	
				liq	1163	176.56	—	—	—	50.0
Al ₂ TiO ₅	109.6 ± 2.1	2607.1 ± 16.7	rhomb	298	182.55	22.18	-46.90	—	—	
As	35.7 ± 0.4	0.0	rhomb	298	23.03	5.74	—	—	—	
As ₂ (g)	239.3 ± 1.3	-190.8 ± 6.3	gas	298	37.20	0.15	-2.02	—	—	
As ₄ (g)	328.4 ± 5.0	-156.1 ± 2.5	gas	298	82.94	0.13	-5.13	—	—	
AsBr ₃ (g)	363.8 ± 0.4	132.1 ± 4.2	gas	298	83.26	—	-4.23	—	—	
AsCl ₃	212.5	315.5	liq	298	133.89	—	—	—	—	
AsCl ₃ (g)	326.2 ± 0.8	271.1	gas	298	82.09	1.00	-5.94	—	—	
AsF ₃	181.2 ± 0.4	956.9 ± 3.3	liq	298	126.78	—	—	—	—	
AsF ₃ (g)	288.9 ± 0.4	921.3 ± 3.3	gas	298	75.98	6.90	-11.21	—	—	
AsH ₃ (g)	223.0 ± 0.6	-66.4 ± 1.3	gas	298	42.01	22.80	-9.08	—	—	
AsI ₃	213.0	64.9	hex	298	71.21	116.32	—	—	—	
				liq	414	133.89	—	—	—	21.8

As ₂ O ₃	122.6	665.8 ± 2.1	monocl	298	59.83	171.96	—	—	—
			liq	587	152.72	—	—	—	22.6
As ₂ O ₅	105.4 ± 2.5	920.1 ± 5.0	cryst	298	42.47	246.86	—	—	—
As ₂ S ₃	163.6 ± 5.0	167.4 ± 16.7	monocl	298	105.65	36.44	—	—	—
			liq	585	177.86	16.86	—	—	28.7
AsS	63.4 ± 1.7	71.1 ± 10.5	monocl	298	41.46	18.66	—	—	—
			liq	580	73.22	—	—	—	6.1
AsS(g)	232.2 ± 4.2	-202.9	gas	298	34.94	1.63	—	—	—
As ₂ Se ₃	194.6 ± 5.0	102.5 ± 16.7	rhomb	298	95.81	85.77	—	—	—
			liq	650	195.39	—	—	—	40.8
As ₂ Te ₃	226.4 ± 4.2	37.7 ± 8.4	monocl	298	135.19	44.35	-18.58	—	—
			liq	648	167.36	—	—	—	46.9
Au	47.5	0.0	fcc	298	31.46	-13.47	-2.89	10.96	—
			liq	1338	50.33	-12.69	—	—	12.6
			liq	1500	30.96	—	—	—	—
Au(g)	180.4	-368.2	gas	298	20.79	—	—	—	—
			gas	1000	22.26	-3.01	—	1.51	—
AuBr	98.3	14.2 ± 2.9	cryst	298	49.37	5.44	-0.84	—	—
AuCl	85.8 ± 4.2	36.4 ± 2.1	rhomb	298	48.53	5.44	-1.26	—	—
AuCl ₃	164.4 ± 6.3	118.4 ± 4.2	monocl	298	97.91	5.44	-4.18	—	—
AuH(g)	211.1 ± 0.2	-273.4	gas	298	29.29	—	—	—	—
AuI	111.1	-1.3 ± 2.1	cryst	298	50.21	5.44	—	—	—
Au ₂ O ₃	130.3	3.4	cubic	298	107.53	21.76	—	—	—
Au ₂ P ₃	150.6 ± 12.6	97.5 ± 12.6	monocl	298	108.37	37.66	—	—	—
AuPb ₂	175.3	6.3 ± 1.7	tetrag	298	61.92	74.48	—	—	—
			liq	527	96.65	—	—	—	24.0
AuS(g)	267.6 ± 4.2	-230.5 ± 25.1	gas	298	37.32	0.05	-1.62	—	—
AuSb ₂	119.2 ± 1.3	19.5 ± 1.3	tetrag	298	71.63	19.41	—	—	—
AuSe	80.8 ± 6.3	7.9 ± 6.3	monocl	298	41.84	27.91	—	—	—
AuSn	98.1 ± 2.9	30.5 ± 1.7	hex	298	46.57	15.90	—	—	—
			liq	692	60.67	—	—	—	24.7
AuTe ₂	141.7 ± 0.4	18.6 ± 4.6	monocl	298	63.60	37.40	1.72	—	—
B	5.9	0.0	hex	298	17.91	9.64	-8.58	-1.80	—
			liq	2350	30.54	—	—	—	50.2
B(a)	6.5	-4.2 ± 1.3	amorph	298	16.05	10.00	-6.28	—	—
B(g)	153.3 ± 0.2	-560.7 ± 12.6	gas	298	20.79	—	—	—	—
BBr ₃	228.7	238.9 ± 1.3	liq	298	128.03	—	—	—	—
BBr ₃ (g)	324.5 ± 1.7	204.4 ± 1.3	gas	298	80.37	1.44	-11.92	—	—
B ₄ C	27.1 ± 0.3	71.5 ± 11.7	hex	298	96.52	21.92	-44.98	—	—
			liq	2734	135.98	—	—	—	104.6
BCl ₃ (g)	290.1 ± 0.8	403.3 ± 0.8	gas	298	78.41	2.41	-15.48	—	—

TABLE I—continued

Substance	$S_{298} \pm \delta S$ (J/deg mol)	$-\Delta H_{298} \pm \delta H$ (kJ/mol)	Phase	T K	$C_p = A + BT + C/T^2 + DT^2$				H_f (kJ/mol)
					A	$B \times 10^3$ (J/deg mol)	$C \times 10^{-5}$ (J/deg mol)	$D \times 10^6$	
BF ₃ (g)	254.3 ± 0.4	1136.0 ± 1.0	gas	298	56.82	27.49	-12.76	-7.74	—
BH(g)	171.8	-442.7	gas	298	30.46	2.97	-2.47	—	—
B ₂ H ₆ (g)	231.8 ± 0.8	-38.5 ± 3.8	gas	298	11.30	180.08	-3.46	-55.31	—
BI ₃ (g)	348.6	-71.1	gas	298	82.01	-0.42	-10.46	—	—
BN	14.8 ± 0.2	252.3 ± 1.3	hex	298	41.21	9.41	-21.76	—	—
B ₂ O ₃	54.0 ± 0.4	1273.5 ± 1.7	hex	298	57.03	73.01	-14.06	—	—
			liq	723	129.70	—	—	—	24.1
B ₂ O ₃ (a)	78.4 ± 0.8	1253.5 ± 2.5	amorph	298	23.72	131.29	—	—	—
			amorph	500	845.59	-741.82	-963.99	—	—
B ₂ O ₃ (g)	283.7 ± 4.2	836.4 ± 4.2	gas	298	78.78	22.18	-16.78	-4.44	—
BOCl(g)	237.2 ± 1.7	315.9 ± 8.4	gas	298	47.66	14.23	-5.90	-3.82	—
B(OH) ₂ (g)	243.1	477.0	gas	298	64.18	31.51	-19.58	-6.07	—
B(OH) ₃	88.7 ± 0.6	1094.1 ± 1.3	tricl	298	81.34	—	—	—	—
BP	26.8 ± 0.4	115.5 ± 5.9	cubic	298	21.97	28.03	—	—	—
B ₂ S ₃	92.0 ± 20.9	252.3 ± 8.4	monocl	298	98.03	64.02	—	—	—
			liq	836	151.67	—	—	—	48.1
Ba	62.4	0.0	bcc	298	-473.21	1586.99	128.16	—	-1306.04
			bcc	648	0.67	-975.71	-710.02	-428.44	—
			liq	1003	22.84	7.82	126.78	—	7.7
			liq	1300	40.58	—	—	—	—
Ba(g)	170.1	-179.1	gas	298	20.79	—	—	—	—
			gas	900	48.66	-36.32	-49.04	13.43	—
BaBr ₂	148.5 ± 4.2	757.7 ± 1.7	orth	298	70.54	21.67	—	—	—
			liq	1130	104.85	—	—	—	32.0
BaBr ₂ (g)	341.8 ± 8.4	424.7 ± 12.6	gas	298	58.45	0.65	—	—	—
BaC ₂	88.7 ± 8.4	74.1 ± 12.6	tetrag	298	73.64	3.77	-9.67	—	—
BaCl ₂	123.7 ± 0.2	858.6 ± 12.6	cubic	298	69.45	19.16	—	—	—
			β	1198	123.85	—	—	—	16.9
			liq	1245	108.78	—	—	—	16.0
BaCl ₂ (g)	325.6 ± 5.0	498.7 ± 16.7	gas	298	58.20	—	-1.80	—	—
BaF ₂	96.4 ± 0.4	1208.8 ± 4.2	cryst	298	70.21	18.37	-2.83	—	—
			1250	70.21	18.37	18.37	-2.83	—	17.1
			liq	1641	99.83	—	—	—	23.3
BaF ₂ (g)	301.2 ± 2.1	803.7 ± 6.3	gas	298	57.99	0.15	-3.77	—	—

BaH ₂	64.4 ± 6.3	178.7 ± 4.2	cryst	298	37.24	17.15	—	—	—
BaI ₂	165.1 ± 0.4	605.4 ± 3.3	cubic	298	71.55	20.00	—	—	—
			liq	984	112.97	—	—	—	26.5
BaI ₂ (g)	348.1 ± 8.4	302.9 ± 16.7	gas	298	57.82	—	—	—	—
Ba ₃ N ₂	152.3 ± 8.4	341.0 ± 31.4	ps.hex	298	87.86	98.32	—	—	—
BaO	72.1 ± 0.4	548.1 ± 2.1	cubic	298	50.29	7.20	-4.60	—	—
			liq	2286	66.94	—	—	—	58.6
BaO(g)	235.4 ± 0.8	123.4 ± 8.4	gas	298	39.54	-3.85	-5.27	1.61	—
BaO ₂	93.1 ± 9.6	634.3 ± 11.7	cubic	298	62.34	28.03	—	—	—
Ba ₃ Al ₂ O ₆	301.2	3508.3 ± 12.6	cryst	298	266.52	30.84	-53.43	—	—
BaAl ₂ O ₄	148.5 ± 9.2	2324.2 ± 7.9	hex	298	143.30	73.89	-45.90	—	—
			β	600	138.20	31.63	—	—	—
BaCO ₃	107.5 ± 1.3	1217.5 ± 12.6	orth	298	86.90	48.95	-11.97	—	—
			tetrag	1079	154.81	—	—	—	18.8
			cubic	1241	163.18	—	—	—	2.9
BaHfO ₃	121.3 ± 12.6	1789.9 ± 12.6	monocl	298	123.85	13.39	-17.36	—	—
BaMoO ₄	146.9 ± 4.6	1516.3 ± 6.7	tetrag	298	135.27	28.45	-25.10	—	—
Ba(NO ₃) ₂	213.8 ± 1.0	992.4 ± 2.1	nit.ba	298	125.73	149.37	-16.74	—	—
BaS	78.2 ± 1.3	463.6 ± 3.3	cubic	298	51.17	7.87	-3.68	—	—
BaSO ₄	132.2 ± 1.3	1481.1 ± 12.6	baryte	298	141.42	—	-35.27	—	—
BaSiO ₃	104.6 ± 8.4	1618.0 ± 7.1	cryst	298	122.01	7.11	-31.21	—	—
			1300	62.76	51.04	—	—	—	—
Ba ₂ SiO ₄	177.8 ± 8.4	2272.3 ± 3.8	orth	298	175.35	11.46	-39.71	—	—
Ba ₂ Sn	126.8 ± 10.5	376.6 ± 33.5	cryst	298	60.67	41.84	—	—	—
Ba ₂ TiO ₄	196.6	2233.4 ± 12.6	monocl	298	179.91	6.69	-29.12	—	—
BaTiO ₃	107.9	1647.7 ± 11.7	cubic	298	121.46	8.54	-19.16	—	—
BaUO ₄	178.1 ± 0.4	1988.2 ± 2.1		298	140.58	20.92	—	—	—
BaV ₂ O ₆	193.7 ± 10.0	2282.0 ± 6.7	cryst	298	181.59	81.17	-29.29	—	—
BaZrO ₃	124.7	1769.0 ± 5.9	cubic	298	127.90	5.94	-21.21	—	—
Be	9.5	0.0	hcp	298	21.21	5.69	-5.86	0.96	—
			bcc	1543	32.22	—	—	—	2.5
			liq	1562	29.46	—	—	—	12.6
Be(g)	136.1	-324.0	gas	298	20.92	—	—	—	—
			gas	1900	18.95	0.59	27.24	—	—
BeBr ₂	100.4 ± 4.6	355.6 ± 12.6	ortho	298	60.21	29.50	—	—	—
			liq	781	112.97	—	—	—	10.0
Be ₂ C	16.3 ± 3.8	117.0 ± 1.0		298	38.37	45.02	-8.41	-9.58	—
BeCl ₂	82.7 ± 0.4	490.8 ± 3.3	orth	298	76.61	12.34	-13.77	—	—
			liq	688	121.42	—	—	—	8.7
BeCl ₂ (b)	75.8 ± 0.2	496.2 ± 3.3	orth.β	298	65.65	20.88	-8.41	—	—
BeCl ₂ (g)	251.0 ± 4.2	360.2 ± 10.5	gas	298	58.12	3.47	-0.75	-6.99	—

TABLE I—continued

Substance	$S_{298} \pm \delta S$ (J/deg mol)	$-\Delta H_{298} \pm \delta H$ (kJ/mol)	Phase	T K	$C_p = A + BT + C/T^2 + DT^2$				H_f (kJ/mol)
					A	$B \times 10^3$	$C \times 10^{-5}$	$D \times 10^6$	
Be ₂ Cl ₄ (g)	387.0 ± 8.4	821.3	gas	298	131.38	0.63	-14.98	—	—
BeF(g)	205.6	174.9 ± 10.5	gas	298	30.04	7.91	-2.18	-2.13	—
BeF ₂	53.3 ± 0.4	1026.8 ± 4.2	β-qtz	298	20.63	104.60	-0.03	—	—
			hex	500	47.36	33.47	—	—	0.2
			liq	1447	52.55	32.89	—	—	4.8
BeF ₂ (g)	227.4	796.0	gas	298	51.17	8.45	-6.65	—	—
			gas	1000	61.84	0.17	-32.76	—	—
BeH ₂	17.6 ± 4.2	19.0 ± 2.1	cryst	298	20.50	29.29	—	—	—
BeH ₂ (g)	173.2	-125.5	gas	298	31.38	23.43	-8.16	-4.77	—
BeI ₂	120.5 ± 4.2	188.7 ± 20.9	tetrag	298	79.50	13.93	—	—	—
			liq	753	112.97	—	—	—	20.9
Be ₃ N ₂	34.3 ± 0.2	589.5 ± 2.5	cubic	298	53.93	103.55	-17.66	—	—
			hex	430	114.52	15.06	-59.54	—	17.8
			liq	2470	158.99	—	—	—	129.3
BeO	13.8 ± 0.4	609.4 ± 3.3	hex	298	41.59	10.21	-17.24	-1.34	—
			cubic	2370	46.86	4.60	—	—	6.7
			liq	2780	64.85	—	—	—	84.9
BeAl ₂ O ₄	66.3 ± 0.4	2301.2 ± 5.9	orth	298	368.78	66.44	-101.67	-1.97	—
BeAl ₆ O ₁₀	175.6 ± 0.4	5624.1 ± 10.0	cryst	298	389.32	47.07	-123.22	—	—
Be ₃ B ₂ O ₆	92.5 ± 12.6	3133.8 ± 4.2	cryst	298	142.26	211.12	-54.81	-66.02	—
Be(OH) ₂	50.2 ± 5.0	905.8 ± 2.1	β	298	19.54	153.76	—	—	—
BeS	33.5 ± 6.3	233.5 ± 4.2	cubic	298	41.71	8.12	-9.62	—	—
BeSO ₄	78.0 ± 0.8	1200.8 ± 3.3	tetrag	298	112.80	-9.25	-27.70	76.02	—
			β	863	162.05	—	—	—	1.1
			gamma	908	290.03	-52.55	-717.56	8.49	19.5
BeSO ₄ ·2H ₂ O	163.2	1820.9		298	71.55	269.87	—	—	—
Be ₂ SiO ₄	64.4 ± 0.4	2146.0 ± 8.4	trigon	298	124.06	78.53	-45.35	-33.47	—
BeWO ₄	88.4	1513.4	cryst	298	112.38	42.89	-25.10	—	—
Bi	56.7	0.0	rhomb	298	11.84	30.46	4.10	—	—
			liq	545	19.04	10.38	20.75	-3.97	11.3
			liq	1200	27.20	—	—	—	—
Bi(g)	186.9	-209.6	gas	298	20.92	—	—	—	—
Bi ₂ (g)	273.2	-220.1	gas	298	37.24	—	—	—	—
BiBr ₃	181.6 ± 6.3	276.1 ± 8.4	cryst	298	97.49	25.10	—	—	—
			liq	492	157.74	—	—	—	21.8

BiCl(g)	255.0 ± 0.4	-25.1 ± 8.4	gas	298	37.32	0.84	-1.17	—	—
BiCl ₃	171.5 ± 8.4	378.7 ± 5.0	cubic	298	68.83	133.89	—	—	—
			liq	507	127.61	—	—	—	23.6
BiF(g)	244.0 ± 0.4	29.3 ± 20.9	gas	298	37.03	0.84	-2.55	—	—
BiF ₃	122.6 ± 5.9	910.4 ± 14.6	cubic	298	104.56	99.75	—	180.50	—
			liq	922	184.60	—	—	—	21.6
BiH(g)	214.7 ± 0.2	-179.9 ± 29.3	gas	298	37.78	—	-9.37	—	—
BiI ₃	224.7 ± 6.3	150.6 ± 6.3	hex	298	39.96	110.04	2.97	—	—
			liq	681	157.74	—	—	—	39.1
Bi ₂ O ₃	151.5 ± 2.9	570.7 ± 3.3	monocl	298	103.51	33.47	—	—	—
			cubic	978	146.44	—	—	—	56.9
			liq	1097	152.72	—	—	—	59.8
BiOCl	102.5 ± 12.6	371.1 ± 4.2	tetrag	298	57.32	43.10	—	—	—
Bi ₂ S ₃	200.4 ± 6.3	201.7	orth	298	114.47	27.70	—	—	—
			liq	1036	188.28	—	—	—	79.5
Bi ₂ (SO ₄) ₃	312.5 ± 18.8	2543.9 ± 25.1	cryst	298	228.45	169.03	—	—	—
Bi ₂ Se ₃	239.7 ± 8.4	140.2 ± 3.3	rhomb	298	118.53	19.25	—	—	—
			liq	995	188.28	—	—	—	86.6
Bi ₂ Te ₃	261.1 ± 8.4	78.7 ± 2.1	hex	298	107.99	55.23	—	—	—
			liq	850	167.36	—	—	—	119.7
Br ₂	152.2	0.0	liq	298	75.73	—	—	—	—
Br ₂ (g)	245.3	-30.9	gas	298	37.36	0.46	-1.30	—	—
Br(g)	174.9	-111.9	gas	298	19.87	1.49	0.42	—	—
C	5.7	0.0	graph	298	0.11	38.94	-1.48	-17.38	—
				1100	24.43	0.44	-31.63	—	—
C(d)	2.4 ± 0.1	-1.5 ± 0.1	diam	298	9.12	13.22	-6.19	—	—
C(g)	158.0	-716.7	gas	298	20.77	0.05	—	—	—
			gas	2000	19.49	0.72	—	—	—
C ₂ (g)	199.3 ± 0.1	-832.6 ± 5.9	gas	298	30.69	4.75	10.18	-0.43	—
C ₃ (g)	237.2	-820.1 ± 12.6	gas	298	31.84	14.98	1.21	-2.62	—
CBr ₄ (g)	358.0 ± 0.8	-50.2	gas	298	105.90	1.14	-13.68	—	—
CCl ₄	214.4 ± 1.3	135.4 ± 2.1	liq	298	133.89	—	—	—	—
CCl ₄ (g)	309.8 ± 0.4	102.9 ± 2.1	gas	298	104.18	2.01	-19.82	—	—
CF ₂ (g)	240.7 ± 1.3	171.5 ± 18.8	gas	298	43.01	16.32	-7.87	-4.69	—
CF ₃ (g)	260.9 ± 3.8	484.1 ± 13.8	gas	298	58.16	26.32	-13.31	-7.45	—
CF ₄ (g)	261.3 ± 0.4	933.2 ± 10.5	gas	298	85.75	18.37	-27.51	-3.87	—
C ₂ F ₆ (g)	332.0 ± 1.7	1325.5 ± 25.1	gas	298	136.23	46.82	-38.66	-13.64	—
CF ₂ Cl ₂ (g)	300.7	475.3	gas	298	107.65	—	-31.38	—	—
CFCl ₃ (g)	309.8	277.0	gas	298	108.07	—	-26.78	—	—
CH ₂ (g)	181.2 ± 1.7	-397.5 ± 20.9	gas	298	25.26	27.37	-1.44	-6.00	—
CH ₃ (g)	192.9	-133.6	gas	298	22.97	49.16	-0.03	-11.66	—

TABLE I—continued

Substance	$S_{298} \pm \delta S$ (J/deg mol)	$-\Delta H_{298} \pm \delta H$ (kJ/mol)	Phase	T K	$C_p = A + BT + C/T^2 + DT^2$				H_f (kJ/mol)
					A	$B \times 10^3$	$C \times 10^{-5}$	$D \times 10^6$	
					(J/deg mol)				
CH ₄ (g)	186.3 ± 0.2	74.8 ± 0.4	gas	298	12.45	76.69	1.45	-17.99	—
C ₂ H ₂ (g)	200.8 ± 0.2	-226.8 ± 1.3	gas	298	43.63	31.65	-7.51	-6.32	—
C ₂ H ₄ (g)	219.2 ± 0.4	-52.5 ± 0.4	gas	298	32.64	59.83	—	—	—
C ₂ H ₆ (g)	229.5 ± 0.4	84.7 ± 0.8	gas	298	28.19	122.63	-9.12	-27.82	—
CH ₃ Cl(g)	234.3 ± 0.4	83.7 ± 2.1	gas	298	42.51	44.89	-13.74	-8.47	—
CN(g)	202.5 ± 0.4	-435.1	gas	298	27.82	5.69	-0.46	-0.33	—
C ₂ N ₂ (g)	241.5 ± 0.6	-309.1 ± 2.1	gas	298	56.07	27.45	-6.23	-6.86	—
CO(g)	197.5	110.5	gas	298	28.41	4.10	-0.46	—	—
CO ₂ (g)	213.7	393.5	gas	298	44.14	9.04	-8.54	—	—
COCl ₂ (g)	283.7 ± 0.8	220.1 ± 5.0	gas	298	65.02	18.16	-11.13	-4.98	—
COF(g)	248.1 ± 1.7	171.5	gas	298	39.37	18.66	-5.19	-5.19	—
COF ₂ (g)	258.8 ± 0.4	633.9 ± 5.4	gas	298	53.22	30.42	-12.97	-8.37	—
CH ₂ O(g)	218.7 ± 0.2	115.9 ± 0.8	gas	298	21.07	53.87	0.78	-13.4	—
CH ₃ OH	126.6 ± 0.8	239.5 ± 0.4	liq	298	81.59	—	—	—	—
CH ₃ OH(g)	239.7 ± 0.8	202.0 ± 0.4	gas	298	4.31	128.72	4.54	-44.10	—
C ₂ H ₅ OH	161.0 ± 0.4	277.0 ± 0.8	liq	298	112.13	—	—	—	—
C ₂ H ₅ OH(g)	282.4 ± 2.1	234.6 ± 0.8	gas	298	31.38	112.97	—	—	—
CS(g)	210.5 ± 0.2	-280.3 ± 25.1	gas	298	29.37	8.66	-1.86	-2.38	—
CS ₂	151.3 ± 0.8	-89.1 ± 1.0	liq	298	76.99	—	—	—	—
CS ₂ (g)	237.9 ± 0.2	-116.9 ± 1.3	gas	298	49.58	13.68	-6.99	-3.77	—
COS(g)	231.5 ± 0.4	138.5 ± 1.0	gas	298	47.40	9.12	-7.66	—	—
Ca	41.6	0.0	fcc	298	16.02	21.51	2.55	—	—
			bcc	716	-0.45	41.35	—	—	0.9
			liq	1115	33.47	—	—	—	8.5
Ca(g)	154.8	-177.8	gas	298	20.79	—	—	—	—
CaAl ₂	85.4 ± 10.0	216.7 ± 16.7	cubic	298	82.84	7.95	-11.21	—	—
			liq	1353	94.14	—	—	—	63.2
CaBr ₂	129.7 ± 4.2	682.8 ± 4.2	tetrag	298	77.24	9.62	-5.48	—	—
			liq	1015	112.97	—	—	—	29.1
CaBr ₂ (g)	420.9 ± 8.4	384.9 ± 8.4	gas	298	62.34	—	-1.72	—	—
CaC ₂	70.3 ± 1.7	59.4 ± 5.0	tetrag	298	68.62	11.88	-8.66	—	—
				720	64.43	8.37	—	—	5.6
CaCl ₂	108.4	795.0 ± 3.3	tetrag	298	69.83	15.40	-1.59	—	—
			liq	1045	122.26	-14.90	0.71	—	28.2

CaCl ₂ (g)	287.4	481.6	gas	298	62.13	0.14	-2.55	—	—
CaF ₂	68.9 ± 0.4	1229.3	cubic	298	41.05	55.48	8.49	—	—
			cubic	1430	154.10	—	-729.69	—	—
			liq	1691	99.16	—	—	—	31.2
CaF ₂ (g)	273.7	800.0	gas	298	57.24	0.61	-5.44	—	—
CaH(g)	201.7 ± 0.4	-228.9	gas	298	32.13	3.10	-2.93	—	—
CaH ₂	41.8 ± 6.3	181.6 ± 8.4	orth	298	29.92	37.24	—	—	—
			β	1053	69.04	—	—	—	6.7
			liq	1273	75.31	—	—	—	22.0
CaI ₂	145.3 ± 0.4	533.0 ± 2.1	hex	298	71.34	19.75	—	—	—
			liq	1052	103.34	—	—	—	41.8
CaI ₂ (g)	327.4 ± 8.4	258.2 ± 16.7	gas	298	62.38	—	-1.51	—	—
CaMg ₂	102.6 ± 1.0	39.3 ± 1.7	hex	298	66.94	26.07	-0.86	—	—
Ca ₃ N ₂	107.9 ± 11.7	439.3 ± 12.6	cubic	298	138.78	15.48	-26.36	—	—
CaO	38.1 ± 0.3	634.9 ± 0.8	cubic	298	50.42	4.18	-8.49	—	—
			liq	2900	83.68	—	—	—	52.3
Ca ₃ Al ₂ O ₆	205.4 ± 1.3	3589.5 ± 4.6	cubic	298	260.58	19.16	-50.25	—	—
CaAl ₂ O ₄	114.0 ± 0.8	2325.9 ± 2.1		298	150.62	24.94	-33.30	—	—
CaAl ₄ O ₇	177.8 ± 1.3	3999.1 ± 3.3		298	276.52	22.93	-74.48	—	—
Ca ₃ B ₂ O ₆	183.7 ± 1.3	3424.6 ± 3.8	cryst	298	236.14	43.60	-54.48	—	—
			liq	1763	393.30	—	—	—	148.5
Ca ₂ B ₂ O ₅	145.2 ± 0.8	2722.9 ± 5.0	α	298	183.05	48.12	-44.73	—	—
			β	804	218.78	10.04	—	—	4.6
			liq	1583	285.35	—	—	—	100.8
CaB ₂ O ₄	105.9 ± 0.8	2027.1 ± 3.8	cryst	298	129.79	40.84	-33.76	—	—
			liq	1433	258.15	—	—	—	74.1
CaB ₄ O ₇	134.7 ± 1.3	3340.9 ± 6.3	cryst	298	214.81	80.17	-71.80	—	—
			liq	1263	444.76	—	—	—	113.4
CaCO ₃	92.7 ± 0.8	1206.9 ± 2.9	calcit	298	104.52	21.92	-25.94	—	—
CaOCl ₂	113.0 ± 9.2	746.4		298	83.68	55.65	—	—	—
CaCr ₂ O ₄	125.2	1829.7	cryst	298	169.66	13.26	-23.97	—	—
Ca ₂ Fe ₂ O ₅	188.7 ± 1.3	2133.8 ± 5.4	cryst	298	248.61	—	-48.87	—	—
			liq	1750	310.45	—	—	—	151.0
CaFe ₂ O ₄	145.2 ± 0.8	1479.5	cryst	298	164.93	19.92	-15.31	—	—
			liq	1489	229.70	—	—	—	108.4
CaGeO ₃	87.4	1285.3 ± 5.4	tricl	298	120.50	16.11	-24.69	—	—
CaOH(g)	239.8	179.9	gas	298	211.71	17.57	-19.04	—	—
Ca(OH) ₂	83.4 ± 0.4	-19.04 ± 1.3	hex	298	104.01	15.19	-18.74	—	—
CaHfO ₃	99.2 ± 8.4	1779.9 ± 10.0	monocl	298	121.71	13.56	-17.78	—	—
CaO.MgO	66.3 ± 1.7	1243.1 ± 1.7		298	97.82	7.66	-18.24	—	—
CaMg(CO ₃) ₂	155.2 ± 0.4	2315.0 ± 5.0	dolom	298	156.98	80.33	-21.34	—	—

TABLE I—continued

Substance	$S_{298} \pm \delta S$ (J/deg mol)	$-\Delta H_{298} \pm \delta H$ (kJ/mol)	Phase	T K	$C_p = A + BT + C/T^2 + DT^2$				H_f (kJ/mol)
					A	$B \times 10^3$ (J/deg mol)	$C \times 10^{-5}$	$D \times 10^6$	
CaMoO ₄	122.6 ± 1.0	1546.0 ± 3.3	tetrag	298	133.47	29.20	-22.34	—	—
Ca(NO ₃) ₂	193.2	936.8	cryst	298	122.88	154.01	-17.28	—	—
CaNb ₂ O ₆	178.4 ± 13.0	2675.2 ± 17.2		298	214.64	20.92	-38.70	—	—
Ca ₃ P ₂	123.8 ± 18.8	506.3 ± 25.1	cryst	298	107.95	28.03	—	—	—
Ca ₃ (PO ₄) ₂	236.0 ± 1.3	4117.1 ± 25.1	rhomb	298	201.84	163.51	-20.92	—	—
			monocl	1373	330.54	—	—	—	15.5
Ca ₂ P ₂ O ₇	189.2 ± 0.4	3336.7 ± 20.9	α	298	221.88	61.76	-46.69	—	—
			β	1413	318.61	—	—	—	6.7
			liq	1626	405.01	—	—	—	100.8
CaHPO ₄	111.4 ± 0.8	1814.2 ± 20.9		298	138.41	55.10	-40.38	—	—
Ca ₂ Pb	126.4 ± 7.1	209.2 ± 12.6	orth	298	62.43	22.01	—	—	—
CaS	56.5 ± 1.3	473.2 ± 3.8	cubic	298	50.63	3.70	-3.89	—	—
CaS(g)	232.4	-116.7 ± 20.9	gas	298	37.20	0.11	-2.28	—	—
CaSO ₄	106.7 ± 1.7	1434.1 ± 4.2	orth	298	70.21	98.74	—	—	—
CaSO ₄ ·1/2H ₂ O	130.5 ± 2.5	1575.5 ± 14.6		298	69.33	163.18	—	—	—
CaSO ₄ ·2H ₂ O	194.1 ± 1.3	2021.4 ± 14.6	gypsum	298	91.38	317.98	—	—	—
Ca ₃ Sb ₂	157.3 ± 18.8	728.0 ± 37.7	hex	298	105.02	29.50	—	—	—
CaSe	69.0 ± 6.3	368.2 ± 33.5	cubic	298	45.61	8.37	—	—	—
CaSi	45.2	150.6 ± 9.2	orth	298	42.68	15.06	—	—	—
Ca ₃ SiO ₅	168.6 ± 1.3	2928.8 ± 7.9		298	208.57	36.07	-42.47	—	—
Ca ₂ SiO ₄	120.5 ± 0.8	2328.4 ± 5.4	olivin	298	133.30	51.80	-19.41	—	—
			larnit	970	134.56	46.11	—	—	10.9
				1710	205.02	—	—	—	14.2
Ca ₂ SiO ₄ (b)	127.6 ± 0.8	2319.6 ± 5.4	larnit	298	145.90	40.75	-26.19	—	—
Ca ₃ Si ₂ O ₇	210.9 ± 1.3	3942.6 ± 12.6	rankin	298	257.36	55.81	-53.64	—	—
CaSiO ₃	83.1 ± 0.8	1635.1 ± 2.1	wollas	298	111.46	15.06	-27.28	—	—
			ps.wol	1463	108.16	16.48	-23.64	—	5.7
			liq	1817	146.44	—	—	—	82.8
CaSiO ₃ (p)	87.4 ± 0.8	1628.0 ± 2.5	ps.wol	298	108.16	16.48	-23.64	—	—
CaO·Al ₂ O ₃ ·2SiO ₂	202.5	4223.7 ± 5.9	anorth	298	297.06	43.39	-135.35	—	—
CaO·Al ₂ O ₃ ·SiO ₂	144.8	3293.2 ± 7.5	pyrox	298	233.22	21.13	-73.72	—	—
2CaO·Al ₂ O ₃ ·SiO ₂	198.3	3989.4 ± 5.9	gehlen	298	275.47	27.91	-78.20	—	—
3CaO·Al ₂ O ₃ ·3SiO ₂	241.4	6646.3 ± 17.6	gross	298	456.31	49.20	-131.42	—	—
CaO·MgO·SiO ₂	110.5 ± 4.2	2263.1 ± 8.8	monti	298	150.62	32.01	-32.84	—	—

CaO.MgO.2SiO ₂	143.1 ± 0.8	3203.3 ± 8.4	diops	298	186.02	123.76	-55.90	-43.93	—
			liq	1665	355.64	—	—	—	128.4
2CaO.MgO.2SiO ₂	209.2	3876.9	akerm	298	251.88	47.24	-48.03	—	—
2CaO.5MgO.8SiO ₂ .H ₂ O	548.9	12358.7 ± 24.3	tremol	298	764.00	271.12	-168.20	—	—
3CaO.MgO.2SiO ₂	253.1	4566.8 ± 15.9	merwin	298	305.01	50.38	-60.25	—	—
Ca ₄ Ti ₃ O ₁₀	328.4 ± 10.5	5671.8 ± 18.8	orth	298	424.05	21.59	-82.42	—	—
CaTiO ₃	93.7 ± 0.8	1660.6 ± 5.0	cubic	298	127.49	5.69	-27.99	—	—
			orth	1530	134.01	—	—	—	2.3
CaO.TiO ₂ .SiO ₂	129.3	2598.7 ± 6.3	sphene	298	177.36	23.18	-40.29	—	—
			liq	1673	279.49	—	—	—	123.8
CaUO ₄	121.1 ± 0.4	1998.3 ± 3.8		298	120.42	45.52	-9.46	—	—
Ca ₃ V ₂ O ₈	274.9 ± 2.1	3777.7 ± 8.4		298	226.81	101.34	—	—	—
Ca ₂ V ₂ O ₇	220.5 ± 1.7	3082.8 ± 6.7		298	177.82	121.00	—	—	—
CaV ₂ O ₆	179.1 ± 1.7	2328.8 ± 5.4		298	135.23	119.16	—	—	—
CaWO ₄	126.4 ± 0.8	1624.2 ± 12.1	scheel	298	134.56	20.67	-24.43	—	—
Ca ₃ WO ₆	195.0 ± 14.6	2933.0 ± 16.3		298	236.52	29.71	-38.33	—	—
CaZrO ₃	93.7 ± 8.4	1766.5 ± 9.6	cubic	298	119.24	12.05	-21.00	—	—
Cd	51.8	0.0	hex	298	22.05	12.55	0.14	—	—
			liq	594	29.71	—	—	—	6.2
Cd(g)	167.7	111.8	gas	298	20.79	—	—	—	—
Cd ₃ As ₂	207.1 ± 10.5	38.1 ± 8.4	tetrag	298	136.19	11.92	-12.84	—	—
CdBr ₂	138.8	315.3 ± 1.7	hex	298	79.96	21.09	-8.49	—	—
			liq	568	101.67	—	—	—	33.5
CdBr ₂ (g)	309.6 ± 3.3	140.0 ± 5.0	gas	298	65.40	—	-4.60	—	—
CdCl ₂	115.3 ± 0.4	390.8 ± 1.3	hex	298	47.28	91.63	—	—	—
			liq	842	110.04	—	—	—	30.5
CdCl ₂ (g)	285.8 ± 2.9	194.6 ± 6.3	gas	298	63.30	—	-4.60	—	—
CdF ₂	83.7 ± 6.3	700.4 ± 2.1	cubic	298	60.04	23.01	—	—	—
CdF ₂ (g)	265.3 ± 2.5	395.0 ± 4.2	gas	298	61.30	—	-6.90	—	—
CdI ₂	158.3 ± 0.8	204.2 ± 2.5	hex	298	67.57	37.66	—	—	—
			β	595	89.96	—	—	—	—
			liq	661	102.09	—	—	—	20.7
CdI ₂ (g)	325.5 ± 3.8	60.2 ± 4.6	gas	298	66.23	—	-5.02	—	—
CdO	54.8 ± 1.7	258.4 ± 0.8	cubic	298	48.24	6.36	-5.31	—	—
CdAl ₂ O ₄	125.1 ± 12.1	1916.9 ± 2.5	cubic	298	160.04	23.85	-33.05	—	—
CdCO ₃	92.5 ± 5.0	751.9 ± 8.4	hex	298	43.10	131.80	—	—	—
CdGa ₂ O ₄	139.7 ± 12.6	1355.6 ± 2.1	cubic	298	161.13	21.84	-25.90	—	—
Cd(NO ₃) ₂	207.9 ± 10.9	456.5 ± 4.6	cubic	298	179.91	—	—	—	—
			tetrag	431	213.38	—	—	—	2.9
CdS	69.0 ± 2.1	149.4 ± 2.9	hex	298	44.56	13.81	—	—	—
CdSO ₄	123.1 ± 0.4	934.3 ± 1.3	rhomb	298	76.73	77.40	—	—	—

TABLE I—continued

Substance	$S_{298} \pm \delta S$ (J/deg mol)	$-\Delta H_{298} \pm \delta H$ (kJ/mol)	Phase	T K	$C_p = A + BT + C/T^2 + DT^2$				H_f (kJ/mol)
					A	$B \times 10^3$ (J/deg mol)	$C \times 10^{-5}$ (J/deg mol)	$D \times 10^6$	
CdSb	95.6 ± 0.8	13.3 ± 1.3	orth	298	44.52	19.41	—	—	—
				729	143.13	-75.44	—	—	35.6
CdSe	83.3 ± 2.1	144.8 ± 2.1	hex	298	46.82	9.33	—	—	—
				298	78.45	54.39	—	—	—
CdSeO ₃	138.1	576.6	cryst	298	78.45	54.39	—	—	—
CdSiO ₃	97.5 ± 1.3	1189.3 ± 3.3	monocl	298	87.86	42.68	-10.46	—	—
CdTe	95.2 ± 0.8	100.8 ± 0.8	cubic	298	52.51	19.00	-7.36	—	—
				1370	64.85	—	—	—	43.9
CdTiO ₃	104.6 ± 8.4	1186.6 ± 2.9	hex	298	116.11	9.62	-18.20	—	—
				298	22.38	15.06	—	—	—
Ce	56.9	0.0	fcc	298	22.38	15.06	—	—	—
				998	37.66	—	—	—	3.0
				1071	37.66	—	—	—	5.2
				298	24.89	15.02	-6.69	-3.77	—
Ce(g)	191.6	417.1	gas	298	24.89	15.02	-6.69	-3.77	—
CeBr ₃	182.0	887.0	hex	298	94.73	24.52	-0.29	—	—
				1006	152.72	—	—	—	51.9
				298	122.38	11.92	-20.08	—	—
Ce ₂ C ₃	173.6 ± 15.9	176.6 ± 6.7	cubic	298	122.38	11.92	-20.08	—	—
CeC ₂	90.0 ± 7.9	97.1 ± 7.1	tetrag	298	68.62	9.20	-9.20	—	—
CeCl ₃	149.8 ± 7.5	1058.1 ± 1.7	hex	298	97.49	13.60	-5.02	—	—
				1095	145.18	—	—	—	54.0
CeF ₃	115.2 ± 0.4	1732.6 ± 8.4	hex	298	74.94	38.79	15.44	—	—
				1705	125.02	—	—	—	58.6
CeH ₂	55.8 ± 0.4	193.3	cubic	298	35.15	19.25	—	—	—
CeI ₃	214.6 ± 14.6	649.8 ± 9.2	orth	298	80.12	60.75	3.77	—	—
				1034	152.72	—	—	—	51.0
CeN	60.7 ± 8.4	326.4 ± 25.1	cubic	298	48.53	6.07	-7.24	—	—
				298	139.33	11.63	-24.23	—	—
				1050	126.78	32.30	-9.29	—	—
				1800	154.81	—	—	—	—
Ce ₂ O ₃	148.1 ± 0.4	1799.7 ± 1.3	cubic	298	139.33	11.63	-24.23	—	—
CeO ₂	62.3 ± 0.3	1090.4 ± 0.8	cubic	298	64.81	17.70	-7.61	—	—
				298	107.19	29.58	-18.87	—	—
CeAlO ₃	95.4 ± 8.4	1800.8 ± 2.9	ortho	298	107.19	29.58	-18.87	—	—
CeCrO ₃	109.2 ± 11.7	1533.0 ± 11.7	—	298	113.60	25.31	-12.43	—	—
CeS	78.2 ± 1.3	456.5 ± 8.4	cubic	298	52.54	13.55	-5.89	—	—
Ce ₃ S ₄	255.2 ± 12.6	1652.7 ± 20.9	cubic	298	167.82	39.66	—	—	—
Ce ₂ S ₃	180.3 ± 1.7	1188.3 ± 12.6	cubic	298	124.93	12.72	—	—	—
Ce ₂ O ₂ S	130.5 ± 7.5	1696.6 ± 15.1	hexag	298	124.89	23.64	-20.92	—	—
Ce ₂ (SO ₄) ₃	287.4 ± 23.0	3955.1 ± 4.6	cryst	298	221.75	198.74	—	—	—

Cl ₂ (g)	223.0	0.0	gas	298	36.99	0.71	-2.93	—	—
Cl(g)	165.1	-121.3	gas	298	23.79	-1.28	-1.40	—	—
ClF(g)	217.8 ± 0.2	50.8 ± 1.3	gas	298	36.30	1.00	-4.18	—	—
ClF ₃ (g)	281.5 ± 0.4	158.9 ± 1.3	gas	298	80.79	1.21	-14.69	—	—
Cl ₂ O(g)	267.9 ± 0.4	-81.4 ± 1.7	gas	298	56.78	0.73	-8.39	—	—
ClO ₂ (g)	257.1 ± 0.4	-93.3 ± 2.1	gas	298	55.56	1.53	-12.55	—	—
Co	30.0	0.0	hcp	298	18.12	23.14	-0.42	-0.08	—
			fcc	700	18.12	23.14	-0.42	-0.08	0.5
			fcc	1390	18.12	23.14	-0.42	-0.08	5.1
			liq	1768	40.50	—	—	—	16.2
Co(g)	179.4	-424.7	gas	298	27.03	-0.21	-3.59	—	—
CoAl	54.4	110.5 ± 8.4	cubic	298	42.68	12.55	—	—	—
			liq	1901	71.13	—	—	—	62.8
CoBr ₂	133.9 ± 8.4	215.7 ± 2.1	hex	298	73.39	20.92	—	—	—
			cubic	648	92.05	—	—	—	—
CoCl ₂	109.3 ± 0.4	312.5 ± 1.7	hex	298	82.09	6.74	-4.98	—	—
			liq	1013	99.16	—	—	—	44.8
CoCl ₂ (g)	298.3 ± 8.4	93.7 ± 8.4	gas	298	58.41	7.49	-0.73	-2.13	—
CoF ₂	82.0 ± 0.4	671.5 ± 9.2	tetrag	298	64.02	15.56	—	—	—
CoF ₃	94.6 ± 12.6	789.9 ± 12.6	hex	298	97.82	7.03	-7.49	—	—
CoI ₂	153.1 ± 10.5	85.8 ± 10.5	hex	298	72.38	25.10	—	—	—
CoO	53.0 ± 0.4	237.7 ± 0.6	cubic	298	55.40	-6.44	—	7.11	—
Co ₃ O ₄	114.3 ± 8.4	910.0 ± 4.6	cubic	298	140.75	17.28	-24.35	53.97	—
CoAl ₂ O ₄	99.6 ± 2.9	1946.8 ± 3.8	cubic	298	165.69	18.83	-34.73	—	—
CoCO ₃	87.9 ± 0.4	702.5 ± 12.6	hex	298	88.28	38.91	-17.99	—	—
CoCr ₂ O ₄	126.8 ± 0.8	1432.2 ± 6.7	spinel	298	167.65	17.74	-13.97	—	—
CoFe ₂ O ₄	142.7 ± 8.4	1088.7 ± 4.6	cubic	298	173.22	54.39	-32.76	—	—
				740	215.06	571.12	—	—	—
				784	657.72	-541.83	—	—	—
Co(OH) ₂	93.3 ± 1.7	541.4 ± 6.3	hex	298	82.84	47.70	—	—	—
Co(NO ₃) ₂	177.0	421.3 ± 3.8	cryst	298	131.80	83.68	—	—	—
Co ₂ P	77.4	187.4 ± 17.2	rhomb	298	57.95	23.01	—	—	—
CoP	50.2	125.5 ± 18.0	rhomb	298	40.92	14.64	—	—	—
CoP ₃	98.3	204.6 ± 31.8	cryst	298	93.72	25.10	—	—	—
CoS _{0.89}	51.5 ± 3.3	94.6 ± 4.2	cubic	298	40.25	15.52	—	—	—
Co ₃ S ₄	184.1 ± 20.9	359.0 ± 25.1	cubic	298	143.30	76.57	—	—	—
CoS ₂	69.0 ± 6.3	153.1 ± 8.4	cubic	298	60.67	25.31	—	—	—
CoSO ₄	117.4 ± 1.3	888.3 ± 1.7	rhomb	298	122.59	40.29	-27.95	—	—
				964	168.62	—	—	—	2.1
CoSb	70.7 ± 5.4	41.8 ± 7.9	hex	298	42.26	25.94	—	—	—
CoSeO ₃	128.0	577.4 ± 10.5	cryst	298	79.91	59.83	—	—	—
			liq	932	144.35	—	—	—	16.3

TABLE I—continued

Substance	$S_{298} \pm \delta S$ (J/deg mol)	$-\Delta H_{298} \pm \delta H$ (kJ/mol)	Phase	T K	$C_p = A + BT + C/T^2 + DT^2$				H_f (kJ/mol)
					A	$B \times 10^3$	$C \times 10^{-5}$	$D \times 10^6$	
CoSi	42.7 ± 2.9	95.1 ± 7.9	cubic	298	49.16	12.09	-7.53	—	—
			liq	1733	87.36	—	—	—	69.2
CoSi ₂	64.0 ± 5.0	98.7 ± 10.0	cubic	298	70.86	18.66	-9.92	—	—
			liq	1600	116.11	—	—	—	100.0
Co ₂ SiO ₄	158.6 ± 4.2	1398.7 ± 4.6	orth	298	157.40	22.05	-26.69	—	—
			liq	1690	242.67	—	—	—	100.4
CoTiO ₃	96.9 ± 3.3	1207.5 ± 3.8	trigon	298	123.47	9.71	-14.64	—	—
CoWO ₄	126.4 ± 9.2	1142.2 ± 3.8	monocl	298	115.48	48.53	—	—	—
			β	986	122.38	41.92	—	—	1.9
Cr	23.6	0.0	bcc	298	21.76	8.98	-0.96	2.26	—
			liq	2130	39.33	—	—	—	17.2
Cr(g)	174.2	-397.5	gas	298	20.79	—	—	—	—
			gas	900	9.58	6.95	41.34	—	—
Cr ₅ B ₃	137.7	248.9	tetrag	298	153.13	79.08	—	—	—
CrB	29.0	78.9 _{orth}	298	42.34	16.02	-10.04	—	—	—
Cr ₃ B ₄	91.8	281.2	orth	298	134.31	57.74	-39.12	—	—
CrB ₂	32.9	125.5	hex	298	60.04	21.88	-18.62	—	—
CrBr ₂	134.7 ± 7.1	302.1 ± 18.8	monocl	298	65.90	22.18	—	—	—
Cr ₂₃ C ₆	612.1 ± 4.2	328.4 ± 37.7	cubic	298	683.25	209.20	-104.6	—	—
Cr ₇ C ₃	201.0 ± 1.3	160.7 ± 16.7	hex	298	233.89	62.34	-38.07	—	—
Cr ₃ C ₂	85.4 ± 0.4	85.4 ± 12.6	orth	298	123.26	25.90	-28.24	—	—
CrCl ₂	115.3 ± 0.4	395.4 ± 10.5	orth	298	63.81	24.94	—	—	—
CrCl ₃	124.7 ± 0.4	570.3 ± 10.9	monocl	298	79.50	41.21	—	—	—
CrF ₂	85.8 ± 6.3	775.3 ± 11.7	monocl	298	61.63	19.50	-8.03	—	—
CrF ₃	94.1 ± 0.4	1159.0 ± 8.4	hex	298	68.62	34.31	—	—	—
CrI ₂	169.0	158.2 ± 5.9	monocl	298	66.94	22.59	—	—	—
CrI ₃	199.6 ± 10.9	205.0 ± 6.7	hex	298	105.44	20.92	—	—	—
Cr ₂ N	65.3 ± 8.4	125.5 ± 12.6	hex	298	65.14	26.23	-6.15	—	—
CrN	37.7 ± 2.1	117.2 ± 8.4	cubic	298	41.17	16.32	—	—	—
Cr ₂ O ₃	81.2 ± 1.3	1134.7 ± 7.5	rhomb	298	119.37	9.20	-15.65	—	—
CrO ₃	73.2	587.0 ± 10.9	orth	298	71.76	87.86	-16.74	—	—
CrO ₃ (g)	270.7 ± 12.6	292.0	gas	298	82.55	—	-21.97	—	—
Cr(CO) ₆	314.2 ± 6.3	1077.4 ± 4.2	orth	298	203.76	75.31	-19.87	—	—
CrO ₂ Cl ₂ (g)	329.7 ± 2.9	528.9 ± 11.7	gas	298	106.61	—	—	—	—

CrS	64.0 ± 6.3	155.6 ± 9.6	monocl	298	32.84	46.74	—	—	—
				450	51.64	4.90	—	—	0.3
Cr ₂ (SO ₄) ₃	258.8 ± 2.1	2931.3 ± 15.9		298	358.07	79.50	-89.75	—	—
Cr ₃ Si	85.8 ± 6.3	92.0 ± 16.7	cubic	298	82.22	42.38	-4.31	—	—
Cr ₃ Si ₃	169.0 ± 12.6	211.3 ± 31.4	tetrag	298	198.57	49.29	25.61	—	—
				1300	586.85	-543.08	—	225.31	—
CrSi	43.7 ± 3.3	54.8 ± 8.4	cubic	298	52.01	8.74	-8.41	—	—
CrSi ₂	58.6 ± 4.6	79.9 ± 12.6	hex	298	65.61	22.51	-7.74	—	—
			liq	1730	89.96	—	—	—	127.8
Cs	85.2	0.0	bcc	298	32.34	—	—	—	—
			liq	302	29.89	0.90	2.03	—	2.1
			liq	700	30.94	—	—	—	—
Cs(g)	175.5	-76.5	gas	298	20.79	—	—	—	—
Cs ₂ (g)	284.5	-113.8	gas	298	37.18	2.82	—	—	—
CsBr	113.0 ± 0.4	405.4 ± 0.8	cubic	298	50.38	8.54	—	—	—
			liq	911	77.40	—	—	—	23.6
CsCl	101.2 ± 0.2	442.7 ± 0.4	cubic	298	53.35	5.15	-2.09	—	—
				743	3.35	73.64	-3.77	—	3.8
			liq	918	57.99	17.91	—	—	20.3
CsCl(g)	256.0 ± 0.2	242.3 ± 4.2	gas	298	36.82	1.05	—	—	—
CsF	93.0	553.5 ± 1.3	cubic	298	45.81	18.83	—	—	—
			liq	976	74.06	—	—	—	21.8
CsF(g)	243.1 ± 0.2	361.1 ± 3.3	gas	298	37.34	0.61	-1.51	—	—
CsH	66.9 ± 8.4	54.0 ± 0.4	cubic	298	31.17	35.56	—	—	—
CsH(g)	215.1 ± 0.2	-116.9	gas	298	37.78	—	-5.61	—	—
CsI	122.2 ± 0.8	346.4 ± 8.4	cubic	298	29.54	43.35	8.08	—	—
			liq	905	72.38	—	—	—	25.5
CsI(g)	275.2 ± 0.2	153.1 ± 2.1	gas	298	38.91	—	-1.30	—	—
Cs ₂ O	146.9 ± 0.8	346.0 ± 2.9	hex	298	66.36	32.01	—	—	—
CsO ₂	142.3 ± 12.6	286.2 ± 2.1	tetrag	298	72.38	30.96	—	—	—
CsBO ₂	105.4 ± 0.6	976.8 ± 20.9	cubic	298	52.34	66.32	-2.33	—	—
Cs ₂ CO ₃	204.0 ± 0.8	1136.4 ± 2.1	cryst	298	115.44	69.33	-10.96	—	—
CsClO ₄	175.3 ± 0.8	437.2 ± 1.3	rhomb	298	30.54	259.41	—	—	—
			cubic	501	176.15	—	—	—	7.5
Cs ₂ CrO ₄	228.6 ± 0.4	1429.3 ± 3.3	cryst	298	146.06	—	—	—	36.0
CsOH	98.7 ± 5.0	416.7 ± 1.3	α	298	52.97	64.02	—	—	—
			β	410	75.31	—	—	—	1.3
			gamma	493	82.42	—	—	—	6.1
			liq	616	81.59	—	—	—	4.6
CsOH(g)	254.7 ± 0.8	259.4 ± 12.6	gas	298	51.04	4.06	-2.22	—	—

TABLE I—continued

Substance	$S_{298} \pm \delta S$ (J/deg mol)	$-\Delta H_{298} \pm \delta H$ (kJ/mol)	Phase	T K	$C_p = A + BT + C/T^2 + DT^2$				H_f (kJ/mol)
					A	$B \times 10^3$ (J/deg mol)	$C \times 10^{-5}$ (J/deg mol)	$D \times 10^6$	
Cs ₂ MoO ₄	248.4	1514.6	rhomb	298	116.40	108.24	—	—	—
			hex	841	122.17	97.07	—	—	4.6
			liq	1230	210.04	—	—	—	31.8
CsNO ₂	181.2 ± 4.2	369.4	cubic	298	91.76	—	—	—	10.9
CsNO ₃	153.7 ± 0.4	505.8 ± 2.1	hex	298	62.76	110.46	—	—	—
			cubic	426	126.36	—	—	—	3.8
			liq	680	135.98	—	—	—	14.0
Cs ₂ SO ₄	211.9 ± 0.4	1444.3 ± 1.3	orth	298	85.48	151.04	—	—	—
			hex	940	36.40	158.16	—	—	2.5
			liq	1286	207.11	—	—	—	36.4
Cs ₂ SiO ₃	175.7 ± 10.5	1558.1 ± 15.1	cryst	298	113.72	74.64	-12.22	—	—
			liq	1100	194.56	—	—	—	39.7
Cs ₂ UO ₄	219.7 ± 0.8	1926.3 ± 4.6		298	164.85	17.03	15.27	—	—
Cu	33.1	0.0	fcc	298	30.29	-10.71	-3.22	9.47	—
			liq	1358	32.84	—	—	—	13.3
Cu(g)	166.3	-337.4	gas	298	20.79	—	—	—	—
			gas	1300	23.97	-4.60	—	1.67	—
CuBr	96.1 ± 0.8	104.6 ± 1.3	cubic	298	56.74	9.37	-4.18	—	—
			hex	665	58.58	—	—	—	7.5
			cubic	743	58.99	—	—	—	1.5
CuCl	87.0 ± 2.9	137.2 ± 2.1	cubic	298	38.28	34.98	—	—	—
			liq	700	66.94	—	—	—	10.3
CuCl ₂	108.1 ± 0.4	215.5 ± 4.2	monocl	298	67.03	17.57	—	—	—
CuF ₂	77.4 ± 0.2	538.9 ± 8.4	monocl	298	72.01	19.96	-11.38	—	—
			liq	1100	100.42	—	—	—	55.2
CuF ₂ (g)	267.0	266.9	gas	298	55.15	2.28	-6.74	—	—
CuI	96.7 ± 1.3	68.0 ± 2.1	cubic	298	31.80	74.06	—	—	—
			hex	650	66.11	—	—	—	8.2
			cubic	690	68.62	—	—	—	1.9
			liq	873	90.79	—	—	—	10.9
			gas	298	37.45	—	-0.92	—	—
CuI(g)	255.6	-153.1	gas	298	37.45	—	-0.92	—	—
CuCN	90.0 ± 0.4	-95.0 ± 2.1	cryst	298	59.66	24.48	-4.35	—	—
Cu ₂ O	92.9 ± 0.3	173.2 ± 2.1	cubic	298	58.20	23.97	-1.59	—	—
			liq	1515	100.42	—	—	—	64.0

CuO	42.6 ± 0.4	161.9 ± 1.7	monocl	298	46.44	11.55	-7.11	2.59	—
CuAl ₂ O ₄	99.6 ± 2.9	1946.8 ± 4.6	cubic	298	155.64	34.10	-33.89	—	—
CuCO ₃	87.9	596.2 ± 9.2		298	92.05	38.91	-17.99	—	—
CuCr ₂ O ₄	130.5 ± 9.2	1293.3 ± 7.5	tetrag	298	166.31	20.92	-21.76	—	—
CuFeO ₂	88.9 ± 1.0	513.0 ± 4.2	hex	298	97.99	7.53	-17.99	—	—
			β	1090	91.50	15.06	—	—	0.4
			liq	1470	126.69	—	—	—	64.4
CuFe ₂ O ₄	146.7	969.0	tetrag	298	139.62	117.78	-23.43	—	—
			cubic	675	227.19	—	—	—	0.8
			cubic	795	166.02	41.00	—	—	—
Cu(OH) ₂	87.0 ± 8.4	443.5 ± 5.4	orth	298	86.99	23.26	-5.40	—	—
Cu ₃ P	119.2	151.0 ± 12.6	hex	298	77.82	33.47	—	—	—
Cu ₂ S	120.9 ± 1.7	79.5 ± 1.7	orth	298	52.84	78.74	—	—	—
			hex	376	112.05	-30.75	—	—	3.8
			cubic	717	84.64	—	—	—	1.2
			liq	1402	89.12	—	—	—	9.6
CuS	66.5 ± 2.1	52.3 ± 4.2	hex	298	44.35	11.05	—	—	—
Cu ₅ FeS ₄	362.3	380.3	tetrag	298	208.20	146.77	-5.65	—	—
			cubic	485	-143.55	1033.45	—	—	6.0
			cubic	540	189.03	117.49	-260.91	—	—
CuFeS ₂	125.0	190.4	tetrag	298	86.99	53.56	-5.61	—	—
			cubic	830	-1441.97	1844.98	—	—	10.0
			cubic	930	172.46	—	—	—	—
CuSO ₄	109.2 ± 0.4	771.4 ± 1.3	rhomb	298	73.43	152.84	-12.30	-71.59	—
CuO.CuSO ₄	157.3	927.6	cryst	298	170.83	45.35	-39.25	—	—
CuSO ₄ .H ₂ O	145.1 ± 5.0	1082.8 ± 2.5	monocl	298	132.30	70.88	-18.62	—	—
CuSO ₄ .3H ₂ O	222.2 ± 5.0	1681.1 ± 3.3	monocl	298	204.30	71.80	-18.41	—	—
CuSO ₄ .5H ₂ O	301.2 ± 2.1	2276.5 ± 3.8	tricli	298	280.96	70.88	-18.58	—	—
Cu ₂ Sb	126.4	11.7 ± 1.7	cryst	298	68.53	27.61	—	—	—
Cu ₂ Se	129.7 ± 4.2	65.3 ± 6.3	tetrag	298	58.58	77.40	—	—	—
			cubic	395	84.10	—	—	—	6.8
CuSe	78.2 ± 6.3	41.8 ± 4.2	hex	298	54.81	—	—	—	—
			orth	326	62.76	—	—	—	1.4
CuSe(g)	264.6 ± 4.2	-309.6 ± 20.9	gas	298	37.40	—	-1.13	—	—
Cu ₂ Te	134.7 ± 6.3	41.8 ± 12.6	hex	298	59.83	53.56	—	—	—
			cubic	433	60.46	53.56	—	—	0.2
			delta	531	112.97	—	—	—	1.9
				590	133.89	—	—	—	1.0
				633	109.29	—	—	—	2.4
				841	87.86	—	—	—	2.0

TABLE I—continued

Substance	$S_{298} \pm \delta S$ (J/deg mol)	$-\Delta H_{298} \pm \delta H$ (kJ/mol)	Phase	T K	$C_p = A + BT + C/T^2 + DT^2$				H_f (kJ/mol)
					A	$B \times 10^3$ (J/deg mol)	$C \times 10^{-5}$ (J/deg mol)	$D \times 10^6$	
Dy	74.9	0.0	hcp	298	35.35	-21.88	-2.13	18.70	—
			bcc	1654	28.03	—	—	—	4.2
			liq	1685	49.92	—	—	—	11.0
Dy(g)	195.8	-290.4	gas	298	21.40	-2.12	-0.14	2.04	—
			gas	700	21.18	-1.99	—	2.29	—
			gas	1400	11.64	9.16	21.55	-1.37	—
DyCl ₃	147.7 ± 11.3	995.8 ± 9.2	monocl	298	94.56	17.99	-1.42	—	—
			liq	924	144.77	—	—	—	25.5
DyCl ₃ (g)	383.3 ± 6.7	714.2 ± 11.3	gas	298	79.91	—	—	—	—
DyF ₃	115.1 ± 10.5	1719.6 ± 7.5	orth	298	89.62	24.56	-0.38	—	—
			liq	1430	156.90	—	—	—	58.6
Dy ₂ O ₃	149.8 ± 12.6	1862.7 ± 3.8	cubic	298	122.59	13.22	-8.49	—	—
			monocl	1590	148.11	—	—	—	0.9
			hex	2343	155.23	—	—	—	8.4
Er	73.1	0.0	hcp	298	28.37	-2.05	—	5.73	—
			bcc	1750	42.68	—	—	—	—
			liq	1795	38.70	—	—	—	19.9
Er(g)	193.9	-317.1	gas	298	20.79	—	—	—	—
			gas	500	22.12	-3.28	-0.64	2.27	—
			gas	1500	8.76	9.49	44.33	-1.20	—
ErCl ₃	146.9 ± 4.2	992.4 ± 2.9	monocl	298	95.56	17.57	-1.05	—	—
			liq	1050	148.53	—	—	—	32.6
ErF ₃	100.8 ± 1.3	1722.6 ± 6.3	orth	298	93.09	19.96	1.67	—	—
			hex	1390	135.02	—	—	—	29.5
			liq	1419	139.12	—	—	—	27.5
Er ₂ O ₃	154.4 ± 0.6	1897.9 ± 4.2	cubic	298	115.27	29.29	-13.81	—	—
Eu	77.8	0.0	cubic	298	33.81	-19.33	-2.22	23.85	—
			liq	765	33.81	-19.33	-2.22	23.85	0.2
			liq	1096	38.07	—	—	—	9.2
Eu(g)	188.7	-175.3	gas	298	20.79	—	—	—	—
			gas	1200	22.42	-2.52	—	0.96	—
EuCl ₃	125.5 ± 12.6	939.3 ± 4.6	hex	298	90.50	26.15	—	—	—
			liq	897	142.26	—	—	—	33.1
EuF ₃	108.8	1619.2	orth	298	80.75	45.61	8.37	—	—
			hex	920	150.62	—	—	—	6.7

EuN	63.6 ± 0.8	217.6 ± 25.1	cubic	298	51.88	5.44	—	—	—
EuO	81.6 ± 4.2	589.9 ± 5.4	cubic	298	54.39	4.18	-6.15	—	—
Eu ₂ O ₃	146.4	1662.7 ± 3.8	cubic	298	123.85	27.11	-8.70	—	—
			monocl	895	129.96	17.41	—	—	0.5
EuS	95.4 ± 0.8	451.9 ± 16.7	cubic	298	48.74	4.81	—	—	—
EuS(g)	272.0	-88.3 ± 16.7	gas	298	37.24	0.07	-1.91	—	—
F ₂ (g)	202.7	0.0	gas	298	35.90	1.34	-4.48	—	—
F(g)	158.6	-79.4	gas	298	21.69	-0.44	1.16	—	—
F ₂ O(g)	247.3 ± 0.4	18.4	gas	298	50.42	8.66	-8.59	-2.54	—
Fe	27.3	0.0	bcc	298	28.18	-7.32	-2.90	25.04	—
			bcc	800	-263.45	255.81	619.23	—	—
			bcc	1000	-641.91	696.34	—	—	—
			bcc	1042	1946.25	-1787.50	—	—	—
			bcc	1060	-561.95	334.13	2912.11	—	—
			fcc	1184	23.99	8.36	—	—	0.9
			bcc	1665	24.64	9.90	—	—	0.8
			liq	1809	46.02	—	—	—	13.8
Fe(g)	180.8	-415.9	gas	298	26.09	-1.40	—	—	—
			gas	400	30.93	-14.31	-0.99	5.95	—
			gas	1100	22.07	0.13	—	—	—
			gas	1600	24.83	-2.68	-26.61	1.11	—
			gas	3135	2.33	6.53	530.95	-0.14	—
Fe ₂ B	51.7	102.5	tetrag	298	78.87	14.14	-14.64	—	—
FeB	31.0	72.8	orth	298	49.96	10.00	-10.59	—	—
			liq	1863	89.96	—	—	—	62.6
FeBr ₂	140.6 ± 2.5	248.9 ± 1.7	hex	298	73.60	22.26	—	—	—
			cubic	650	92.05	—	—	—	0.4
			liq	964	106.69	—	—	—	51.9
FeBr ₂ (g)	337.2	41.4	gas	298	59.87	3.14	—	—	—
Fe ₃ C	104.6 ± 4.2	-25.1 ± 4.2	cement	298	82.01	83.68	—	—	—
				480	107.32	12.55	—	—	0.8
FeCl ₂	76.1 ± 2.5	341.8 ± 0.8	hex	298	79.24	8.70	-4.77	—	—
			liq	950	102.17	—	—	—	43.0
FeCl ₂ (g)	299.2 ± 4.2	141.0 ± 2.1	gas	298	59.50	3.31	-2.59	—	—
Fe ₂ Cl ₄ (g)	464.4 ± 12.6	431.4 ± 4.2	gas	298	130.21	3.26	-4.73	—	—
FeCl ₃	142.3 ± 1.7	399.4 ± 1.0	hex	298	62.34	115.06	—	—	—
			liq	580	133.89	—	—	—	43.1
FeCl ₃ (g)	344.1	253.6 ± 4.2	gas	298	82.97	0.08	-4.73	—	—
Fe ₂ Cl ₆ (g)	537.0	654.8 ± 8.4	gas	298	182.67	0.13	-8.08	—	—
FeF ₂	87.0 ± 0.4	707.1 ± 8.4	tetrag	298	74.64	8.03	-8.16	—	—
			liq	1373	98.32	—	—	—	51.9

TABLE I—continued

Substance	$S_{298} \pm \delta S$ (J/deg mol)	$-\Delta H_{298} \pm \delta H$ (kJ/mol)	Phase	T K	$C_p = A + BT + C/T^2 + DT^2$				H_f (kJ/mol)
					A	$B \times 10^3$ (J/deg mol)	$C \times 10^{-5}$ (J/deg mol)	$D \times 10^6$ (J/deg mol)	
Fe ₄ N	155.6 ± 7.5	11.1 ± 4.2	cubic	298	110.79	34.14	—	—	—
Fe _{0.945} O	60.1 ± 0.8	263.0 ± 2.5	cubic	298	48.79	8.37	-2.80	—	—
Fe ₂ O ₃	87.4 ± 1.3	823.4 ± 3.3	hemat	298	98.28	77.82	-14.85	—	—
				950	150.60	—	—	—	—
				1050	132.67	7.36	—	—	—
Fe ₃ O ₄	150.9 ± 1.7	1108.8 ± 4.2	magnet	298	91.55	202.00	—	—	—
				900	213.40	—	—	—	—
				298	155.31	26.15	-35.23	—	—
FeAl ₂ O ₄	106.3 ± 0.8	1966.5 ± 2.5	cubic	298	48.66	112.09	—	—	—
FeCO ₃	92.9 ± 2.5	740.6 ± 3.3	sider	298	72.22	39.33	-37.24	—	—
Fe(CO) ₅ (g)	445.2 ± 3.3	723.8 ± 8.4	gas	298	69.04	26.82	—	—	—
FeOCl	76.6 ± 6.3	408.4 ± 8.4	rhomb	298	163.01	22.34	-31.92	—	—
FeCr ₂ O ₄	146.9 ± 1.7	1446.4 ± 5.0	spinel	298	49.37	83.68	—	—	—
FeOOH	60.4 ± 0.8	558.1 ± 2.9	orth	298	217.57	—	—	—	—
FeCl ₂ ·2H ₂ O	165.1	956.5 ± 6.3	monocl	298	301.25	—	—	—	—
FeCl ₂ ·4H ₂ O	245.6	1552.3 ± 8.4	monocl	298	101.67	49.41	6.07	—	—
Fe ₃ Mo ₂	146.4 ± 8.4	4.2 ± 8.4	homb	298	125.52	33.47	-15.90	—	—
FeMoO ₄	129.3 ± 1.7	1060.2 ± 12.1	monocl	298	117.15	12.97	-17.78	—	—
Fe ₃ P	101.6	164.0	tetrag	298	76.78	17.03	-6.07	—	—
Fe ₂ P	72.4	160.2	hex	298	180.54	—	—	—	—
FePO ₄ ·2H ₂ O	171.3 ± 1.3	1887.8 ± 9.2	streng	298	-0.50	170.71	—	—	—
FeS	60.3 ± 0.4	100.4 ± 1.7	hex	298	72.80	—	—	—	2.4
				411	51.04	9.96	—	—	0.5
				598	71.13	—	—	—	32.3
			liq	1461	68.95	14.10	-9.87	—	—
FeS ₂	52.9 ± 0.4	171.5 ± 2.1	pyrite	298	122.01	37.82	-29.29	—	—
FeSO ₄	107.5 ± 1.3	927.6 ± 10.5	orth	298	309.62	111.59	-64.22	—	—
Fe ₂ (SO ₄) ₃	282.8 ± 2.1	2580.3 ± 5.0	hex	298	54.31	21.13	-5.19	—	—
FeSe _{0.96}	69.2 ± 4.2	66.9 ± 4.2	tetrag	298	67.86	-12.07	—	—	9.6
			hex	731	226.98	123.43	-31.17	—	—
Fe ₂ (SeO ₃) ₃	272.4 ± 18.8	1706.2 ± 14.6	cryst	298	44.56	15.15	-1.13	—	—
FeSi	37.7 ± 3.3	79.5 ± 3.3	cubic	298	152.76	39.16	-28.03	—	—
Fe ₂ SiO ₄	145.2 ± 1.7	1471.1 ± 7.9	fayal	298	240.58	—	—	—	92.0
			liq	1490	—	—	—	—	—

FeTi	52.7 ± 8.8	40.6 ± 1.7	cubic	298	53.01	9.62	-8.12	—	—
Fe ₂ Ti	74.5	87.4	hex	298	80.96	13.81	-13.18	—	—
Fe ₂ TiO ₄	173.2	1501.2 ± 11.7	spinel	298	139.49	63.09	-14.23	—	—
FeTiO ₃	105.9 ± 1.3	1237.6 ± 5.9	trigon	298	116.61	18.24	-20.04	—	—
			liq	1740	199.16	—	—	—	90.8
FeWO ₄	131.6 ± 1.3	1182.8 ± 5.4	monocl	298	132.42	29.75	-23.93	—	—
Ga	40.8	0.0	orth	298	26.78	—	—	—	—
			liq	303	26.78	—	—	—	5.6
Ga(g)	168.9	-272.0	gas	298	31.76	-9.62	-3.05	2.18	—
GaAs	64.2 ± 0.4	74.1 ± 6.3	cubic	298	45.19	6.07	—	—	—
			liq	1511	58.99	—	—	—	87.9
GaBr ₃	179.9 ± 11.7	386.6 ± 2.5	cryst	298	78.58	77.40	—	—	—
			liq	396	125.52	—	—	—	11.7
GaCl(g)	240.0 ± 0.2	81.8 ± 15.1	gas	298	37.99	—	-2.01	—	—
GaCl ₃	135.1 ± 13.8	524.7 ± 4.6	cryst	298	118.41	—	—	—	—
			liq	351	128.03	—	—	—	11.5
GaI ₃	203.8 ± 16.7	239.3 ± 12.1	orth	298	117.15	—	—	—	—
			liq	486	128.45	—	—	—	22.2
GaN	29.7 ± 7.5	109.6 ± 9.2	hex	298	38.07	9.00	—	—	—
Ga ₂ O ₃	84.9 ± 0.4	1089.1 ± 4.6	monocl	298	112.55	15.48	-21.67	—	—
GaP	52.3 ± 0.8	102.5 ± 8.4	cubic	298	41.84	6.82	—	—	—
Ga ₂ S(g)	290.0 ± 8.4	-20.9 ± 33.5	gas	298	56.00	1.15	-9.25	—	—
GaS	57.7 ± 6.3	209.2 ± 18.8	hex	298	41.34	15.69	—	—	—
Ga ₂ S ₃	142.3 ± 16.7	516.3 ± 12.6	cubic	298	90.50	47.28	—	—	—
GaSb	76.1 ± 0.8	43.9 ± 1.7	cubic	298	44.35	14.23	—	—	—
GaSe	70.3 ± 2.1	159.0 ± 12.6	hex	298	44.64	12.97	—	—	—
Ga ₂ Se ₃	179.9 ± 16.7	408.8 ± 12.6	cubic	298	105.73	35.31	—	—	—
GaTe	85.4	125.5 ± 12.6	monocl	298	45.27	13.97	—	—	—
Ga ₂ Te ₃	213.4 ± 16.7	274.9 ± 16.7	cubic	298	95.06	18.62	—	—	—
Gd	67.9	0.0	hcp	298	6.69	32.64	18.41	-8.37	—
			bcc	1533	28.45	—	—	—	3.9
			liq	1586	37.15	—	—	—	10.0
Gd(g)	194.2	-397.5	gas	298	30.91	-8.35	-0.95	2.15	—
			gas	1000	23.73	-4.00	23.20	2.55	—
			gas	2000	7.26	10.66	67.98	-0.94	—
GdBr ₃	190.0	828.9	hex	298	101.96	5.77	-5.98	—	—
			liq	1058	139.33	—	—	—	38.2
GdCl ₃	151.5 ± 2.5	1008.3 ± 3.3	orth	298	93.09	25.10	-2.47	—	—
			liq	875	139.33	—	—	—	40.7
GdF ₃	114.8 ± 1.3	1699.1 ± 4.6	orth	298	102.01	6.49	-13.81	—	—
			hex	1348	130.83	—	—	—	6.0
			liq	1505	127.82	—	—	—	52.4

TABLE I—continued

Substance	$S_{298} \pm \delta S$ (J/deg mol)	$-\Delta H_{298} \pm \delta H$ (kJ/mol)	Phase	T K	$C_p = A + BT + C/T^2 + DT^2$				H_f (kJ/mol)
					A	$B \times 10^3$	$C \times 10^{-5}$	$D \times 10^6$	
					(J/deg mol)				
GdI ₃	226.4	594.1	hex	298	106.61	0.88	-7.32	—	—
			β	1013	127.82	—	—	—	0.9
			liq	1204	155.85	—	—	—	54.0
Gd ₂ O ₃	150.6 ± 0.4	1826.7 ± 3.3	cubic	298	119.20	12.95	-15.82	—	—
			monocl	1550	114.50	14.47	-10.84	—	1.7
GdOCl	95.4 ± 9.2	983.7 ± 3.8	tetrag	298	66.94	16.40	—	—	—
Ge	31.1	0.0	cubic	298	21.55	5.86	—	—	—
			liq	1210	27.61	—	—	—	36.9
Ge(g)	167.8	-372.0	gas	298	39.90	-15.95	-3.93	—	—
GeBr ₄ (g)	396.2 ± 1.7	298.7 ± 9.2	gas	298	107.36	0.67	-5.10	—	—
GeCl ₄ (g)	347.7 ± 1.3	494.8 ± 10.5	gas	298	106.86	0.92	-10.00	—	—
GeF ₄ (g)	301.8 ± 1.0	1190.2 ± 0.8	gas	298	97.61	8.37	-16.36	—	—
GeH ₄ (g)	217.1 ± 0.8	-90.8 ± 2.1	gas	298	62.55	22.09	-21.63	—	—
GeI ₄ (g)	428.9 ± 2.1	37.7 ± 10.5	gas	298	109.20	1.00	-4.60	—	—
GeO(g)	223.8 ± 0.4	30.7	gas	298	37.03	—	-5.65	—	—
GeO ₂	39.7 ± 1.3	580.0 ± 1.5	tetrag	298	66.61	11.59	-17.74	—	—
			hex	1322	68.91	9.83	-17.70	—	21.1
GeP	61.1 ± 8.4	27.2 ± 10.5	cryst	298	45.40	11.30	-5.23	—	—
GeS	66.0 ± 0.8	76.1 ± 4.6	orth	298	41.80	20.13	—	—	—
			liq	938	60.67	—	—	—	20.9
GeS(g)	235.6 ± 0.4	-99.4 ± 5.9	gas	298	36.74	0.42	-2.85	—	—
GeS ₂	87.4 ± 2.1	156.9 ± 12.6	orth	298	56.44	31.05	—	—	—
GeSe	78.2 ± 0.8	69.0 ± 10.5	orth	298	45.10	16.40	—	—	—
GeSe(g)	247.7 ± 2.1	-105.4 ± 18.8	gas	298	36.99	0.17	-1.76	—	—
GeSe ₂	112.5 ± 3.3	113.0 ± 20.9	hex	298	62.89	27.74	—	—	—
GeTe	88.9 ± 1.0	48.5 ± 10.5	trig	298	48.12	12.55	—	—	—
			liq	997	60.67	—	—	—	46.9
GeTe(g)	255.6 ± 1.7	-145.6 ± 16.7	gas	298	37.36	—	-1.26	—	—
H(g)	114.6 ± 0.0	-218.0 ± 0.0	gas	298	20.79	—	—	—	—
H ₂ (g)	130.6 ± 0.0	0.0	gas	298	27.37	3.33	—	—	—
HBr(g)	198.6	36.3	gas	298	25.10	8.45	1.42	-1.46	—
HCl(g)	186.8	92.3	gas	298	24.80	7.99	1.88	-1.30	—
HF(g)	173.7 ± 0.0	273.3 ± 0.6	gas	298	26.90	3.43	1.09	—	—
HI(g)	206.5 ± 0.2	-26.4 ± 0.8	gas	298	25.90	8.49	0.66	-1.54	—
HCN(g)	201.7 ± 0.2	-135.1 ± 8.4	gas	298	46.28	5.02	-10.67	—	—

H ₂ O(l)	69.9	285.8	liq	298	75.44	—	—	—	—
H ₂ O(g)	188.7	241.8	gas	298	30.00	10.71	0.33	—	—
H ₂ O ₂ (l)	109.5 ± 0.5	187.8 ± 0.4	liq	298	89.33	—	—	—	—
H ₂ O ₂ (g)	232.9 ± 0.6	136.4 ± 0.8	gas	298	52.30	11.88	-11.88	—	—
HBO ₂	49.0 ± 6.3	803.3 ± 1.3	cubic	298	52.09	34.48	6.95	—	—
HBO ₂ (g)	240.2 ± 1.7	564.0 ± 7.5	gas	298	51.76	12.01	-11.72	—	—
H ₃ BO ₃	90.0 ± 0.8	1094.8 ± 1.3	tricli	298	81.38	—	—	—	—
H ₃ BO ₃ (g)	303.3 ± 2.5	1012.5 ± 20.9	gas	298	77.40	—	—	—	—
HOF(g)	226.6 ± 0.2	98.3 ± 4.2	gas	298	41.59	6.55	-6.80	—	—
HNO ₃ (g)	266.5	134.7	gas	298	66.11	32.05	-20.50	-6.86	—
HCNO(g)	238.1 ± 0.4	101.7 ± 8.4	gas	298	57.28	10.63	-13.81	—	—
H ₃ PO ₄	110.5 ± 0.4	1266.9 ± 2.5	monocl	298	106.61	—	—	—	—
			liq	315	55.23	301.25	—	—	13.4
H ₂ S(g)	205.6 ± 0.4	20.5 ± 0.8	gas	298	28.54	20.61	-0.37	-3.70	—
H ₂ S ₂ (l)	200.8 ± 12.6	18.0 ± 0.8	liq	298	92.26	—	—	—	—
H ₂ S ₂ (g)	266.4	-15.7 ± 0.8	gas	298	51.38	16.19	-4.18	—	—
H ₂ SO ₄ (l)	156.9 ± 0.2	814.0 ± 0.8	liq	298	58.16	193.72	—	—	—
H ₂ SO ₄ (g)	298.7 ± 2.1	735.1 ± 8.4	gas	298	126.23	10.43	-43.46	—	—
H ₂ Se(g)	218.8 ± 0.4	-29.3 ± 1.3	gas	298	31.76	14.64	-1.30	—	—
H ₂ Te(g)	228.9 ± 2.1	-99.6 ± 1.3	gas	298	35.48	12.05	-3.10	—	—
Hf	43.5	0.0	hex	298	23.44	7.63	—	—	—
			bcc	2016	10.29	10.77	—	—	5.9
			liq	2504	33.47	—	—	—	27.2
Hf(g)	186.8	-620.1	gas	298	13.24	15.78	2.85	-3.47	—
			gas	2500	16.23	3.90	315.93	—	—
HfB ₂	42.9 ± 0.4	328.9 ± 8.8	hex	298	73.35	7.82	-23.01	—	—
HfBr ₄	240.6 ± 12.6	766.1 ± 2.1	cubic	298	108.70	63.43	—	—	—
HfBr ₄ (g)	427.6 ± 12.6	656.9 ± 16.7	gas	298	108.99	0.13	-4.85	—	—
HfC	39.5 ± 0.4	225.9 ± 6.3	cubic	298	42.34	12.13	-7.36	-2.43	—
HfCl ₄	190.8 ± 2.5	990.4 ± 2.1	cubic	298	131.67	—	-9.96	—	—
HfCl ₄ (g)	377.2 ± 6.3	882.8 ± 6.3	gas	298	108.44	0.21	-8.54	—	—
HfF ₄	113.0 ± 10.5	1930.5 ± 3.8	tetrag	298	133.47	3.14	-37.66	—	—
HfF ₄ (g)	327.6 ± 12.6	1694.5 ± 20.9	gas	298	120.25	—	-27.61	—	—
HfI ₄	269.9 ± 12.6	493.7 ± 20.9	cubic	298	135.02	31.21	—	—	—
HfN	45.2 ± 1.3	373.6 ± 2.5	cubic	298	45.77	9.32	-6.69	—	—
HfO ₂	59.4 ± 0.4	1117.5 ± 1.7	monocl	298	72.11	9.05	-12.94	—	—
			tetrag	1973	108.78	—	—	—	9.3
Hg	75.9	0.0	liq	298	30.38	-11.46	—	10.15	—
Hg(g)	174.8	-61.4	gas	298	27.66	—	—	—	—
HgBr	109.4	102.1	tetr	298	49.75	11.76	—	—	—
HgBr ₂	170.3	169.5 ± 1.3	orth	298	66.59	29.29	—	—	—
			liq	428	102.09	—	—	—	17.9

TABLE I—continued

Substance	$S_{298} \pm \delta S$ (J/deg mol)	$-\Delta H_{298} \pm \delta H$ (kJ/mol)	Phase	T K	$C_p = A + BT + C/T^2 + DT^2$				H_f (kJ/mol)
					A	$B \times 10^3$	$C \times 10^{-5}$	$D \times 10^6$	
HgCl	95.8 ± 0.8	132.6 ± 0.8	tetrag	298	49.37	11.51	-1.80	—	—
HgCl ₂	144.5 ± 0.4	230.1 ± 2.3	orth	298	70.00	20.29	-1.88	—	—
			liq	550	102.09	—	—	—	19.2
			gas	298	62.13	0.13	-3.64	—	—
HgCl ₂ (g)	288.7 ± 1.7	149.0 ± 2.7	gas	298	62.13	0.13	-3.64	—	—
HgF	80.3 ± 8.4	242.7 ± 10.5	tetrag	298	50.00	10.92	-2.76	—	—
HgF ₂	116.3	422.6	cubic	298	68.62	20.92	—	—	—
			liq	918	102.09	—	—	—	23.0
HgI	120.6	59.5 ± 0.8	tetrag	298	53.26	9.25	-2.76	—	—
			liq	563	68.20	—	—	—	13.6
HgI ₂	170.7	105.4 ± 1.7	tetrag	298	77.40	—	—	—	—
			orth	403	84.52	—	—	—	2.7
			liq	525	104.60	—	—	—	18.8
HgO	70.2 ± 0.4	90.8 ± 0.8	orth	298	35.56	30.12	—	—	—
HgS	82.4 ± 2.1	53.3 ± 4.2	hex	298	43.76	15.56	—	—	—
			cubic	618	44.02	15.19	—	—	4.0
Hg ₂ SO ₄	200.7 ± 0.4	743.1 ± 10.5	monocl	298	133.05	—	—	—	—
HgSO ₄	140.2	704.2 ± 10.5	orth	298	58.58	146.44	—	—	—
HgSe	100.8 ± 3.3	43.5	cubic	298	48.95	15.48	—	—	—
HgSeO ₃	162.3	365.3	cryst	298	83.68	61.92	—	—	—
HgTe	111.5 ± 1.7	32.2 ± 5.0	cubic	298	52.09	9.08	—	—	—
Ho	75.0	0.0	hcp	298	35.46	-22.07	-2.96	18.83	—
			bcc	1713	28.03	—	—	—	4.7
			liq	1745	43.93	—	—	—	12.1
Ho(g)	195.5	-300.8	gas	298	20.79	—	—	—	—
			gas	500	22.05	-2.95	-0.67	1.95	—
			gas	1500	7.88	9.72	54.75	-1.30	—
HoCl ₃	147.7 ± 14.6	1006.3 ± 2.9	monocl	298	95.56	12.97	-0.96	—	—
			liq	993	148.66	—	—	—	30.5
HoF ₃	110.9 ± 12.6	1714.2 ± 6.3	orth	298	106.86	0.50	-21.09	—	—
			orth	1343	163.34	-16.44	-239.07	—	—
			liq	1416	96.02	—	—	—	56.3
Ho ₂ O ₃	158.2 ± 0.4	1881.1 ± 5.4	cubic	298	125.85	6.95	-11.51	—	—
I ₂	116.1	0.0	orth	298	-50.65	246.91	27.97	—	—
			liq	387	80.67	—	—	—	15.8

I ₂ (g)	260.6	-62.4	gas	298	37.40	0.57	-0.62	—	—
I(g)	180.7	-106.8	gas	298	20.39	0.40	0.28	—	—
In	57.8	0.0		298	24.31	10.46	—	—	—
In(g)	173.7	-240.4	liq	430	30.29	-1.38	—	—	3.3
			gas	298	13.10	17.24	2.55	-2.97	—
				800	36.40	-5.23	-44.39	—	—
				1500	33.01	-5.15	—	0.59	—
				1900	23.81	—	85.23	-0.21	—
InAs	75.7 ± 0.8	57.7 ± 3.3	cubic	298	47.07	7.53	—	—	—
InBr	112.1 ± 4.2	20.5 ± 8.4	liq	1215	59.83	—	—	—	77.0
			orth	298	43.51	25.10	—	—	—
InBr(g)	259.5 ± 0.2	37.2	liq	558	60.67	—	—	—	24.3
InBr ₃	175.7 ± 12.6	410.9 ± 8.4	gas	298	37.57	0.42	-0.73	—	—
InCl	95.0 ± 6.3	186.2 ± 8.4	cryst	298	82.01	54.39	—	—	—
			cubic	298	35.15	41.84	—	—	—
			β	393	58.58	—	—	—	6.9
			liq	498	62.76	—	—	—	9.2
InCl ₂	122.2 ± 6.3	362.8 ± 16.7	orth	298	58.58	50.21	—	—	—
InCl ₃	141.0 ± 8.4	537.2 ± 8.4	monocl	298	78.66	55.65	—	—	—
InI	123.8 ± 6.3	115.9 ± 8.4	orth	298	48.12	12.55	—	—	—
			liq	638	60.67	—	—	—	22.4
InI ₃	203.3 ± 10.5	234.7 ± 8.4	monocl	298	164.01	—	—	—	—
			liq	480	135.98	—	—	—	20.1
InN	43.5 ± 5.9	138.1 ± 10.0	hex	298	38.07	12.13	—	—	—
In ₂ O ₃	107.9 ± 3.3	925.9 ± 1.7	cubic	298	121.34	13.39	-30.12	—	—
InP	59.7 ± 0.4	75.3 ± 8.4	cubic	298	41.00	14.64	—	—	—
			β	910	55.23	—	—	—	0.4
			liq	1328	58.58	—	—	—	62.8
InS	71.0 ± 0.8	133.9 ± 10.5	orth	298	42.51	18.83	—	—	—
			liq	965	60.67	—	—	—	36.0
In ₂ S ₃	163.6 ± 2.5	355.6 ± 20.9	cubic	298	128.95	3.26	-10.63	—	—
			tetrag	660	97.78	55.40	—	—	1.1
			gamma	1100	159.41	—	—	—	4.0
In ₂ (SO ₄) ₃	302.1 ± 2.1	2725.5 ± 3.3	hex	298	200.20	251.04	—	—	—
InSb	87.1 ± 0.8	30.5 ± 0.8	cubic	298	44.77	15.06	—	—	—
			liq	798	61.92	—	—	—	47.7
InSe	81.6 ± 4.2	118.0 ± 12.6	rhomb	298	45.44	16.32	—	—	—
In ₂ Se ₃	201.3 ± 16.7	326.4 ± 16.7	hex	298	59.91	270.50	—	—	—
			hex	470	165.27	—	—	—	1.4
In ₂ Te	156.9 ± 10.5	79.9 ± 2.5	orth	298	56.48	36.82	—	—	—
InTe	105.7 ± 1.7	72.0 ± 1.7	tetrag	298	41.97	19.37	—	—	—
			liq	965	60.67	—	—	—	3.7

TABLE I—continued

Substance	$S_{298} \pm \delta S$ (J/deg mol)	$-\Delta H_{298} \pm \delta H$ (kJ/mol)	Phase	T K	$C_p = A + BT + C/T^2 + DT^2$				H_f (kJ/mol)
					A	$B \times 10^3$ (J/deg mol)	$C \times 10^{-5}$ (J/deg mol)	$D \times 10^6$	
In ₂ Te ₃	234.3 ± 16.7	191.6 ± 4.2	cubic	298	110.88	41.84	—	—	—
			cubic	890	148.53	—	—	—	2.0
Ir	35.5	0.0	liq	944	154.81	—	—	—	81.6
			fcc	298	22.89	7.03	—	—	—
Ir(g)	193.5	-669.4	liq	2720	41.84	—	—	—	26.1
			gas	298	15.42	9.56	2.48	-1.54	—
IrCl ₃	114.6	245.2	cryst	298	84.94	18.83	-4.18	—	—
IrF ₆ (g)	357.7 ± 1.7	543.9 ± 83.7	gas	298	120.92	—	—	—	—
IrO ₂	51.0	249.4	tetrag	298	61.88	20.42	-10.96	—	—
Ir ₂ S ₃	51.0	249.4	orth	298	110.29	32.97	-9.62	—	—
IrS ₂	69.0	133.1	orth	298	68.58	15.77	-6.57	—	—
K	64.7	0.0	bcc	298	25.27	13.05	—	—	—
			liq	337	37.18	-19.12	—	12.30	2.4
K(g)	160.2	-89.0	gas	298	20.79	—	—	—	—
K ₂ (g)	249.6	-127.1	gas	298	37.41	2.06	-0.12	—	—
KBr	95.9 ± 0.4	393.6 ± 0.4	cubic	298	69.16	-45.56	-6.49	45.02	—
			liq	1007	69.87	—	—	—	25.5
KBr(g)	250.4 ± 0.2	179.9 ± 2.1	gas	298	37.40	0.86	-0.61	—	—
			cubic	298	40.02	25.47	3.64	—	—
KCl	82.6 ± 0.2	436.6 ± 0.4	liq	1045	73.60	—	—	—	26.3
			gas	298	37.15	0.96	-0.84	—	—
KCl(g)	239.0 ± 0.2	214.6	gas	298	137.28	4.03	-5.15	—	—
			orth	298	123.60	-80.75	—	80.75	—
KCaCl ₃	196.6	1244.3	liq	600	123.60	-80.75	—	—	—
			cubic	1014	178.66	—	—	—	41.8
KF	66.5 ± 0.4	566.1 ± 1.7	liq	298	47.36	13.26	-1.97	—	—
			liq	1131	66.94	—	—	—	29.3
KF(g)	226.5 ± 0.2	324.3 ± 5.0	gas	298	37.24	0.75	-2.05	—	—
K ₃ AlF ₆	284.5 ± 12.6	3326.3 ± 13.8	tetrag	298	238.61	41.00	-25.94	—	—
			orth	298	65.35	162.59	0.73	—	—
KBF ₄	133.9	1884.1 ± 2.1	cubic	556	146.23	—	—	—	13.8
			liq	843	167.15	—	—	—	18.0
KH	51.5 ± 6.3	57.8 ± 0.2	cubic	298	37.80	26.78	-6.99	—	—
			gas	298	35.33	1.99	-4.60	—	—

KHF ₂	104.3 ± 0.4	930.9 ± 1.3	tetrag	298	50.21	89.54	—	—	—
			cubic	470	100.25	—	—	—	12.0
			liq	512	104.60	—	—	6.6	
KI	106.3 ± 0.4	327.8	cubic	298	38.83	28.91	4.94	—	—
			liq	954	72.38	—	—	—	24.0
KI(g)	258.2 ± 0.2	125.5 ± 2.1	gas	298	37.40	0.88	-0.42	—	—
KCN	127.8 ± 1.7	113.4	cubic	298	66.27	0.42	—	—	—
			liq	895	75.31	—	—	—	14.6
K ₂ O	94.1	363.2 ± 2.9	cubic	298	95.65	-4.94	-11.05	23.68	—
K ₂ O ₂	113.0	495.0	rhomb	298	79.75	69.08	—	—	—
KO ₂	122.6 ± 4.2	284.5 ± 2.5	tetrag	298	87.65	10.67	-11.97	—	—
KBO ₂	80.0 ± 0.4	995.0 ± 8.4	hex	298	80.96	23.43	-18.66	—	—
			liq	1220	146.44	—	—	—	31.4
K ₂ B ₄ O ₇	208.4 ± 6.3	3326.3 ± 12.6	cryst	298	138.57	279.57	-35.48	-131.75	—
			liq	1089	380.53	77.19	—	—	104.2
K ₂ CO ₃	155.5 ± 0.4	1153.1 ± 4.2	monocl	298	97.95	92.09	-9.87	—	—
			liq	1173	209.20	—	—	—	27.9
KClO ₃	143.1 ± 1.3	389.1 ± 2.9	monocl	298	97.49	60.67	-13.39	—	—
KClO ₄	151.0 ± 1.3	427.2 ± 5.0	rhomb	298	138.49	62.76	-39.75	—	—
			cubic	574	138.49	62.76	-39.75	—	13.8
K ₂ CrO ₄	200.2 ± 2.9	1390.3 ± 4.2	orth	298	123.72	74.89	—	—	—
			hex	939	148.53	50.21	—	—	10.0
			liq	1250	209.20	—	—	—	31.8
KFeO ₂	87.9 ± 9.6	1238.5 ± 12.6	cryst	298	100.00	23.85	-11.72	—	—
KOH	78.9 ± 0.8	424.7 ± 1.3	monocl	298	43.30	72.59	—	—	—
			cubic	516	78.66	—	—	—	6.4
KOH(g)	236.3 ± 1.3	232.6 ± 10.5	liq	679	83.09	—	—	—	8.6
			gas	298	50.84	4.29	-3.18	—	—
			rhomb	298	60.46	118.83	—	—	—
KNO ₃	132.8 ± 0.8	494.5 ± 1.7	hex	402	120.50	—	—	—	5.1
			liq	607	123.43	—	—	—	9.7
K ₃ PO ₄	211.7 ± 6.3	1988.2 ± 7.5	cubic	298	164.85	—	—	—	—
			cryst	298	164.56	41.46	-29.71	—	—
K ₂ HPO ₄	179.1 ± 1.3	1775.7 ± 2.9	tetrag	298	144.52	38.95	-35.15	—	—
KH ₂ PO ₄	134.9 ± 0.8	1568.0 ± 2.5	cubic	298	66.94	25.94	—	—	—
			cubic	1050	142.34	—	—	—	10.5
K ₂ S	115.1 ± 14.6	376.6 ± 12.6	liq	1221	100.96	—	—	—	16.2
			orth	298	142.38	10.75	-19.08	80.75	—
K ₂ SO ₄	175.6 ± 1.0	1438.5 ± 1.3	hex	857	114.06	81.59	—	—	8.6
			liq	1342	200.00	—	—	—	34.7
			—	—	—	—	—	—	—

TABLE I—continued

Substance	$S_{298} \pm \delta S$ (J/deg mol)	$-\Delta H_{298} \pm \delta H$ (kJ/mol)	Phase	T K	$C_p = A + BT + C/T^2 + DT^2$				H_f (kJ/mol)
					A	$B \times 10^3$	$C \times 10^{-5}$	$D \times 10^6$	
$K_2Si_2O_5$	190.6 ± 0.4	2508.7 ± 8.4	monocl	298	191.84	36.57	-37.15	—	—
			β	510	157.99	90.83	-9.96	—	1.3
			gamma	867	224.22	4.44	—	—	1.6
			liq	1318	275.31	—	—	—	35.2
K_2SiO_3	146.1 ± 0.8	1589.9 ± 6.3	orth	298	118.91	48.79	-14.14	—	—
			liq	1249	167.36	—	—	—	50.2
$K_2Si_4O_9$	265.7 ± 12.6	4315.8 ± 15.1	tricli	298	253.22	159.37	—	—	—
			β	865	391.37	16.19	—	—	3.3
			liq	1043	410.03	—	—	—	87.9
$KAl(SO_4)_2$	204.6 ± 1.3	2470.2 ± 3.3	hex	298	234.14	82.34	-58.41	—	—
$K_2O \cdot Al_2O_3 \cdot 2SiO_2$	266.1	4217.1	kaliop	298	239.58	—	—	—	—
$K_2O \cdot Al_2O_3 \cdot 4SiO_2$	368.2	6068.9	leucit	298	244.60	—	—	—	—
$K_2O \cdot Al_2O_3 \cdot 6SiO_2$	439.3	7914.0	microc	298	572.12	77.32	-190.46	—	—
$K_2O \cdot Al_2O_3 \cdot 6SiO_2(a)$	468.6	7908.2	andula	298	572.12	77.32	-190.46	—	—
$K_2O \cdot Al_2O_3 \cdot 6SiO_2(s)$	476.1	7903.2	sanidi	298	572.12	77.32	-190.46	—	—
K_2WO_4	175.7 ± 20.9	1581.6	monocl	298	113.39	125.52	—	—	—
			hex	650	194.56	—	—	—	10.5
			liq	1196	213.38	—	—	—	31.0
La	56.9	0.0	hex	298	26.44	2.33	—	—	—
			fcc	583	17.66	15.02	3.89	—	0.4
			bcc	1138	39.54	—	—	—	3.1
			liq	1191	34.31	—	—	—	6.2
La(g)	182.3	-430.0	gas	298	18.91	16.48	—	-5.15	—
				1400	32.51	—	-12.05	—	—
				1800	28.28	—	71.42	0.50	—
$LaAl_2$	98.7 ± 0.4	151.0 ± 33.5	cubic	298	69.45	14.23	—	—	—
$LaBr_3$	182.0	844.7 ± 1.7	hex	298	94.73	25.10	—	—	—
			liq	1062	144.35	—	—	—	54.0
$LaCl_3$	137.7 ± 0.8	1070.7 ± 1.3	hex	298	86.19	39.75	—	—	—
			liq	1131	125.52	—	—	—	54.4
$LaCl_3(g)$	364.4 ± 6.7	740.6 ± 6.7	gas	298	80.75	0.25	-2.93	—	—
LaF_3	113.4	1731.8 ± 5.0	hex	298	48.95	59.58	29.12	—	—
			liq	1766	152.72	—	—	—	50.2
$LaF_3(g)$	327.6 ± 2.9	1287.8	gas	298	82.68	—	-8.87	—	—
LaH_2	51.7 ± 0.4	201.3 ± 5.4	cubic	298	39.25	15.15	—	—	—

LaI ₃	214.6	656.9 ± 10.5	cryst	298	97.15	19.81	-2.73	—	—
			liq	1062	151.75	—	—	—	56.1
LaN	60.5 ± 0.8	299.2 ± 16.7	cubic	298	45.52	7.28	—	—	—
La ₂ O ₃	127.3 ± 0.4	1794.9 ± 2.9	cubic	298	120.71	12.89	-13.72	—	—
LaAlO ₃	85.4 ± 10.5	1793.9 ± 3.3	orth	298	111.80	15.48	-21.13	—	—
				623	111.80	15.48	-21.13	—	0.1
				800	111.80	15.48	-21.13	—	0.3
LaOCl	82.8 ± 10.5	1018.8 ± 9.2	tetrag	298	70.50	12.26	-4.60	—	—
La ₃ (MoO ₄) ₃	389.9 ± 5.4	4323.7 ± 11.7	monocl	298	329.36	—	—	—	—
LaPO ₄	121.3 ± 12.6	1912.5 ± 10.5	monocl	298	125.52	24.89	-27.82	—	—
La ₂ S ₃	165.0 ± 0.8	1184.1 ± 12.6	rhomb	298	116.52	14.64	—	—	—
LaS	73.2	472.4 ± 5.0	cubic	298	46.48	5.44	—	—	—
LaS(g)	252.5 ± 0.4	-129.7	gas	298	37.07	0.17	-2.38	—	—
La ₂ Se ₃	202.2 ± 0.8	933.0 ± 33.5	cubic	298	120.71	16.32	—	—	—
LaSe	81.2 ± 5.0	405.0	cubic	298	47.45	5.86	—	—	—
La ₂ Te ₃	231.7 ± 0.8	784.5 ± 25.5	cubic	298	128.16	13.39	—	—	—
Li	29.1	0.0	bcc	298	1.30	56.27	6.02	—	—
			liq	454	31.21	-5.27	2.05	2.64	3.0
Li(g)	138.7	-159.3	gas	298	20.79	—	—	—	—
			gas	1700	22.64	-2.09	—	0.59	—
Li ₂ (g)	196.9	-211.3	gas	298	37.03	1.72	-1.34	0.59	—
			gas	1200	51.13	-4.94	-77.61	—	—
			gas	2000	61.09	-18.16	—	3.64	—
LiBr	74.1 ± 0.4	351.0 ± 1.0	cubic	298	30.25	41.38	7.20	—	—
			liq	823	65.27	—	—	—	17.7
LiBr(g)	224.3 ± 0.2	156.9 ± 2.5	gas	298	37.03	0.84	-3.01	—	—
Li ₂ C ₂	58.6 ± 4.2	59.4 ± 8.4	cryst	298	101.84	10.21	-29.62	—	—
LiCl	59.3 ± 0.4	408.4 ± 0.4	cubic	298	41.42	23.39	—	—	—
			liq	883	73.39	-9.46	—	—	19.7
LiCl(g)	212.8 ± 0.4	195.4 ± 1.7	gas	298	36.80	0.89	-3.49	—	—
LiF	35.6 ± 0.2	615.0 ± 1.3	cubic	298	42.68	17.41	-5.31	—	—
			liq	1122	64.18	—	—	—	27.1
LiF(g)	200.2 ± 0.2	338.9 ± 1.3	gas	298	35.65	1.31	-4.27	—	—
Li ₂ F ₂ (g)	261.5	936.4	gas	298	81.59	2.26	-16.23	-0.54	—
Li ₃ F ₃ (g)	316.7	1404.2	gas	298	126.19	6.69	-22.93	-1.67	—
Li ₃ AlF ₆	187.9 ± 0.4	3376.5 ± 5.9	rhomb	298	205.94	109.83	-32.30	—	—
			tetrag	748	284.51	—	—	—	2.1
			cubic	848	294.97	—	—	—	1.3
			eps	978	305.43	—	—	—	0.4
			liq	1057	359.82	—	—	—	86.2
Li ₂ BeF ₄	130.5 ± 2.5	2272.7 ± 4.6	hex	298	92.05	147.95	-1.00	—	—
			liq	732	232.21	—	—	—	43.9

TABLE I—continued

Substance	$S_{298} \pm \delta S$ (J/deg mol)	$-\Delta H_{298} \pm \delta H$ (kJ/mol)	Phase	T K	$C_p = A + BT + C/T^2 + DT^2$				H_f (kJ/mol)
					A	$B \times 10^3$	$C \times 10^{-5}$ (J/deg mol)	$D \times 10^6$	
LiBeF ₃	89.1 ± 4.2	1650.6 ± 5.4	cryst	298	54.39	125.52	—	—	—
			liq	650	158.99	—	—	—	27.2
LiH	20.6 ± 0.4	90.7 ± 0.4	cubic	298	16.40	52.72	-2.93	—	—
			liq	964	58.58	—	—	—	22.1
LiH(g)	170.8 ± 0.4	-139.3 ± 1.7	gas	298	28.29	10.30	-1.37	-2.63	—
LiI	86.7 ± 0.4	270.3 ± 5.4	cubic	298	42.26	28.07	—	—	—
			liq	742	63.18	—	—	—	14.6
LiI(g)	232.1 ± 0.2	88.3	gas	298	37.15	0.84	-2.55	—	—
Li ₃ N	62.6 ± 0.4	164.8 ± 1.3	hex	298	56.53	85.77	-6.07	—	—
Li ₂ O	37.7 ± 0.2	597.9 ± 1.0	cubic	298	69.79	17.66	-18.49	—	—
			liq	1726	97.07	—	—	—	43.1
Li ₂ O(g)	232.6 ± 4.6	165.7 ± 5.4	gas	298	60.46	0.84	-9.33	—	—
Li ₂ O ₂	58.2 ± 6.3	633.9 ± 8.4	hex	298	52.22	76.15	—	—	—
LiAlO ₂	53.3 ± 1.3	1188.7 ± 4.2	hex	298	92.34	12.18	-25.02	—	—
			liq	1883	133.89	—	—	—	87.9
Li ₃ AsO ₄	173.2 ± 8.4	1623.4 ± 10.5	orth	298	161.92	—	—	—	—
LiBO ₂	51.7 ± 0.4	1019.2 ± 1.7	monocl	298	59.41	50.00	-12.34	—	—
			liq	1117	144.35	—	—	—	33.8
Li ₂ B ₄ O ₇	156.9 ± 2.9	3374.4 ± 8.8	tetrag	298	83.68	302.08	13.81	-84.31	—
			liq	1193	453.55	10.46	-53.97	3.77	120.5
LiB ₃ O ₅	96.2 ± 3.8	2335.9 ± 5.0	orth	298	155.98	44.81	-23.01	—	—
Li ₂ B ₈ O ₁₃	263.6	5947.6 ± 20.9	orth	298	377.82	219.66	-97.49	-78.66	—
Li ₂ CO ₃	90.2 ± 0.4	1215.5 ± 4.2	monocl	298	56.82	138.07	—	—	—
			β	623	132.38	—	—	—	—
			gamma	683	14.35	180.75	—	—	2.5
			liq	1000	185.43	—	—	—	44.8
LiClO ₄	119.5 ± 0.4	375.3 ± 1.3	cryst	298	137.24	44.64	-40.46	—	—
			liq	520	161.08	—	—	—	17.0
LiFeO ₂	75.3 ± 0.8	769.0 ± 5.4	cubic	298	81.17	51.67	-12.55	—	—
LiOH	42.8 ± 0.2	484.9 ± 0.4	tetrag	298	50.17	34.48	-9.50	—	—
			liq	744	87.11	—	—	—	20.9
LiOH(g)	210.5 ± 2.1	234.3 ± 6.3	gas	298	50.54	4.23	-5.02	—	—
Li ₂ HfO ₃	96.2 ± 8.4	1774.0 ± 5.4	monocl	298	134.72	34.39	-29.41	—	—
LiNO ₃	88.7 ± 7.5	483.2 ± 1.3	hex	298	62.68	88.70	—	—	—
			liq	526	111.29	—	—	—	25.9

LiNbO ₃	85.4 ± 4.2	1365.2	hex	298	114.93	24.35	-20.33	—	—
LiPO ₃	72.4 ± 2.9	1254.8 ± 3.8	monocl	298	58.37	94.14	—	—	—
Li ₂ S	60.7 ± 8.4	446.9 ± 2.1	cubic	298	66.32	20.17	—	—	—
Li ₂ SO ₄	114.0 ± 0.4	1437.2 ± 0.8	monocl	298	65.27	174.05	—	—	—
			cubic	848	607.52	-383.25	—	—	25.5
			liq	1130	207.94	—	—	—	9.3
Li ₂ Se	66.5 ± 8.4	420.1 ± 8.4	cryst	298	74.81	10.29	—	—	—
Li ₂ SiO ₃	79.9 ± 0.8	1648.5 ± 10.5	orth	298	126.90	28.24	-30.25	—	—
			liq	1474	167.36	—	—	—	28.0
Li ₂ O.Al ₂ O ₃ .2SiO ₂	207.5	4230.0	eucryp	298	308.57	56.90	-87.86	—	—
				1300	259.41	100.42	—	—	2.5
Li ₂ O.Al ₂ O ₃ .4SiO ₂	258.6	6092.7	α-spod	298	370.95	137.57	-83.68	—	—
Li ₂ O.Al ₂ O ₃ .4SiO ₂ (β)	308.8	6036.7	β-spod	298	414.38	91.21	-103.09	—	—
LiTaO ₃	90.0 ± 8.4	1419.2	hexag	298	117.78	19.54	-20.92	—	—
Li ₂ Te	77.4	355.6	cryst	298	77.40	16.74	—	—	—
Li ₂ TiO ₃	91.8 ± 0.8	1669.8 ± 10.5	cubic	298	143.39	13.22	-33.47	—	—
			monocl	1485	125.52	33.47	—	—	11.5
			liq	1820	200.83	—	—	—	110.0
Li ₂ WO ₄	113.0 ± 12.6	1603.7	hex	298	101.67	106.27	—	—	—
			cubic	948	199.16	—	—	—	2.7
			liq	1013	205.02	—	—	—	28.5
Li ₂ ZrO ₃	91.6 ± 8.4	1762.3 ± 7.1	cryst	298	133.26	32.97	-28.20	—	—
Lu	51.0	0.0	hex	298	27.41	-5.40	0.25	8.28	—
Lu(g)	184.7	-427.6	liq	1936	47.91	—	—	—	19.2
			gas	298	12.47	20.93	2.48	-7.15	—
			gas	800	30.63	-1.59	-26.41	-0.32	—
			gas	1700	28.24	-1.26	—	—	—
			gas	1936	38.64	-8.18	-72.20	1.32	—
LuF ₃	94.8	1681.1	orth	298	89.12	19.25	-6.95	—	—
			hex	1230	106.44	—	—	—	25.1
			liq	1457	214.85	-0.54	-2347.20	—	30.3
LuF ₃ (g)	315.3	1246.4	gas	298	81.17	1.17	-9.71	—	—
Lu ₂ O ₃	110.0 ± 0.4	1878.2 ± 7.5	cubic	298	112.63	23.01	-15.69	—	—
Mg	32.7	0.0	hcp	298	21.13	11.92	0.15	—	—
			liq	923	34.31	—	—	—	8.5
Mg(g)	148.5	-147.1	gas	298	20.79	—	—	—	—
MgB ₂	36.0	92.0		298	49.79	22.72	-7.61	—	—
MgB ₄	51.9	105.0		298	66.94	49.66	-10.33	—	—
MgB ₁₂	89.5	221.8		298	151.46	—	—	—	—
MgBr ₂	117.2 ± 5.0	524.3 ± 2.5	hex	298	75.65	12.55	-5.40	—	—
			liq	984	104.60	—	—	—	39.3
MgCe	105.6 ± 3.8	16.1 ± 3.3	cubic	298	44.56	25.86	—	—	—

TABLE I—continued

Substance	$S_{298} \pm \delta S$ (J/deg mol)	$-\Delta H_{298} \pm \delta H$ (kJ/mol)	Phase	T K	$C_p = A + BT + C/T^2 + DT^2$				H_f (kJ/mol)
					A	$B \times 10^3$	$C \times 10^{-5}$ (J/deg mol)	$D \times 10^6$	
MgCl ₂	89.6 ± 0.8	641.4 ± 0.8	rhomb	298	79.08	5.94	-8.62	—	—
			liq	987	92.47	—	—	—	43.1
Mg ₂ Cu	92.3 ± 1.3	29.5 ± 1.3	orth	298	61.09	29.71	—	—	—
			liq	839	96.65	—	—	—	36.0
MgCu ₂	97.9 ± 1.7	35.1 ± 1.7	cubic	298	66.61	24.02	—	—	—
			liq	1092	95.40	—	—	—	41.8
MgF ₂	57.2 ± 0.4	1124.2 ± 1.3	rutile	298	77.11	3.89	-14.94	—	—
			liq	1536	94.56	—	—	—	58.6
Mg ₂ Ge	72.9 ± 1.9	115.2 ± 1.7	cubic	298	73.43	17.99	-3.18	—	—
MgH ₂	31.0 ± 4.2	76.1 ± 2.5		298	27.20	49.37	-5.86	—	—
MgI ₂	129.7 ± 8.4	366.9 ± 6.7	hex	298	75.86	13.72	-4.48	—	—
			liq	907	104.60	—	—	—	29.3
Mg ₃ N ₂	93.7 ± 7.5	461.5 ± 7.1	cubic	298	86.90	46.86	—	—	—
			β	823	83.97	44.60	—	—	0.5
			gamma	1061	119.24	—	—	—	0.9
MgO	26.9 ± 0.4	601.6 ± 0.4	cubic	298	48.99	3.43	-11.34	—	—
			liq	3105	60.67	—	—	—	77.8
MgAl ₂ O ₄	88.7 ± 4.2	2312.9 ± 2.5	cubic	298	153.97	26.78	-40.92	—	—
			liq	2408	230.12	—	—	—	196.6
MgCO ₃	65.9 ± 0.8	1095.8 ± 12.6	magnes	298	77.91	57.74	-17.41	—	—
MgCr ₂ O ₄	105.9 ± 0.8	1777.8 ± 3.3	spinel	298	167.44	14.90	-40.08	—	—
MgGeO ₃	70.5	1208.3 ± 5.0	cryst	298	119.79	14.73	-29.46	—	—
Mg(OH) ₂	63.2 ± 0.4	925.1 ± 2.1	hex	298	46.82	102.93	—	—	—
MgMoO ₄	118.8 ± 0.8	1400.4 ± 5.0	monocl	298	128.91	34.89	-24.85	-2.93	—
Mg(NO ₃) ₂	164.0	790.8		298	44.69	297.90	7.49	—	—
Mg ₃ (PO ₄) ₂	189.1 ± 0.8	3780.7 ± 16.7	cryst	298	121.46	335.77	1.09	-108.78	—
			liq	1621	462.12	7.74	—	—	121.3
Mg ₂ Pb	119.2 ± 12.6	48.1 ± 2.9	cubic	298	65.90	34.52	—	—	—
			orth	710	92.88	—	—	—	2.2
			liq	822	94.98	—	—	—	40.2
MgS	50.3 ± 0.4	345.6 ± 4.2	cubic	298	48.74	3.64	-3.79	—	—
MgSO ₄	91.6 ± 0.8	1284.9 ± 12.6	cryst	298	106.44	46.28	-21.88	—	—
			liq	1400	158.99	—	—	—	14.6
Mg ₃ Sb ₂	136.6 ± 14.6	300.0 ± 14.6	hex	298	112.97	40.17	—	—	—
			cubic	1198	160.67	—	—	—	73.3

Mg ₂ Si	63.8 ± 2.1	79.1 ± 7.9	cubic	298	68.45	23.01	-5.02	—	—
			liq	1350	93.30	—	—	—	97.9
Mg ₂ SiO ₄	95.2 ± 0.8	2176.9 ± 2.5	forst	298	144.31	38.74	-32.84	-5.48	—
			liq	2163	205.02	—	—	—	71.1
MgSiO ₃	67.9 ± 0.8	1548.5 ± 3.8	clino	298	92.05	33.05	-17.78	—	—
				903	120.33	—	—	—	0.7
				1258	122.42	—	—	—	1.6
			liq	1850	146.44	—	—	—	75.3
2MgO.2Al ₂ O ₃ .5SiO ₂	407.1	9113.2	cord	298	626.34	91.21	-200.83	—	—
3MgO.2SiO ₂ .2H ₂ O	222.2	4364.7	serp	298	317.23	132.21	-73.55	—	—
7MgO.8SiO ₂ .H ₂ O	559.0	12088.0	anthop	298	832.62	142.67	-218.82	—	—
3MgO.4SiO ₂ .H ₂ O	260.7	5916.2	talc	298	353.00	175.27	-74.27	—	—
MgTe	74.5 ± 10.5	209.2 ± 25.1	hex	298	37.66	10.46	—	—	—
Mg ₂ TiO ₄	115.1 ± 6.3	2164.4 ± 2.1	tet/cu	298	152.38	34.06	-30.54	—	—
			liq	2013	228.45	—	—	—	129.7
MgTiO ₃	74.6 ± 1.3	1572.6 ± 2.1	trig	298	118.53	13.60	-27.91	—	—
			liq	1953	163.18	—	—	—	90.4
MgTi ₂ O ₅	135.6 ± 6.3	2342.0 ± 2.9	orth	298	170.41	38.37	-31.30	—	—
			liq	1963	261.50	—	—	—	146.4
MgUO ₄	131.9 ± 0.8	1856.9 ± 2.9		298	110.25	66.78	-23.43	—	—
MgV ₂ O ₆	160.7 ± 2.9	2200.8 ± 5.4		298	231.29	-6.09	-64.77	-2.93	—
Mg ₂ V ₂ O ₇	200.0 ± 3.8	2834.7 ± 8.4		298	284.60	4.06	-74.22	-5.82	—
MgWO ₄	101.0 ± 0.8	1517.1 ± 2.9		298	115.02	42.30	-15.77	—	—
Mn	32.0	0.0	alpha	298	23.85	14.14	-1.57	—	—
			beta	990	34.85	2.76	—	—	2.2
			gamma	1360	25.23	14.90	-1.85	—	2.2
			delta	1410	46.44	—	—	—	1.8
			liq	1517	46.02	—	—	—	14.6
Mn(g)	173.6	-280.7	gas	298	20.79	—	—	—	—
			gas	1600	18.70	0.79	21.21	—	—
MnAs	77.1 ± 0.4	56.9 ± 4.2	hex	298	70.71	—	—	—	—
Mn ₂ B	66.4	91.6	tetrag	298	69.04	22.80	-16.57	—	—
MnB	36.0	70.7	orth	298	42.47	15.90	-10.13	—	—
Mn ₃ B ₄	118.0	236.4	orth	298	122.59	44.77	-49.92	—	—
MnB ₂	44.4	94.1	hex	298	64.43	16.99	-25.02	—	—
MnBr ₂	138.1 ± 10.5	384.9 ± 8.4	hex	298	67.91	24.81	—	—	—
			liq	971	100.42	—	—	—	33.5
MnCl ₂	118.2 ± 0.4	481.2 ± 0.8	hex	298	75.48	13.22	-5.73	—	—
			liq	923	94.56	—	—	—	37.7
MnCl ₂ (g)	295.4 ± 6.3	263.6 ± 2.1	gas	298	64.98	—	-6.15	—	—

TABLE I—continued

Substance	$S_{298} \pm \delta S$ (J/deg mol)	$-\Delta H_{298} \pm \delta H$ (kJ/mol)	Phase	T K	$C_p = A + BT + C/T^2 + DT^2$				H_f (kJ/mol)
					A	$B \times 10^3$	$C \times 10^{-5}$	$D \times 10^6$	
MnF ₂	93.3 ± 0.4	846.8	tetrag liq	298	61.92	23.85	-1.97	—	—
				1203	92.05	—	—	—	23.0
MnO	59.8 ± 0.8	384.9 ± 1.3	cubic liq	298	46.48	8.12	-3.68	—	—
				2058	60.67	—	—	—	54.4
Mn ₃ O ₄	154.8 ± 6.3	1387.4 ± 1.7	tetrag cubic	298	144.77	45.44	-12.97	—	—
				1440	210.04	—	—	—	20.9
Mn ₂ O ₃	110.5 ± 2.1	958.1 ± 2.1	orth	298	112.26	35.06	-13.71	—	—
MnO ₂	53.1 ± 0.4	520.9 ± 1.3	tetrag	298	69.45	10.21	-16.23	—	—
MnAl ₂ O ₄	103.8 ± 2.1	2100.4 ± 6.3	cubic	298	153.13	25.94	-32.22	—	—
MnCO ₃	109.6 ± 1.3	881.6 ± 4.6	hex	298	79.83	50.21	—	—	—
MnFe ₂ O ₄	154.0	1228.8 ± 5.0	cubic	298	145.60	45.27	-8.79	—	—
MnMoO ₄	136.0	1191.6 ± 9.6	monocl	298	108.78	51.30	—	—	—
MnP	52.3 ± 9.2	96.2 ± 16.7	rhomb	298	44.94	10.46	—	—	—
MnS	80.3 ± 0.8	214.2 ± 2.1	cubic liq	298	47.70	7.53	—	—	—
				1803	66.94	—	—	—	26.4
MnS(g)	238.9	-265.7 ± 12.6	gas	298	36.36	—	-3.01	—	—
MnS ₂	99.9 ± 0.4	207.1	cubic	298	69.71	17.66	-4.35	—	—
MnSO ₄	112.3 ± 1.3	1066.1 ± 4.6	orth	298	122.38	37.32	-29.50	—	—
Mn ₂ Sb	136.8 ± 6.3	32.6 ± 3.3	tetrag	298	66.94	29.29	—	—	—
MnSb	92.5 ± 4.2	27.2 ± 2.5	hex	298	46.02	20.29	—	—	—
MnSe	90.8 ± 1.7	155.6 ± 10.5	cubic	298	48.79	7.70	—	—	—
Mn ₃ Si	103.8 ± 1.3	110.5 ± 10.5	cubic	298	100.88	52.09	-14.73	—	—
Mn ₅ Si ₃	238.5 ± 3.3	244.3 ± 20.9	hex liq	298	201.38	54.14	-19.58	—	—
				1573	324.68	—	—	—	173.2
MnSi	46.2 ± 1.3	65.3 ± 5.4	cubic liq	298	49.33	12.76	-6.40	—	—
				1548	78.66	—	—	—	59.4
MnSi _{1.7}	56.1 ± 1.0	75.7 ± 8.4	tetrag	298	71.92	4.60	-13.05	—	—
Mn ₂ SiO ₄	163.2 ± 4.2	1730.9 ± 4.2	orth liq	298	159.08	19.50	-31.13	—	—
				1620	243.09	—	—	—	88.7
MnSiO ₃	102.5 ± 2.1	1320.9 ± 2.5	rhodon liq	298	110.54	16.23	-25.77	—	—
				1564	151.67	—	—	—	66.9
MnSn ₂	130.9 ± 3.8	27.4 ± 2.9	tetrag	298	92.38	1.26	-11.38	—	—
MnTe	93.7 ± 1.7	109.2 ± 3.8	hex	298	74.35	—	—	—	—
				307	56.69	2.76	—	—	—

MnTe ₂	145.0 ± 0.4	123.4 ± 3.8	cubic	298	76.65	4.18	—	—	—
Mn ₂ TiO ₄	170.3	1750.0	tetrag	298	168.20	17.41	-25.56	—	—
MnTiO ₃	105.0 ± 0.8	1359.0	hex	298	121.67	9.29	-21.88	—	—
MnWO ₄	140.6 ± 8.4	1305.8 ± 9.2	monocl	298	108.78	51.30	-34.73	8.87	—
Mo	28.6	0.0	bcc	298	28.52	-4.42	-3.62	4.28	—
			liq	2896	40.33	—	—	—	39.1
Mo(g)	181.8	-658.1	gas	298	20.79	—	—	—	—
			gas	1200	35.40	-13.68	-49.54	3.68	—
Mo ₂ B	52.6 ± 8.4	132.2 ± 25.1	tetrag	298	78.45	4.56	-19.37	2.80	—
			liq	2648	111.71	—	—	—	138.1
MoB	25.3 ± 8.4	123.8 ± 16.7	tetrag	298	45.40	5.82	-13.05	—	—
			liq	2873	80.75	—	—	—	55.2
Mo ₂ C	65.8 ± 0.4	52.3 ± 2.5	orth	298	64.27	23.60	-9.50	4.48	—
			hex	1500	79.50	8.37	—	—	21.8
			liq	2795	100.42	—	—	—	70.3
MoCl ₄	159.0 ± 2.5	504.2 ± 20.9	monocl	298	120.50	—	—	—	—
			β	350	107.95	58.58	—	—	4.6
			liq	600	149.79	—	—	—	21.6
MoCl ₄ (g)	371.7	383.7 ± 16.7	gas	298	107.86	-0.42	-9.04	2.76	—
MoCl ₅	238.5 ± 12.6	526.8 ± 9.2	monocl	298	165.69	—	—	—	—
			liq	470	88.28	—	—	—	18.8
MoCl ₅ (g)	398.1 ± 12.6	446.9 ± 9.2	gas	298	136.11	-0.75	-13.26	0.05	—
MoCl ₆ (g)	419.7 ± 16.7	460.2 ± 41.8	gas	298	157.53	0.01	-12.13	—	—
MoF ₅	178.7 ± 12.6	1387.4 ± 4.2	monocl	298	154.81	—	—	—	—
			liq	319	155.64	—	—	—	12.6
MoF ₅ (g)	347.3 ± 8.4	1240.6 ± 5.4	gas	298	133.60	0.17	-27.66	0.08	—
Mo ₂ F ₁₀ (g)	530.9 ± 16.7	2694.5 ± 10.5	gas	298	264.01	13.97	-50.38	0.17	—
MoF ₆ (g)	350.6 ± 0.4	1556.9 ± 1.7	gas	298	153.76	1.59	-30.75	—	—
MoO ₂	46.4 ± 0.4	587.9 ± 1.7	monocl	298	65.61	11.55	-12.13	—	—
MoO ₂ (g)	277.0 ± 8.4	8.4 ± 12.6	gas	298	55.65	0.44	-10.46	0.30	—
MoO ₃	77.8 ± 0.8	745.2 ± 0.8	orth	298	75.19	32.64	-8.79	—	—
			liq	1074	126.90	—	—	—	48.5
MoO ₃ (g)	283.8 ± 4.2	345.2 ± 20.9	gas	298	74.89	6.95	-15.44	-1.46	—
Mo(CO) ₆	327.2 ± 1.3	1059.8 ± 10.5	cubic	298	205.23	154.81	—	—	—
Mo ₂ S ₃	115.0 ± 8.4	406.7 ± 8.4	monocl	298	110.29	32.97	-9.62	—	—
MoS ₂	62.6 ± 0.4	275.7 ± 2.5	hex	298	71.65	7.45	-9.20	—	—
Mo ₃ Si	106.3 ± 1.3	116.3 ± 9.2	cubic	298	85.86	22.68	0.32	—	—
Mo ₅ Si ₃	207.9 ± 9.2	310.0 ± 22.2	tetrag	298	183.34	35.02	-12.01	—	—
MoSi ₂	65.1 ± 3.8	131.8 ± 8.4	tetrag	298	67.86	11.97	-6.57	—	—
N ₂ (g)	191.5	0.0	gas	298	30.42	2.54	-2.37	—	—
N(g)	153.2	-472.7	gas	298	20.79	—	—	—	—
			gas	1800	20.68	0.05	—	—	—

TABLE I—continued

Substance	$S_{298} \pm \delta S$ (J/deg mol)	$-\Delta H_{298} \pm \delta H$ (kJ/mol)	Phase	T K	$C_p = A + BT + C/T^2 + DT^2$				H_f (kJ/mol)
					A	$B \times 10^3$ (J/deg mol)	$C \times 10^{-5}$	$D \times 10^6$	
NH ₃ (g)	192.7	45.9	gas	298	37.32	18.66	-6.49	—	—
NH ₄ Br	111.3 ± 0.6	270.7 ± 1.0	cubic	298	124.68	-35.15	-23.85	—	—
				413	98.32	—	-33.89	—	3.6
NH ₄ Cl	95.0 ± 2.1	314.6 ± 0.4	cubic	298	38.87	160.25	—	—	—
				458	34.64	111.71	—	—	3.9
NH ₄ F	72.0 ± 0.2	463.6 ± 2.5	cubic	298	65.27	—	—	—	—
NH ₄ I	113.0	201.7	cubic	298	60.29	71.76	—	—	—
N ₂ O(g)	219.9 ± 0.2	-82.0 ± 0.6	gas	298	46.11	11.38	-10.04	-2.13	—
NO(g)	210.7 ± 0.2	-90.3 ± 0.4	gas	298	29.41	3.85	-0.59	—	—
N ₂ O ₃ (g)	309.2 ± 0.8	-82.8 ± 1.0	gas	298	80.10	17.82	-18.24	-3.51	—
NO ₂ (g)	239.9 ± 0.4	-33.1 ± 0.8	gas	298	35.69	22.91	-4.70	-6.33	—
				1500	53.76	1.28	—	—	—
N ₂ O ₄ (g)	304.0 ± 0.8	-9.4 ± 1.7	gas	298	101.11	24.31	-28.58	-4.85	—
N ₂ O ₅ (g)	355.6 ± 10.5	-11.7 ± 1.7	gas	298	118.66	35.48	-29.20	-10.50	—
NO ₃ (g)	252.7	-71.1	gas	298	67.78	12.55	-22.51	-2.64	—
NOBr(g)	273.4	-82.1	gas	298	51.00	3.39	-6.28	—	—
NOCl(g)	261.6 ± 0.4	-52.4 ± 0.8	gas	298	42.80	8.91	-0.71	—	—
NH ₄ ClO ₄	184.1	295.8 ± 5.0	orth	298	67.78	202.38	—	—	—
NOF(g)	248.0 ± 0.4	66.1 ± 3.3	gas	298	48.07	6.07	-7.61	—	—
NH ₄ NO ₃	151.0 ± 0.4	365.4 ± 0.8	orth	298	140.16	—	—	—	—
				305	59.41	196.65	—	—	1.7
				357	150.62	—	—	—	1.3
				399	158.99	—	—	—	4.4
(NH ₄) ₂ SO ₄	220.1 ± 1.3	1180.3 ± 0.8	orth	298	103.55	280.75	—	—	—
Na	51.3	0.0	bcc	298	82.47	-369.32	—	627.60	—
				371	37.51	-19.22	—	10.64	2.6
Na(g)	153.6	-107.5	gas	298	20.79	—	—	—	—
Na ₂ (g)	230.1	-142.3	gas	298	32.55	14.35	1.30	-7.74	—
				1200	51.76	-9.58	-22.09	—	—
				1900	69.83	-30.88	—	6.07	—
				298	47.91	13.31	—	—	—
NaBr	86.9 ± 0.4	361.3 ± 0.4	cubic	298	47.91	13.31	—	—	—
NaBr(g)	241.1 ± 0.4	144.3 ± 2.1	gas	1020	62.34	—	—	—	26.1
				298	36.61	1.19	—	—	—

NaCl	72.1 ± 0.4	411.3 ± 0.4	cubic	298	45.94	16.32	—	—	—
			liq	1074	77.78	-7.53	—	—	28.2
			liq	1500	66.94	—	—	—	—
NaCl(g)	229.7 ± 0.4	182.0 ± 0.8	gas	298	37.33	0.74	-1.59	—	—
NaAlCl ₄	184.1 ± 8.4	1138.5 ± 3.3	rhomb	298	63.60	262.34	—	—	—
NaF	51.2 ± 0.2	572.8 ± 1.7	cubic	298	46.61	9.92	-2.13	—	—
			liq	1269	70.54	—	—	—	33.5
NaF(g)	217.6 ± 0.4	292.9	gas	298	37.15	0.77	-2.89	—	—
Na ₃ AlF ₆	238.5 ± 1.7	3312.1 ± 5.0	monocl	298	172.26	158.45	—	—	—
			cubic	838	282.00	—	—	—	8.4
			cubic	1154	355.64	—	—	—	0.4
			liq	1284	396.22	—	—	—	107.5
NaBF ₄	145.3 ± 0.8	1844.7 ± 3.3	orth	298	50.96	217.57	3.68	—	—
			monocl	516	152.63	—	—	—	6.7
			liq	679	165.35	—	—	—	13.6
NaH	40.0 ± 0.4	56.5 ± 0.4	cubic	298	26.15	42.80	-2.26	—	—
NaI	98.5 ± 0.4	287.9 ± 0.8	cubic	298	48.87	12.05	—	—	—
			liq	934	64.85	—	—	—	23.6
NaCN	115.7 ± 0.8	90.8	cubic	298	67.36	5.44	—	—	—
			liq	837	79.50	—	—	—	18.4
Na ₂ O	75.1 ± 0.4	415.1 ± 0.8	cubic	298	55.48	70.21	-4.14	-30.54	—
			β	1023	82.30	12.76	—	—	1.8
			gamma	1243	84.85	10.71	—	—	11.9
			liq	1405	104.60	—	—	—	47.7
Na ₂ O ₂	94.8 ± 1.3	513.0 ± 6.3	hex	298	85.48	42.68	-8.03	—	—
			β	785	113.60	—	—	—	5.6
NaO ₂	115.9 ± 1.3	260.7 ± 3.3	cubic	298	59.96	40.84	—	—	—
NaO(g)	228.4 ± 1.7	-102.5 ± 20.9	gas	298	37.24	0.92	-2.13	—	—
NaAlO ₂	184.1 ± 0.8	1138.5 ± 5.9	orth	298	89.16	15.27	-17.95	—	—
			tetrag	740	89.16	15.27	-17.95	—	1.3
Na ₃ AsO ₄	186.2 ± 5.4	1540.1 ± 6.7	rhomb	298	170.29	—	—	—	1.8
NaBO ₂	73.5 ± 0.4	975.7 ± 2.5	hex	298	79.54	23.56	-18.41	—	—
			liq	1240	146.44	—	—	—	33.5
Na ₂ B ₄ O ₇	189.5 ± 0.8	3284.9 ± 5.9	tricli	298	206.10	77.11	-37.49	—	—
			liq	1016	444.88	—	—	—	81.2
NaB ₃ O ₅	116.1 ± 4.6	2299.1 ± 7.1	monocl	298	40.92	282.29	4.69	-95.81	—
Na ₂ B ₈ O ₁₃	276.1 ± 16.7	5902.8 ± 10.0	monocl	298	345.18	226.35	-95.81	—	—
Na ₂ CO ₃	135.0 ± 0.8	1129.7 ± 0.8	monocl	298	11.00	244.05	24.48	—	—
			hex	723	50.08	129.08	—	—	0.7
			liq	1130	189.54	—	—	—	29.7
NaClO ₄	143.9 ± 0.4	377.8 ± 1.7	orth	298	138.49	54.10	-39.33	—	—

TABLE I—continued

Substance	$S_{298} \pm \delta S$ (J/deg mol)	$-\Delta H_{298} \pm \delta H$ (kJ/mol)	Phase	T K	$C_p = A + BT + C/T^2 + DT^2$				H_f (kJ/mol)
					A	$B \times 10^3$	$C \times 10^{-5}$	$D \times 10^6$	
NaClO ₃	126.4 ± 4.2	357.7 ± 1.3	cubic	298	54.68	154.81	—	—	—
			liq	528	133.05	—	—	—	22.6
NaCrO ₂	81.2 ± 5.0	876.5 ± 4.6	hex	298	94.56	15.06	-8.58	—	—
Na ₂ CrO ₄	176.6 ± 0.4	1334.3 ± 9.2	orth	298	101.04	140.00	—	—	—
			hex	694	149.95	51.59	—	—	9.6
			liq	1070	204.60	—	—	—	24.3
NaFeO ₂	88.3 ± 0.8	698.3 ± 5.9	orth	298	98.83	14.23	-16.74	—	—
				1270	98.83	14.23	-16.74	—	2.2
			liq	1620	125.52	—	—	—	49.4
NaOH	64.4 ± 0.4	425.9 ± 0.8	orth	298	71.76	-110.88	—	235.77	—
			cubic	572	85.98	—	—	—	7.2
			liq	596	89.45	-5.86	—	—	6.6
NaHCO ₃	101.3 ± 0.8	949.1 ± 0.8	monocl	298	45.31	143.09	—	—	—
Na ₂ MoO ₄	159.4 ± 1.3	1534.3 ± 11.3	cubic	298	142.80	58.32	-16.65	—	—
			rhomb	718	-215.48	506.26	—	—	21.8
			rhomb	866	-585.76	891.19	—	—	2.1
			delta	915	1105.41	-1204.99	—	—	8.3
			liq	962	212.97	—	—	—	21.4
Na ₂ Mo ₂ O ₇	250.6 ± 2.1	2361.0 ± 12.6	orth	298	173.64	144.35	—	—	—
NaNO ₃	116.3 ± 0.4	468.2 ± 1.3	hex	298	25.69	225.94	—	—	—
			liq	580	155.64	—	—	—	15.1
			rhomb	298	52.93	115.06	—	—	—
NaPO ₃	95.5 ± 0.8	1220.1 ± 2.1	tetrag	298	153.47	—	—	—	—
Na ₃ PO ₄	173.8 ± 0.8	1916.9 ± 2.1	rhomb	298	241.12	—	—	—	—
Na ₄ P ₂ O ₇	270.3 ± 1.7	3166.5	cubic	298	83.16	13.81	-0.25	—	—
Na ₂ S	96.2 ± 14.6	366.1 ± 12.6	orth	298	82.34	154.35	—	—	—
Na ₂ SO ₄	149.6 ± 0.4	1389.5 ± 1.3		522	145.06	54.60	—	—	10.8
			hex	980	142.67	59.33	—	—	0.3
			liq	1157	197.40	—	—	—	23.0
Na ₂ SO ₄ ·7H ₂ O	411.7 ± 2.1	3456.8 ± 3.8	cryst	298	348.11	157.32	—	—	—
Na ₂ SO ₄ ·10H ₂ O	585.8 ± 0.8	4328.8 ± 4.6	cryst	298	585.76	—	—	—	—
Na ₂ SO ₃	146.0 ± 1.7	1095.0	hex	298	107.11	43.51	—	—	—
			liq	1184	182.00	—	—	—	25.9
Na ₂ SiF ₆	207.1 ± 0.8	2912.9 ± 3.8	hex	298	182.00	72.17	-15.27	—	—
			liq	1120	276.14	—	—	—	99.6

Na ₄ SiO ₄	195.8 ± 2.5	2101.2 ± 25.1	monocl	298	162.59	74.22	—	—	—
			liq	1393	259.41	—	—	—	57.7
Na ₂ SiO ₃	113.8 ± 0.8	1563.1	orth	298	130.29	40.17	-27.07	—	—
			liq	1361	179.08	—	—	—	52.3
Na ₂ Si ₂ O ₅	164.4 ± 2.9	2473.6 ± 5.0	monocl	298	185.69	70.54	-44.64	—	—
			orth	983	292.88	—	—	—	2.5
			liq	1147	261.08	—	—	—	35.6
Na ₂ O.Al ₂ O ₃ .4SiO ₂	266.9	6039.6 ± 18.8	jadeit	298	403.00	95.56	-99.37	—	—
Na ₂ O.Al ₂ O ₃ .6SiO ₂	420.1	7841.2 ± 10.0	l.alb	298	516.31	116.32	-125.60	—	—
			h.alb	973	565.59	81.67	-171.80	—	28.5
Na ₂ O.Al ₂ O ₃ .2SiO ₂	248.5	4163.5	nephel	298	55.48	590.78	—	—	—
				467	224.18	134.22	—	—	—
				980	224.18	134.22	—	—	17.1
				1180	344.01	11.05	—	—	—
Na ₂ Te	96.2	334.7 ± 25.1	cubic	298	73.22	13.81	—	—	—
Na ₂ TiO ₃	121.6 ± 0.4	1552.7 ± 2.1	cubic	298	135.19	46.78	-21.25	—	—
			β	560	108.57	71.13	—	—	1.7
			liq	1303	196.23	—	—	—	70.3
Na ₂ Ti ₂ O ₅	173.8 ± 0.8	2513.7 ± 62.8	orth	298	230.71	9.62	-52.63	—	—
			liq	1258	286.60	—	—	—	112.3
Na ₂ Ti ₃ O ₇	233.9 ± 0.8	3481.9 ± 4.2	monocl	298	294.76	20.63	-63.68	—	—
			liq	1401	393.92	—	—	—	155.2
Na ₃ UO ₄	198.2 ± 0.8	2023.8 ± 2.9	cubic	298	188.91	25.19	-20.92	—	—
Na ₂ UO ₄	166.1 ± 0.8	1889.5 ± 2.5	rhomb	298	162.55	25.90	-20.92	—	—
			β	1193	224.68	—	—	—	20.9
Na ₃ VO ₄	189.5 ± 1.7	1841.4 ± 10.5	cubic	298	188.28	25.73	-27.66	—	—
Na ₄ V ₂ O ₇	318.4 ± 1.7	3037.2 ± 10.5	cryst	298	323.42	28.87	-55.31	—	—
NaVO ₃	113.8 ± 0.8	1191.6 ± 10.5	monocl	298	127.70	3.14	-27.61	—	—
Na ₂ WO ₄	160.7 ± 1.3	1541.8	cubic	298	107.19	115.98	—	—	—
			β	864	209.20	—	—	—	34.4
			liq	969	209.20	—	—	—	23.8
Nb	36.6	0.0	bcc	298	27.78	-3.84	-2.55	3.60	—
			liq	2745	41.78	—	—	—	30.5
Nb(g)	186.1	-722.6	gas	298	32.13	-8.79	0.50	2.59	—
NbB ₂	37.4 ± 0.8	175.3 ± 16.7	hex	298	46.99	38.53	-9.41	—	—
NbBr ₅	305.4	556.1 ± 1.7	orth	298	116.78	130.54	—	—	—
			liq	540	184.10	—	—	—	35.6
NbBr ₅ (g)	449.2	443.5	gas	298	132.84	0.10	-6.28	—	—
Nb ₂ C	64.0 ± 0.4	195.0 ± 5.0		298	63.39	13.56	-3.47	—	—
NbC _{0.7}	31.9	116.7		298	39.92	6.49	-6.19	—	—
NbC	35.4 ± 0.4	141.4 ± 2.5	cubic	298	45.52	6.32	-9.04	—	—

TABLE I—continued

Substance	$S_{298} \pm \delta S$ (J/deg mol)	$-\Delta H_{298} \pm \delta H$ (kJ/mol)	Phase	T K	$C_p = A + BT + C/T^2 + DT^2$				H_f (kJ/mol)
					A	$B \times 10^3$ (J/deg mol)	$C \times 10^{-5}$	$D \times 10^6$	
NbCl ₄	179.9 ± 10.5	694.5 ± 6.3	orth	298	133.47	—	-12.13	—	—
NbCl ₅	214.2 ± 4.2	797.5 ± 4.2	monocl	298	148.53	—	—	—	—
			liq	479	184.10	—	—	—	33.9
			gas	298	133.13	—	-12.55	—	—
NbCl ₅ (g)	404.0 ± 3.3	703.3 ± 8.4	gas	298	133.13	—	-12.55	—	—
NbCr ₂	83.7 ± 0.4	20.9 ± 2.5	cubic	298	74.27	23.77	-7.36	—	—
NbF ₅	157.3 ± 2.1	1813.8 ± 4.2	monocl	298	139.33	—	—	—	—
			liq	352	177.82	—	—	—	12.2
NbF ₅ (g)	382.8	1719.2 ± 8.4	gas	298	130.67	1.09	-24.69	—	—
Nb ₂ N	79.5	253.1 ± 7.1	hex	298	62.38	17.11	—	—	—
			hex	1000	70.75	8.74	—	—	—
			cubic	298	36.36	22.59	—	—	—
NbN	43.9	236.4 ± 6.3	hex	600	43.81	8.31	—	—	—
			hex	1643	62.76	—	—	—	—
			liq	2320	62.76	—	—	—	46.0
			hex	298	42.97	8.87	-4.02	—	—
NbO	46.0 ± 8.4	419.7 ± 12.6	liq	2210	62.76	—	—	—	85.4
NbO(g)	238.9 ± 3.8	-198.7 ± 20.9	gas	298	35.52	1.09	-4.56	—	—
	54.5 ± 0.4	795.0 ± 8.4	tetrag	298	61.30	25.77	-10.21	—	—
NbO ₂			tetrag	1090	89.04	—	—	—	3.4
			tetrag	1200	83.05	—	—	—	—
			liq	2175	94.14	—	—	—	42.3
			gas	298	54.77	1.59	-10.17	—	—
NbO ₂ (g)	272.0 ± 8.4	200.0 ± 20.9	gas	298	54.77	1.59	-10.17	—	—
Nb ₂ O ₅	137.3 ± 1.3	1899.5 ± 4.2	orth	298	162.17	14.81	-30.63	—	—
			liq	1785	242.25	—	—	—	104.2
NbOCl ₂	121.3	774.0 ± 8.4	cryst	298	96.23	16.74	-7.11	—	—
			cryst	298	133.47	—	-12.13	—	—
NbOCl ₃	159.0 ± 10.5	880.7 ± 10.5	cryst	298	107.95	—	-8.37	—	—
NbOCl ₃ (g)	343.1	770.3	gas	298	107.95	—	-8.37	—	—
Nb ₅ Si ₃	251.0	451.9 ± 108.8	tetrag	298	189.12	30.79	-15.06	—	—
NbSi ₂	69.9 ± 10.5	138.1 ± 41.8	hex	298	63.18	15.36	-2.80	—	—
			hcp	298	14.66	26.92	4.48	—	—
Nd	71.1	0.0	bcc	1128	44.56	—	—	—	3.0
			liq	1289	48.79	—	—	—	7.1
			gas	298	17.95	19.29	-0.79	-8.45	—
Nd(g)	189.3	-327.6	gas	1000	28.79	1.42	-14.81	—	—

NdCl ₃	153.0 ± 0.8	1040.6 ± 2.1	hex	298	82.84	55.06	—	—	—
			liq	1032	146.44	—	—	—	48.5
NdF ₃	116.3 ± 8.4	1712.9 ± 7.5	hex	298	78.66	34.64	5.36	—	—
			liq	1650	133.89	—	—	—	54.8
NdH ₂	58.9 ± 0.4	202.1	cubic	298	38.24	16.11	—	—	—
NdI ₃	215.1	628.4	rhomb	298	90.86	35.82	-0.63	—	—
			β	847	117.40	—	—	—	13.8
			liq	1060	155.73	—	—	—	41.4
Nd ₂ O ₃	158.6 ± 0.4	1808.3 ± 3.3	cubic	298	115.77	29.79	-11.88	—	—
			hex	1395	155.64	—	—	—	0.6
NdOCl	79.9 ± 7.9	1005.8 ± 6.7	tetrag	298	68.62	19.12	-3.97	—	—
NdS	74.1 ± 4.2	464.8 ± 5.0	tetrag	298	46.19	8.37	—	—	—
Nd ₂ S ₃	185.4 ± 0.8	1125.5 ± 14.6	orth	298	118.53	13.35	—	—	—
Ni	29.9	0.0	fcc	298	11.17	37.78	3.18	—	—
			fcc	631	20.54	10.08	15.40	—	—
			liq	1728	38.91	—	—	—	17.2
Ni(g)	182.1	-430.1	gas	298	26.11	-1.30	-2.18	—	—
Ni ₃ Al	113.8	153.1 ± 4.6	cubic	298	88.49	32.22	—	—	—
NiAl	54.1	118.4 ± 4.2	cubic	298	41.84	13.81	—	—	—
			liq	1912	71.13	—	—	—	62.8
Ni ₂ Al ₃	136.4	282.4 ± 14.6	hexag	298	106.06	34.31	—	—	—
NiAl ₃	110.7	150.6 ± 6.3	ortho	298	84.10	35.15	—	—	—
NiAs	51.9	72.0	hex	298	44.10	12.97	—	—	—
Ni ₃ B	87.9	88.9	orth	298	95.40	26.36	-15.56	—	—
Ni ₂ B	66.3	63.8	tetrag	298	66.94	22.18	-12.05	—	—
Ni ₄ B ₃	110.1	179.1	orth	298	156.06	49.16	-37.78	—	—
NiB	28.5	46.4	orth	298	42.97	14.64	-11.25	—	—
NiBi	88.3	7.7	hex	298	46.02	19.25	—	—	—
NiBr ₂	120.9	213.8 ± 2.5	hex	298	69.04	19.66	—	—	—
NiBr ₂ (g)	320.9	-11.7	gas	298	68.70	-1.00	-4.94	—	—
			gas	1100	67.20	—	—	—	—
NiBr(g)	262.4	-184.1	gas	298	39.87	0.79	-3.51	—	—
NiCl ₂	98.1 ± 0.4	304.6 ± 2.1	hex	298	73.22	13.22	-4.98	—	—
NiCl(g)	251.3	-179.9	gas	298	39.66	0.84	-4.10	—	—
NiAl ₂ Cl ₈ (g)	610.9	1543.9	gas	298	251.37	8.58	-25.19	—	—
NiF ₂	73.6 ± 0.4	657.7 ± 2.1	tetrag	298	66.48	13.64	-5.73	—	—
NiF ₂ (g)	272.8 ± 2.5	330.0	gas	298	63.18	2.34	-10.13	—	—
NiF(g)	114.0	-104.6	gas	298	39.16	1.13	-6.15	—	—
NiH(g)	73.6	-393.3	gas	298	31.30	0.31	-2.72	—	—
NiI ₂	154.0	78.2	hex	298	65.90	24.27	—	—	—
NiI(g)	270.1	-246.9	gas	298	40.21	0.46	-3.35	—	—

TABLE I—continued

Substance	$S_{298} \pm \delta S$ (J/deg mol)	$-\Delta H_{298} \pm \delta H$ (kJ/mol)	Phase	T K	$C_p = A + BT + C/T^2 + DT^2$				H_f (kJ/mol)
					A	$B \times 10^3$	$C \times 10^{-5}$	$D \times 10^6$	
NiO	38.0 ± 0.4	239.7 ± 1.3	cubic	298	-20.88	157.23	16.28	—	—
			β	525	58.07	—	—	—	
			gamma	565	46.78	8.45	—	—	
NiO(g)	241.2	-309.6	gas	298	42.33	-0.51	-0.78	—	
NiAl ₂ O ₄	98.3 ± 3.8	1920.5 ± 4.6	cubic	298	159.20	23.35	-30.75	—	
NiCO ₃	86.2 ± 0.4	696.2 ± 12.6	hex	298	88.70	38.91	-12.34	—	
Ni(CO) ₄ (g)	415.5 ± 0.8	600.4 ± 4.2	gas	298	209.62	—	-53.56	—	
NiCr ₂ O ₄	129.7 ± 0.8	1375.7 ± 4.2	cubic	298	167.15	17.87	-21.05	—	
Ni(OH) ₂ (g)	291.2	255.2	gas	298	87.07	5.56	-26.48	—	
Ni ₃ P	106.3	220.1 ± 10.5	tetrag	298	77.82	33.47	—	—	
Ni ₅ P ₂	184.9	436.0 ± 16.7	cryst	298	135.14	56.48	—	—	
Ni ₂ P	77.4	184.9 ± 16.7	hex	298	57.95	23.01	—	—	
Ni ₆ P ₅	276.1	627.6 ± 62.8	cryst	298	241.00	71.13	—	—	
Ni ₃ S ₂	133.9 ± 0.8	216.3 ± 5.0	hex	298	110.79	51.67	-7.53	—	
			β	829	188.61	—	—	—	
			liq	1062	191.79	—	—	—	
NiS	53.0 ± 0.4	87.9 ± 6.3	rhomb	298	44.69	19.04	-2.89	—	
			hex	652	34.39	28.66	—	—	
			liq	1249	76.78	—	—	—	
Ni ₃ S ₄	186.6	301.2 ± 25.1	cubic	298	121.96	143.68	—	—	
NiSO ₄	101.3 ± 1.7	873.2 ± 1.3	orth	298	125.94	27.82	-32.64	—	
NiSb	78.2	83.7	hex	298	46.23	11.63	—	—	
NiSe ₂	103.5 ± 0.4	64.6 ± 2.9	cubic	298	76.65	13.14	-4.60	—	
NiSeO ₃	103.3	567.4	cryst	298	79.50	59.83	—	—	
NiSi	44.4 ± 3.3	89.5 ± 7.5	orth	298	48.74	6.15	-6.53	—	
			liq	1265	79.50	—	—	—	
Ni ₃₅ Si ₆₅	22.0 ± 1.7	31.4 ± 4.2	cubic	298	25.02	3.68	-3.60	—	
Ni ₂ SiO ₄	110.0 ± 8.4	1400.8 ± 9.2	orth	298	185.10	19.87	-56.90	—	
NiTe	80.0 ± 0.8	35.6	hex	298	54.48	6.78	-3.83	—	
Ni ₃ Ti	138.1 ± 14.6	139.3 ± 8.4	hex	298	108.95	16.86	—	—	
NiTl ₂	83.7	80.8 ± 7.9	cubic	298	67.99	23.43	—	—	
NiTlO ₃	82.8 ± 4.2	1202.1 ± 6.3	trigon	298	115.10	15.98	-18.20	—	
NiWO ₄	118.0 ± 6.3	1128.8 ± 2.1	monocl	298	110.62	53.39	-4.39	—	
O ₂ (g)	205.1	0.0	gas	298	29.96	4.18	-1.67	—	

O ₃ (g)	238.8 ± 0.4	-142.3 ± 2.1	gas	298	44.35	15.61	-8.62	-4.35	—
O(g)	161.0	-249.2	gas	298	20.88	-0.05	0.97	—	—
Os	32.6	0.0	hcp	298	23.56	3.85	—	—	—
Os(g)	192.5	-788.0	gas	298	13.22	11.13	5.48	-1.59	—
			gas	3200	33.18	—	-229.83	0.21	—
OsO ₂	51.9 ± 10.9	294.6 ± 9.6	tetrag	298	69.96	10.38	-14.18	—	—
OsO ₄	136.8 ± 8.4	393.7 ± 8.4	monocl	298	151.46	—	—	—	—
			liq	314	157.74	—	—	—	14.3
OsO ₄ (g)	293.6 ± 0.4	336.2 ± 8.8	gas	298	85.98	20.42	-15.98	—	—
OsS ₂	54.8 ± 8.4	146.9 ± 16.7	cubic	298	68.53	11.84	-8.79	—	—
OsSe ₂	81.6 ± 12.6	120.1 ± 20.9	cubic	298	73.64	11.09	-4.18	—	—
P	41.1	0.0	white	298	19.12	15.82	—	—	—
			liq	317	26.32	—	—	—	0.7
P(r)	22.8 ± 0.2	17.4 ± 0.2	red	298	16.74	14.90	—	—	—
P(g)	163.1 ± 0.0	-316.5 ± 1.0	gas	298	20.79	—	—	—	—
P ₂ (g)	218.0 ± 0.2	-144.0 ± 0.4	gas	298	36.32	0.79	-4.14	—	—
P ₄ (g)	279.9 ± 0.3	-58.9 ± 0.3	gas	298	82.11	0.68	-13.44	—	—
PBr ₃ (g)	348.1 ± 0.4	145.9 ± 9.2	gas	298	74.43	0.18	-61.40	—	—
PCl ₃	218.5 ± 1.0	320.9 ± 9.2	liq	298	131.38	—	—	—	—
PCl ₃ (g)	311.7 ± 0.5	288.7 ± 4.2	gas	298	82.37	0.41	-9.41	—	—
PCl ₅ (g)	364.0 ± 1.7	360.2 ± 9.6	gas	298	131.46	0.84	-17.78	—	—
PF ₃ (g)	272.8 ± 0.8	958.1	gas	298	67.43	14.99	-11.77	—	—
			gas	800	82.48	0.26	-32.67	—	—
PF ₅ (g)	300.7	1576.9 ± 1.3	gas	298	101.59	29.80	-22.84	—	—
			gas	800	131.08	0.69	-62.63	—	—
PH ₃ (g)	210.2 ± 0.4	-5.4 ± 2.1	gas	298	26.30	40.48	-1.14	—	—
			gas	800	68.28	5.44	-90.29	—	—
PN(g)	211.0 ± 0.3	-104.6	gas	298	28.87	9.12	-1.61	-2.51	—
P ₄ O ₆ (g)	345.6 ± 1.3	2214.2	gas	298	182.42	48.12	-47.03	—	—
P ₂ O ₅	114.4 ± 0.8	1505.0 ± 7.5	hex	298	74.89	162.34	-15.61	—	—
P ₄ O ₁₀ (g)	403.8	2834.2	gas	298	278.78	33.51	-9.12	—	—
POBr ₃ (g)	359.7 ± 0.4	406.6	gas	298	96.50	10.52	-8.70	—	—
POCl ₃	222.5 ± 0.8	597.5 ± 2.1	liq	298	138.78	—	—	—	—
POCl ₃ (g)	325.4 ± 0.8	542.2 ± 2.1	gas	298	102.90	2.61	-17.26	—	—
P ₄ S ₃	203.3 ± 0.4	154.4	orth	298	165.27	—	—	—	—
			hex	314	162.88	56.90	—	—	10.3
			liq	446	230.12	—	—	—	20.2
PS(g)	235.1 ± 0.8	-238.5 ± 9.6	gas	298	37.03	0.50	-1.80	—	—
P ₂ S ₃	140.8 ± 8.4	121.3 ± 10.5	cryst	298	79.41	108.37	—	—	—
Pb	64.8	0.0	fcc	298	24.23	8.70	—	—	—
			liq	601	32.49	-3.10	—	—	4.8
			liq	1300	28.62	—	—	—	—

TABLE I—continued

Substance	$S_{298} \pm \delta S$ (J/deg mol)	$-\Delta H_{298} \pm \delta H$ (kJ/mol)	Phase	T K	$C_p = A + BT + C/T^2 + DT^2$				H_f (kJ/mol)
					A	$B \times 10^3$ (J/deg mol)	$C \times 10^{-5}$	$D \times 10^6$	
Pb(g)	175.3	-195.2	gas	298	20.79	—	—	—	—
			gas	900	17.70	-1.13	19.25	2.22	—
PbBr ₂	161.1 ± 2.1	277.4 ± 2.5	orth	298	55.86	50.75	7.66	—	—
			liq	644	112.13	—	—	—	16.4
PbCl ₂	136.0 ± 2.1	359.4 ± 0.8	orth	298	68.49	29.04	—	—	—
			liq	774	111.50	—	—	—	21.9
PbCl ₂ (g)	317.1 ± 2.9	174.1 ± 1.3	gas	298	58.03	0.33	-2.64	—	—
PbF ₂	113.0 ± 8.4	677.0 ± 4.2	orth	298	74.29	18.83	-5.44	—	—
			liq	716	74.29	18.83	-5.44	—	8.4
			liq	1103	109.20	—	—	—	14.7
PbF ₂ (g)	292.5 ± 3.3	435.1 ± 8.4	gas	298	57.40	0.54	-5.90	—	—
PbI ₂	174.9 ± 0.4	175.3 ± 0.8	hex	298	72.17	18.07	—	—	—
			liq	683	108.57	—	—	—	23.4
			r.tet	298	52.38	8.66	-8.20	—	—
PbO	66.3 ± 0.8	219.4 ± 0.8	y.orth	762	45.27	12.80	-2.99	—	0.2
			gas	298	36.53	0.77	-3.91	—	—
PbO(g)	239.9 ± 0.2	-70.3 ± 7.1	gas	298	36.53	0.77	-3.91	—	—
Pb ₃ O ₄	212.0 ± 6.7	718.8 ± 6.3	tetrag	298	187.19	14.48	-33.39	9.37	—
PbO ₂	71.8 ± 0.4	274.5 ± 2.9	tetrag	298	63.22	31.00	-8.95	-13.97	—
PbCO ₃	131.0 ± 3.3	699.6 ± 5.4	orth	298	51.84	119.66	—	—	—
PbMoO ₄	166.1 ± 2.1	1053.1 ± 5.0	tetrag	298	124.06	46.65	-16.53	—	—
Pb(NO ₃) ₂	218.0 ± 6.7	451.9 ± 3.3	cryst	298	125.94	149.37	-16.74	—	—
PbS	91.3 ± 1.7	98.3 ± 2.1	cubic	298	46.74	9.41	—	—	—
			liq	1387	66.94	—	—	—	18.8
			gas	298	37.32	0.38	-2.05	—	—
PbS(g)	251.3 ± 0.2	-131.8 ± 6.3	gas	298	37.32	0.38	-2.05	—	—
PbSO ₄	148.5 ± 0.8	920.0 ± 1.3	orth	298	74.18	102.51	-1.55	—	—
			monocl	1139	184.10	—	—	—	17.2
			liq	1443	179.91	—	—	—	40.2
PbSe	102.5 ± 2.1	100.0 ± 2.1	cubic	298	47.24	10.00	—	—	—
			liq	1350	62.76	—	—	—	49.4
			gas	298	37.40	—	-1.05	—	—
PbSe(g)	263.6 ± 4.2	-126.4 ± 8.4	gas	298	37.40	—	-1.05	—	—
PbSeO ₃	148.5	537.6	monocl	298	85.77	46.02	—	—	—
Pb ₂ SiO ₄	186.6 ± 2.1	1369.0 ± 2.5	α	298	127.70	82.55	-13.68	—	—
			β	600	199.58	-1.55	-91.09	—	—
			liq	1018	189.12	—	—	—	53.6

PbSiO ₃	109.6 ± 1.3	1147.7 ± 3.3	cryst	298	74.64	110.75	-11.46	-54.14	—
			liq	1037	130.12	—	—	—	34.5
PbTe	110.0 ± 2.1	68.6 ± 1.3	cubic	298	47.20	11.25	—	—	—
			liq	1197	62.76	—	—	—	57.3
PbTiO ₃	111.9 ± 13.4	1194.7 ± 13.8	orth	298	120.29	17.91	-18.20	—	—
			β	763	109.08	22.80	-13.35	—	4.8
PbWO ₄	167.8 ± 1.7	1121.3 ± 7.9	tetrag	298	120.00	41.25	—	—	—
Pd	37.9	0.0	fcc	298	23.78	7.39	—	—	—
			fcc	400	24.61	5.30	—	—	—
			fcc	1400	20.72	8.08	—	—	—
			liq	1825	34.73	—	—	—	17.6
Pd(g)	166.9	-377.0	gas	298	20.79	—	—	—	—
			gas	800	-6.74	20.17	74.81	—	—
			gas	2100	44.56	16.19	-949.01	-4.31	—
PdCl ₂	103.8 ± 12.6	173.2 ± 12.6	hex	298	69.04	20.92	—	—	—
			liq	952	94.14	—	—	—	18.4
PdI ₂	150.6 ± 10.5	63.6 ± 10.5	monocl	298	68.20	23.01	—	—	—
PdO	38.9 ± 4.2	115.5 ± 3.3	tetrag	298	45.31	7.03	-1.26	0.38	—
Pd ₄ S	180.7 ± 0.4	69.0 ± 2.1	tetrag	298	100.42	48.53	—	—	—
PdS	56.5 ± 6.3	70.7 ± 6.3	tetrag	298	41.71	17.20	-3.05	—	—
PdS ₂	87.9 ± 12.6	78.2 ± 12.6	orth	298	68.58	15.77	-6.57	—	—
PdTe	89.6 ± 0.4	37.7 ± 16.7	hex	298	47.45	129.29	—	—	—
PdTe ₂	126.6 ± 0.4	54.4 ± 20.9	hex	298	70.63	20.08	—	—	—
Pr	73.6	0.0	hcp	298	18.83	17.07	3.05	3.97	—
			bcc	1065	38.49	—	—	—	3.2
			liq	1191	42.97	—	—	—	6.9
Pr(g)	189.7	-355.6	gas	298	13.89	24.35	1.00	-10.42	—
			gas	1100	31.42	—	-27.15	-0.88	—
			gas	1600	30.46	-1.84	7.61	0.17	—
PrCl ₃	153.3 ± 0.8	1057.7 ± 2.1	hex	298	88.37	45.61	-2.76	—	—
			liq	1059	133.89	—	—	—	50.6
PrCl ₃ (g)	379.5 ± 6.7	730.1 ± 5.0	gas	298	86.19	—	-3.35	—	—
PrF ₃	117.2 ± 8.4	1712.1 ± 5.0	trigon	298	92.05	19.96	4.75	—	—
			liq	1672	130.75	—	—	—	57.3
PrF ₃ (g)	344.3 ± 4.2	1279.9 ± 11.7	gas	298	83.55	—	-6.95	—	—
PrH ₂	56.8 ± 0.3	200.0 ± 3.3	cubic	298	35.48	18.83	—	—	—
PrI ₃	226.4 ± 16.7	654.4 ± 16.7	orth	298	89.12	40.58	—	—	—
			liq	1011	143.09	—	—	—	52.3
Pr ₂ O ₃	155.6 ± 2.1	1809.6	hex	298	119.66	17.78	-7.41	—	—
			cubic	2150	154.81	—	—	—	—
			liq	2570	152.30	—	—	—	92.0

TABLE I—continued

Substance	$S_{298} \pm \delta S$ (J/deg mol)	$-\Delta H_{298} \pm \delta H$ (kJ/mol)	Phase	T K	$C_p = A + BT + C/T^2 + DT^2$				H_f (kJ/mol)
					A	$B \times 10^3$ (J/deg mol)	$C \times 10^{-5}$	$D \times 10^6$	
PtS	77.8 ± 4.2	451.9 ± 25.1	cubic	298	51.97	4.39	—	—	—
			fcc	298	24.69	5.02	—0.50	—	—
			fcc	1000	24.43	5.23	—0.75	—	—
			liq	2042	34.69	—	—	—	19.7
Pt	41.5	0.0	gas	298	36.32	—14.02	—5.86	—	—
			gas	500	31.21	—11.34	1.34	3.56	—
			gas	1700	18.66	1.38	33.64	—	—
			rhomb	298	150.62	—	—	—	—
Pt(g)	192.3	—565.0	gas	298	36.32	—14.02	—5.86	—	—
			gas	500	31.21	—11.34	1.34	3.56	—
PtBr ₄	251.0	140.6 ± 16.7	rhomb	298	150.62	—	—	—	—
PtCl ₄	205.0 ± 20.9	236.8 ± 16.7	cubic	298	146.44	—	—	—	—
PtO ₂ (g)	255.9 ± 10.5	—168.6 ± 10.5	gas	298	55.44	2.09	—11.51	—	—
PtS	55.1 ± 0.4	83.1 ± 2.5	tetrag	298	41.71	17.20	—3.05	—	—
PtS ₂	74.7 ± 0.4	110.9 ± 2.5	hex	298	68.58	15.77	—6.57	—	—
Pt ₃ Se ₄	336.8 ± 31.4	242.7 ± 37.7	monocl	298	188.28	78.45	—	—	—
PuN	64.9	299.2	cubic	298	44.89	15.48	—	—	—
Rb	76.8	0.0	bcc	298	31.71	—	—	—	—
			liq	313	40.88	—26.21	0.33	14.14	2.2
Rb(g)	170.0	—80.9	gas	298	20.79	—	—	—	—
Rb ₂ (g)	270.7	—118.4	gas	298	37.28	2.00	—	—	—
RbBr	110.0 ± 0.8	394.6 ± 0.8	cubic	298	49.37	10.67	—	—	—
			liq	965	66.94	—	—	—	23.3
RbCl	95.2 ± 0.4	435.1 ± 0.8	cubic	298	48.24	10.46	—	—	—
			liq	996	64.02	—	—	—	23.7
RbF	77.8 ± 2.1	555.6 ± 1.7	cubic	298	33.33	38.53	5.02	—	—
			liq	1050	59.41	—	—	—	23.0
RbH	58.6 ± 6.3	52.3 ± 0.4	cubic	298	27.70	40.67	—	—	—
RbI	118.8 ± 0.8	331.8 ± 5.0	cubic	298	49.08	11.30	—	—	—
			liq	929	66.53	—	—	—	22.0
Rb ₂ O	125.5 ± 4.2	338.9 ± 8.4	cubic	298	60.25	46.02	—	—	—
			hex	613	89.96	—	—	—	4.6
			liq	778	95.81	—	—	—	20.9
RbBO ₂	94.6 ± 0.4	974.9 ± 20.9	cryst	298	58.37	50.63	—	—	—
Rb ₂ CO ₃	181.3 ± 0.4	1133.0 ± 13.8	monocl	298	105.86	80.75	—10.88	—	—
RbOH	92.0 ± 8.4	418.8 ± 3.3	cryst	298	64.85	71.13	—	—	—
			β	508	79.50	—	—	—	5.4
			liq	658	83.68	—	—	—	8.9

Rb ₂ S	133.1 ± 12.6	361.1 ± 20.9	cubic	298	77.40	20.92	—	—	—
Rb ₂ SO ₄	197.5 ± 0.4	1437.2 ± 1.3	orth	298	84.94	164.43	—	—	—
			hex	930	81.84	84.94	—	—	4.2
			liq	1341	207.11	—	—	—	38.4
Re	36.5	0.0	hcp	298	23.68	5.44	—	—	—
Re(g)	188.8	-775.0	gas	298	20.79	—	—	—	—
			gas	1400	29.75	-10.84	—	3.26	—
ReBr ₃	200.8 ± 16.7	175.7 ± 5.9	monocl	298	80.33	68.20	—	—	—
ReCl ₃	123.8 ± 0.4	263.6 ± 10.5	hex	298	105.48	27.61	-19.08	—	—
ReF ₆ (g)	363.6 ± 2.1	1353.5 ± 12.6	gas	298	155.64	1.30	-31.59	—	—
ReO ₂	62.8 ± 4.6	432.6 ± 5.0	monocl	298	67.36	12.68	-12.93	—	—
ReO ₃	80.8 ± 8.4	610.9 ± 12.6	cubic	298	108.78	—	—	—	—
Re ₂ O ₇	207.1 ± 0.8	1248.5 ± 10.5	orth	298	121.96	184.10	-9.41	—	—
			liq	570	297.48	—	—	—	62.8
			hex	298	68.58	15.77	-6.57	—	—
ReS ₂	60.7 ± 8.4	178.7 ± 12.6	tetrag	298	184.10	50.21	—	—	—
Re ₂ S ₇	167.4 ± 20.9	451.5 ± 16.7	tetrag	298	190.79	45.19	-14.06	—	—
Re ₅ Si ₃	255.9 ± 16.7	157.3 ± 62.8	cubic	298	52.59	9.62	-3.77	—	—
ReSi	55.4 ± 4.2	52.7 ± 20.9	tetrag	298	67.78	11.05	-6.11	—	—
ReSi ₂	74.1 ± 6.7	90.4 ± 31.4	fcc	298	20.79	13.43	0.33	-2.26	—
Rh	31.5	0.0	liq	2236	41.84	—	—	—	21.5
			gas	298	21.17	6.40	-2.13	-1.46	—
Rh(g)	185.7	-553.1	monocl	298	105.44	27.61	-19.08	—	—
RhCl ₃	126.8 ± 14.6	280.3 ± 12.6	rhomb	298	86.78	57.74	—	—	—
Rh ₂ O ₃	106.3 ± 8.4	355.6	gas	298	37.87	—	-5.44	—	—
RhO(g)	229.7 ± 10.5	-410.0 ± 50.2	cryst	298	145.60	60.25	-10.67	—	—
Rh ₃ S ₄	182.0 ± 25.1	357.7	cryst	298	110.25	32.97	-9.62	—	—
Rh ₂ S ₃	125.5 ± 20.9	262.8	hcp	298	18.58	9.29	2.80	—	—
Ru	28.5	0.0	liq	2523	41.84	—	—	—	24.3
			gas	298	23.93	2.01	-2.72	—	—
Ru(g)	186.4	-651.4	hex	298	115.06	—	—	—	—
RuCl ₃	127.6 ± 10.5	253.1 ± 14.6	gas	298	56.90	7.66	-3.01	—	—
RuCl ₃ (g)	397.5 ± 20.9	-56.1 ± 18.8	gas	298	95.81	—	-10.46	—	—
RuCl ₄ (g)	374.5 ± 20.9	93.3 ± 16.7	cryst	298	163.18	—	—	—	—
RuF ₅	161.1 ± 14.6	892.9 ± 1.7	liq	358	182.00	—	—	—	18.8
			tetrag	298	69.87	10.46	-14.85	—	—
RuO ₂	58.6 ± 4.6	305.0 ± 6.3	gas	298	101.80	3.05	-24.02	—	—
RuO ₄ (g)	290.7 ± 0.4	184.1 ± 5.0	cubic	298	68.53	11.84	-8.79	—	—
RuS ₂	54.4 ± 12.6	205.9 ± 20.9	orth	298	23.51	—	—	—	—
S	32.0 ± 0.1	0.0	monocl	368	24.73	—	—	—	0.4
			liq	388	35.19	—	—	—	1.7

TABLE I—continued

Substance	$S_{298} \pm \delta S$ (J/deg mol)	$-\Delta H_{298} \pm \delta H$ (kJ/mol)	Phase	T K	$C_p = A + BT + C/T^2 + DT^2$				H_f (kJ/mol)
					A	$B \times 10^3$ (J/deg mol)	$C \times 10^{-5}$ (J/deg mol)	$D \times 10^6$	
S(g)	167.7	-277.2 ± 0.4	gas	298	22.01	-0.42	1.51	—	—
			gas	2400	20.75	0.42	2.51	—	—
S ₂ (g)	228.1	-128.6	gas	298	33.53	6.02	-2.37	-2.09	—
			gas	1000	34.62	3.67	-6.07	-0.43	—
S ₃ (g)	276.0	-146.4	gas	298	57.60	0.32	-6.33	—	—
S ₄ (g)	325.9	-188.3	gas	298	82.55	3.14	-7.11	—	—
			gas	718	82.42	3.14	-7.11	—	—
S ₅ (g)	320.9	-111.0	gas	298	106.48	0.85	-16.45	—	—
S ₆ (g)	353.9	-98.7	gas	298	131.75	0.67	-17.20	—	—
S ₇ (g)	394.1	-102.9	gas	298	155.91	1.09	-23.34	—	—
			gas	718	155.91	1.09	-23.34	—	—
S ₈ (g)	423.1	-96.8	gas	298	181.18	0.92	-22.79	—	—
S ₂ Cl ₂	223.8 ± 4.2	58.2 ± 2.1	liq	298	124.26	—	—	—	—
S ₂ Cl ₂ (g)	327.2 ± 0.4	16.7 ± 4.2	gas	298	80.79	3.04	-7.76	—	—
S ₂ Cl ₂ (g)	281.5 ± 0.4	17.6 ± 3.3	gas	298	57.53	0.36	-6.00	—	—
SF ₅ (g)	301.2 ± 8.4	908.3 ± 15.9	gas	298	126.19	3.18	-33.47	—	—
SF ₆ (g)	291.6 ± 0.4	1220.5 ± 1.7	gas	298	146.69	5.90	-46.02	—	—
SO(g)	221.8 ± 0.2	-5.0 ± 2.1	gas	298	33.35	2.85	-3.60	—	—
SO ₂ (g)	248.1	296.8	gas	298	49.96	4.77	-10.46	—	—
SO ₃	122.6 ± 8.4	438.5 ± 0.8	liq	298	179.91	—	—	—	—
SO ₃ (g)	256.7 ± 0.2	395.8 ± 0.8	gas	298	70.00	6.61	-19.35	—	—
SOCl ₂ (g)	307.9 ± 0.4	212.3 ± 3.8	gas	298	74.27	7.20	-8.70	—	—
SO ₂ Cl ₂ (g)	311.0 ± 0.4	354.8 ± 2.1	gas	298	97.49	4.81	-19.46	—	—
SO ₂ F ₂ (g)	283.5 ± 0.4	758.6 ± 8.4	gas	298	96.02	5.69	-28.49	—	—
Sb	45.5	0.0	rhomb	298	23.05	7.28	—	—	—
			liq	904	31.38	—	—	—	19.9
Sb(g)	180.2	-264.6	gas	298	20.79	—	—	—	—
			gas	800	17.83	1.91	9.68	—	—
Sb ₂ (g)	254.8	-231.2	gas	298	37.36	0.04	-0.91	—	—
			gas	1300	37.28	0.06	—	—	—
			gas	1860	37.39	—	—	—	—
Sb ₄ (g)	350.0	-206.5	gas	298	82.91	0.17	-1.80	—	—
			gas	1300	82.81	0.14	—	—	—
			gas	1860	62.14	—	—	—	—

SbBr ₃	210.0 ± 4.2	259.4 ± 14.6	orth	298	112.97	—	—	—	—
			liq	370	125.52	—	—	—	14.6
SbBr ₃ (g)	372.4 ± 0.8	180.7	gas	298	83.26	—	-2.68	—	—
SbCl ₃	183.3 ± 3.8	381.2 ± 1.7	orth	298	43.10	225.94	—	—	—
			liq	346	123.85	—	—	—	13.0
SbCl ₃ (g)	338.5 ± 1.3	312.1 ± 3.3	gas	298	83.01	—	-4.98	—	—
SbCl ₅ (g)	401.7 ± 1.0	389.1 ± 5.4	gas	298	132.21	-9.83	—	—	—
SbF ₃	127.2	915.5 ± 16.7	orth	298	107.11	—	—	—	—
			liq	564	127.61	—	—	—	21.3
SbH ₃ (g)	233.0 ± 0.4	145.1 ± 0.8	gas	298	50.50	18.70	-13.18	—	—
SbI ₃	215.5 ± 1.7	100.4 ± 27.6	hex	298	71.13	88.70	—	—	—
			liq	443	143.51	—	—	—	17.6
Sb ₂ O ₃	132.7 ± 4.2	716.1 ± 3.3	cubic	298	75.31	97.49	—	—	—
			orth	845	92.05	66.11	—	—	8.1
			liq	929	156.90	—	—	—	54.8
SbO ₂	63.6 ± 4.2	453.5 ± 2.5	cubic	298	47.28	33.89	—	—	—
Sb ₂ O ₅	125.1 ± 8.4	1007.5 ± 4.6	cubic	298	69.04	230.12	—	—	—
SbOCl	107.5 ± 9.2	380.7 ± 16.7	monocl	298	67.99	21.97	—	—	—
Sb ₂ S ₃	107.53 ± 3.3	205.0	orth	298	101.84	60.54	—	—	—
			liq	823	167.36	—	—	—	47.9
Sb ₂ Se ₃	212.1 ± 3.3	127.6 ± 1.3	orth	298	118.74	20.92	—	—	—
			liq	888	171.54	—	—	—	53.8
Sb ₂ Te ₃	246.4 ± 3.3	56.5 ± 1.3	rhomb	298	112.88	53.14	—	—	—
			liq	892	196.65	—	—	—	99.0
Sc	34.8	0.0	hex	298	24.74	1.33	0.35	5.10	—
			cubic	1610	44.22	—	—	—	4.0
			liq	1814	44.35	—	—	—	14.1
Sc(g)	300.2	-379.1	gas	298	20.92	—	—	—	—
			gas	1600	28.12	-8.74	—	2.68	—
ScCl ₃	121.3	918.8 ± 3.3	rhomb	298	95.65	15.40	-7.28	—	—
			liq	1240	143.43	—	—	—	67.4
ScF ₃	89.1	1648.9 ± 8.4	hex	298	98.58	3.22	-13.16	—	—
			liq	1825	88.87	—	—	—	62.8
ScN	29.7 ± 4.2	313.8 ± 16.7	cubic	298	45.81	5.44	-9.20	—	—
Sc ₂ O ₃	77.0 ± 0.4	1908.3 ± 3.3	cubic	298	99.79	22.22	-11.09	—	—
Se	42.3	0.0	hex	298	17.89	25.10	—	—	—
			liq	493	35.15	—	—	—	5.9
Se(g)	176.6	-235.4	gas	298	21.46	1.51	-0.92	—	—
Se ₂ (g)	246.9	-138.2	gas	298	44.60	-2.66	-2.50	—	—
Se ₃ (g)	314.9	-176.1	gas	298	58.15	3.04	-2.21	—	—
Se ₄ (g)	379.1	-183.3	gas	298	83.16	0.03	-2.51	—	—

TABLE I—continued

Substance	$S_{298} \pm \delta S$ (J/deg mol)	$-\Delta H_{298} \pm \delta H$ (kJ/mol)	Phase	T K	$C_p = A + BT + C/T^2 + DT^2$				H_f (kJ/mol)
					A	$B \times 10^3$	$C \times 10^{-5}$	$D \times 10^6$	
					(J/deg mol)				
Se ₅ (g)	385.3	-138.1	gas	298	107.93	0.09	-5.91	—	—
Se ₆ (g)	433.5	-135.1	gas	298	132.90	0.07	-5.92	—	—
Se ₂ Cl ₂ (g)	353.8	21.8 ± 8.4	gas	298	82.42	1.55	-4.52	—	—
SeCl ₂ (g)	295.6	33.5 ± 12.6	gas	298	57.95	0.13	-3.95	—	—
SeCl ₄	194.6 ± 16.7	188.7 ± 6.3	monocl	298	133.89	—	—	—	—
SeF ₄ (g)	296.4	811.7 ± 41.8	gas	298	101.04	3.68	-27.53	—	—
SeF ₅ (g)	326.4	940.6 ± 14.6	gas	298	127.61	2.80	-29.29	—	—
SeF ₆ (g)	313.5 ± 0.8	1117.1 ± 1.3	gas	298	151.13	3.60	-37.40	—	—
SeO(g)	233.9	-62.3 ± 20.9	gas	298	34.94	1.51	-3.68	—	—
SeO ₂	66.7 ± 1.7	225.1 ± 2.1	tetrag	298	69.58	3.89	-11.05	—	—
SeO ₂ (g)	264.8	107.9 ± 8.4	gas	298	52.84	3.10	-9.90	—	—
Si	18.8	0.0	diam	298	23.93	2.22	-4.14	—	—
			liq	1685	27.20	—	—	—	50.2
Si(g)	167.9	-450.0	gas	298	19.82	1.00	2.01	—	—
Si ₂ (g)	229.7	-585.8	gas	298	37.25	0.46	-0.28	—	—
Si ₃ (g)	267.8	-636.0	gas	298	61.99	0.13	-0.73	—	—
Si ₃ (g)	303.3 ± 2.1	42.7 ± 0.8	gas	298	57.78	—	-4.64	—	—
SiBr ₂ (g)	278.2 ± 1.3	457.3 ± 8.4	liq	298	146.44	—	—	—	—
SiBr ₄	379.2 ± 0.8	415.5 ± 16.7	gas	298	107.40	0.31	-9.33	—	—
SiBr ₄ (g)	16.5 ± 0.2	66.9 ± 6.3	cubic	298	42.59	8.37	-16.61	-1.26	—
SiC	281.8 ± 4.2	167.4 ± 4.2	gas	298	57.57	0.38	-5.65	—	—
SiCl ₂ (g)	330.8 ± 0.4	662.7 ± 1.3	gas	298	106.52	0.75	-14.73	—	—
SiCl ₄ (g)	256.5 ± 0.8	619.2	gas	298	54.76	1.91	-9.99	—	—
SiF ₂ (g)	282.6 ± 0.4	1615.0 ± 0.8	gas	298	91.46	13.26	-19.66	—	—
SiF ₄ (g)	197.9 ± 0.4	-368.2 ± 20.9	gas	298	28.33	4.84	—	—	—
SiH(g)			gas	700	30.29	3.65	—	—	—
			gas	298	13.87	111.03	-0.49	-40.31	—
SiH ₄ (g)	204.6 ± 0.2	-34.3 ± 2.1	gas	298	53.93	136.40	-10.33	← 44.77	—
Si ₂ H ₆ (g)	274.3 ± 2.1	-80.3 ± 1.3	gas	298	85.40	10.04	-23.64	—	—
SiH ₂ Cl ₂ (g)	286.6 ± 0.4	320.5 ± 12.6	gas	298	58.07	0.06	-3.08	—	—
SiI ₂ (g)	317.1 ± 2.5	-92.5 ± 8.4	gas	298	81.96	87.45	—	—	—
SiI ₄	258.2 ± 3.3	189.5 ± 16.7	cubic	298	147.49	41.30	—	—	19.7
			liq	394	147.49	41.30	—	—	—
SiI ₄ (g)	413.4 ± 1.3	125.1 ± 7.5	gas	298	106.98	1.00	-6.02	—	—

Si ₃ N ₄	113.0 ± 8.4	744.8 ± 12.6	hex	298	76.36	109.04	-6.53	-27.07	—
SiO(g)	211.5 ± 0.4	98.3 ± 8.4	gas	298	29.83	8.24	-2.05	-2.28	—
SiO ₂	41.5 ± 0.4	910.9 ± 1.7	α-qtz	298	43.93	38.83	-9.69	—	—
			β-qtz	847	58.91	10.04	—	—	0.7
SiO ₂ (cr)	43.4 ± 0.8	908.3 ± 1.7	α-cris	298	46.90	31.51	-10.08	—	—
			β-cris	540	71.63	1.88	-39.06	—	1.3
			liq	2000	86.19	—	—	—	9.6
SiOF ₂ (g)	271.2	966.5	gas	298	64.27	20.23	-14.64	-5.77	—
SiP	32.6 ± 9.6	61.9 ± 14.6	cryst	298	42.89	10.88	-5.65	—	—
SiS(g)	223.7 ± 2.1	-105.9 ± 12.6	gas	298	36.42	0.74	-4.04	—	—
SiS ₂	80.3 ± 4.2	213.4 ± 20.9	orth	298	74.14	12.38	—	—	—
			liq	1363	91.00	—	—	—	20.9
SiSe(g)	235.1 ± 1.3	-202.9 ± 20.9	gas	298	36.74	0.42	-2.89	—	—
Sm	69.5	0.0	hcp	298	27.57	29.58	-5.61	-10.46	—
			bcc	1191	46.94	—	—	—	3.1
			liq	1346	50.21	—	—	—	8.6
Sm(g)	182.9	-206.7	gas	298	30.33	—	—	—	—
SmC ₂	77.8 ± 8.4	97.9 ± 8.4	tetrag	298	68.62	11.30	-7.95	—	—
SmCl ₂	127.6 ± 6.3	816.3 ± 8.4	cryst	298	77.40	16.74	—	—	—
SmCl ₂ (g)	315.5	500.4 ± 17.6	gas	298	65.19	-8.58	—	—	—
SmCl ₃	113.0 ± 12.6	1028.4 ± 3.3	hex	298	82.26	47.70	0.75	—	—
Sm ₂ O ₃	151.0 ± 0.4	1822.6 ± 3.3	monocl	298	128.66	19.41	-17.99	—	—
			monocl	1195	154.39	—	—	—	1.0
SmOCl	100.4 ± 12.6	1000.4 ± 10.0	tetrag	298	70.71	22.38	-5.73	—	—
SmS	81.2 ± 4.2	431.0 ± 41.8	cubic	298	59.33	3.18	-1.92	—	—
SmSe	94.1 ± 6.3	443.5 ± 6.3	cubic	298	59.83	3.22	-1.84	—	—
Sn	51.2	0.0	tetrag	298	21.59	18.16	—	—	—
			liq	505	32.84	-6.28	—	—	7.2
			liq	700	28.45	—	—	—	—
Sn(g)	168.4	-301.2	gas	298	8.31	31.51	3.16	—	—
			gas	500	-1.49	66.33	4.21	-32.18	—
			gas	1000	50.14	-10.73	-63.12	—	—
			gas	1400	29.20	-1.36	91.76	—	—
SnBr ₂	149.8 ± 11.7	260.2 ± 6.7	cryst	298	114.64	33.05	—	—	—
			liq	505	99.58	—	—	—	18.0
SnBr ₄ (g)	405.0 ± 1.7	348.1	gas	298	107.91	—	-4.06	—	—
SnCl ₂	131.8	331.0	rhomb	298	50.63	83.68	—	—	—
			liq	520	96.23	—	—	—	12.6
SnCl ₄	259.0 ± 3.3	528.9 ± 14.6	liq	298	164.85	—	—	—	—
SnCl ₄ (g)	364.8 ± 1.3	489.1	gas	298	106.98	0.84	-7.82	—	—
SnH ₄ (g)	228.7 ± 0.4	-162.8 ± 2.1	gas	298	51.80	37.66	-11.30	—	—

TABLE I—continued

Substance	$S_{298} \pm \delta S$ (J/deg mol)	$-\Delta H_{298} \pm \delta H$ (kJ/mol)	Phase	T K	$C_p = A + BT + C/T^2 + DT^2$				H_f (kJ/mol)
					A	$B \times 10^3$ (J/deg mol)	$C \times 10^{-5}$ (J/deg mol)	$D \times 10^6$	
SnI ₂	164.8	152.1 ± 3.3	cryst	298	70.29	29.29	—	—	—
			liq	593	94.56	—	—	—	18.8
SnI ₂ (g)	344.8 ± 1.7	— 0.8	gas	298	61.92	—	—4.60	—	—
SnI ₄	270.3	206.3 ± 5.0	cubic	298	147.28	—	—	—	—
			liq	418	162.34	—	—	—	19.2
SnI ₄ (g)	446.4 ± 1.7	112.2	gas	298	108.37	—	—2.64	—	—
SnO	57.2 ± 0.4	280.7 ± 0.8	tetrag	298	39.96	14.64	—	—	—
SnO(g)	232.0 ± 0.2	—20.9 ± 9.6	gas	298	35.23	1.34	—3.51	—	—
SnO ₂	52.3 ± 1.3	577.6 ± 0.4	tetrag	298	73.89	10.04	—21.59	—	—
Sn(NO ₃) ₂	208.8 ± 9.2	456.1 ± 18.8	cryst	298	209.20	—	—	—	—
SnS	77.0 ± 0.8	107.9 ± 2.1	orth	298	35.69	31.30	—3.77	—	—
			orth	875	32.55	15.65	—	—	0.7
			liq	1153	74.89	—	—	—	31.6
SnS(g)	242.3 ± 0.8	—112.5 ± 4.2	gas	298	36.94	0.33	—2.30	—	—
Sn ₃ S ₄	243.5 ± 16.7	370.3 ± 20.9	tetrag	298	150.96	62.34	—	—	—
Sn ₂ S ₃	164.4	263.6 ± 20.9	orth	298	107.03	43.93	—	—	—
SnS ₂	87.4 ± 0.8	153.6	hex	298	64.89	17.57	—	—	—
SnSO ₄	138.6 ± 0.8	1014.6 ± 31.4	rhomb	298	118.20	108.78	—	—	—
SnSe	98.1	94.1 ± 3.8	orth	298	46.65	19.96	—	—	—
SnSe(g)	255.2 ± 1.3	—120.9 ± 5.0	gas	298	37.36	—	—1.30	—	—
SnSe ₂	118.0	124.7 ± 8.4	hex	298	62.05	31.63	—	—	—
SnTe	98.7	60.7 ± 0.8	cubic	298	48.95	10.13	—	—	—
			liq	1079	63.60	—	—	—	45.2
			fcc	298	27.70	—3.68	—1.38	19.20	—
Sr	52.3	0.0	bcc	820	37.66	—	—	—	0.8
			liq	1042	35.15	—	—	—	8.2
			gas	298	20.79	—	—	—	—
Sr(g)	164.5	—164.0	gas	298	20.79	—	—	—	—
SrBr ₂	143.5 ± 4.2	718.0 ± 1.7	α	298	75.10	13.47	—	—	—
			β	918	115.06	—	—	—	12.2
			liq	930	116.40	—	—	—	10.1
SrBr ₂ (g)	323.4 ± 8.4	407.1 ± 12.6	gas	298	62.34	8.74	—1.30	—0.08	—
SrC ₂	71.1 ± 8.4	84.5 ± 16.7	tetrag	298	68.62	11.30	—7.95	—	—
SrCl ₂	114.8 ± 0.2	828.9 ± 2.5	cubic	298	113.72	—99.70	—14.90	92.88	—
			β	1000	123.01	—	—	—	6.0
			liq	1147	104.60	—	—	—	16.2

SrCl ₂ (g)	316.2 ± 5.0	473.2 ± 6.3	gas	298	58.16	20.04	-2.13	-0.21	—
SrF ₂	82.1	1217.1 ± 2.9	cubic	298	69.37	16.07	-3.47	-0.59	—
			cubic	1475	69.37	16.07	-3.47	-0.59	23.7
			liq	1750	99.04	—	—	—	29.7
SrF ₂ (g)	291.6 ± 2.1	766.1 ± 4.2	gas	298	57.99	0.08	-4.52	—	—
SrH ₂	49.8 ± 6.7	179.9 ± 5.9	cryst	298	33.47	22.59	—	—	—
SrI ₂	159.1 ± 0.8	561.5 ± 2.1	cryst	298	69.83	27.41	-0.05	—	—
			liq	811	110.04	—	—	—	19.7
SrI ₂ (g)	339.4 ± 8.4	274.9 ± 6.3	gas	298	62.34	0.02	-0.84	—	—
SrO	55.5 ± 0.4	592.0 ± 3.8	cubic	298	50.75	6.07	-6.28	—	—
SrO(g)	230.0 ± 0.4	13.4 ± 16.7	gas	298	36.40	0.67	-3.10	—	—
SrO ₂	59.0 ± 10.0	633.5 ± 15.1	tetrag	298	73.97	18.41	—	—	—
SrAl ₂ O ₄	108.8 ± 20.9	2338.9 ± 16.7	α	298	177.19	4.94	-53.01	—	—
			β	932	146.11	29.29	—	—	1.9
SrB ₄ O ₇	144.3 ± 6.3	3332.6 ± 26.8	ortho	298	165.69	142.26	-35.69	—	139.7
SrCO ₃	97.1 ± 1.7	1220.1 ± 8.4	orth	298	88.78	35.90	-15.48	—	—
			hex	1197	142.26	—	—	—	19.7
			cryst	298	35.23	133.05	—	—	—
Sr(OH) ₂	97.1 ± 8.4	968.9 ± 9.2	monocl	298	122.17	13.81	-19.87	—	—
SrHfO ₃	113.0 ± 12.1	1783.6 ± 12.1	tetrag	298	134.14	29.37	-23.01	—	—
SrMoO ₄	128.9 ± 5.0	1549.3 ± 10.0	cubic	298	54.31	5.27	-6.49	—	—
SrS	68.2 ± 2.9	452.7 ± 16.3	celest	298	91.21	55.65	—	—	—
SrSO ₄	117.2 ± 8.4	1453.1 ± 17.6	cryst	298	154.39	31.38	-31.38	—	—
Sr ₂ SiO ₄	149.8 ± 8.4	2302.9 ± 3.3	cryst	298	116.73	11.09	-29.29	—	—
SrSiO ₃	96.2 ± 8.4	1633.4 ± 3.8	tetrag	298	160.87	16.07	-19.54	—	—
Sr ₂ TiO ₄	159.0	2287.8 ± 9.6	cubic	298	118.11	8.54	-19.16	—	—
SrTiO ₃	108.4 ± 1.3	1670.7 ± 7.9	cryst	298	120.67	36.11	—	—	—
SrWO ₄	133.9 ± 5.0	1621.3 ± 20.5	cryst	298	121.25	12.22	-21.42	—	—
SrZrO ₃	108.8 ± 8.4	1767.3 ± 14.6	bcc	298	23.77	7.41	-0.42	-2.72	—
Ta	41.5	0.0	bcc	1400	47.82	-22.34	—	6.57	—
			liq	3293	41.84	—	—	—	33.9
Ta(g)	185.1	-781.6	gas	298	17.95	11.21	-0.56	-1.72	—
TaB ₂	46.0 ± 4.2	209.2	hex	298	59.45	18.83	-15.06	—	—
			liq	3250	125.52	—	—	—	83.7
TaBr ₅	303.3 ± 18.8	598.3 ± 6.3	orth	298	119.16	122.59	—	—	—
			liq	543	184.10	—	—	—	47.3
Ta ₂ C	81.6 ± 4.2	208.4 ± 9.2	hex	298	66.44	13.93	-8.58	—	—
TaC	42.3 ± 0.4	142.7 ± 3.8	cubic	298	43.30	8.16	-7.95	—	—
			liq	4100	66.94	—	—	—	104.6
TaCl ₃	154.8 ± 8.4	552.3 ± 3.8	cubic	298	96.23	16.32	-7.11	—	—

TABLE I—continued

Substance	$S_{298} \pm \delta S$ (J/deg mol)	$-\Delta H_{298} \pm \delta H$ (kJ/mol)	Phase	T K	$C_p = A + BT + C/T^2 + DT^2$				H_f (kJ/mol)
					A	$B \times 10^3$ (J/deg mol)	$C \times 10^{-5}$	$D \times 10^6$	
TaCl ₄	192.5 ± 8.4	705.0 ± 4.6	monocl	298	133.47	—	-12.13	—	—
TaCl ₄ (g)	382.8 ± 10.5	566.9 ± 8.8	gas	298	107.95	—	-8.37	—	—
TaCl ₅	221.8 ± 6.3	859.0 ± 4.2	monocl	298	147.90	—	—	—	—
			liq	490	180.75	—	—	—	35.1
TaCl ₅ (g)	412.9 ± 3.3	764.8 ± 8.4	gas	298	132.51	0.27	-11.09	—	—
TaCr ₂	88.1 ± 0.6	27.0 ± 2.5	cubic	298	73.85	22.80	-7.20	—	—
TaF ₅	169.9 ± 15.9	1903.7 ± 2.1	monocl	298	133.89	—	—	—	—
			liq	369	177.82	—	—	—	12.6
TaF ₅ (g)	352.9 ± 16.7	1820.0 ± 16.7	gas	298	130.67	1.09	-24.69	—	—
TaFe ₂	106.7 ± 5.4	57.7 ± 7.5	hex	298	66.94	26.36	—	—	—
Ta ₂ N	74.5 ± 9.2	272.4 ± 5.0	hex	298	70.50	17.66	-7.11	—	—
TaN	41.8 ± 1.3	252.3 ± 2.5	cubic	298	55.27	2.72	-12.64	—	—
			liq	3360	62.76	—	—	—	66.9
TaO ₂ (g)	279.5 ± 1.7	184.1 ± 20.9	gas	298	54.81	0.17	-10.13	—	—
Ta ₂ O ₅	143.1 ± 1.3	2046.4 ± 4.2	orth	298	161.29	21.42	-29.20	—	—
			liq	2058	242.67	—	—	—	120.1
TaS ₂	75.3	354.0 ± 16.7	hex	298	69.87	—	—	—	—
Ta ₅ Si ₃	280.7 ± 26.8	334.7 ± 33.5	tetrag	298	179.70	39.12	-8.91	—	—
TaSi ₂	75.3 ± 6.3	119.2 ± 12.6	hex	298	73.26	7.70	-9.08	—	—
Tb	73.3	0.0	hcp	298	16.78	18.70	6.02	—	—
			bcc	1591	27.74	—	—	—	5.0
			liq	1633	46.44	—	—	—	10.8
Tb(g)	203.1	-388.7	gas	298	25.46	-2.85	—	—	—
			gas	500	19.50	5.87	4.15	—	—
			gas	1000	21.23	6.50	-9.08	-1.07	—
TbF ₃	90.4 ± 1.3	1707.9 ± 5.0	orth	298	97.82	19.66	-12.07	—	—
TbCl ₃	147.7 ± 7.5	998.7 ± 3.3	orth	298	94.10	25.75	-3.10	—	—
			orth	783	123.93	—	—	—	14.2
			liq	855	144.47	—	—	—	19.5
Tb ₂ O ₃	156.9 ± 8.4	1865.2 ± 7.5	cubic	298	108.78	41.42	-8.37	—	—
TbO ₂	82.8	971.5 ± 3.8	cubic	298	64.81	17.70	-7.59	—	—
Te	49.5	0.0	hex	298	19.16	21.97	—	—	—
			liq	723	37.66	—	—	—	17.5
Te(g)	182.6	-211.7	gas	298	19.41	1.84	0.75	—	—

Te ₂ (g)	260.6	-159.1	gas	298	34.64	6.61	-0.26	—	—
TeCl ₄	200.8 ± 20.9	323.8	cryst	298	138.49	—	—	—	—
			liq	497	230.12	—	—	—	18.9
TeCl ₄ (g)	376.6 ± 20.9	205.9 ± 20.9	gas	298	96.71	0.15	-5.49	—	—
TeF ₄ (g)	324.1 ± 12.6	948.1	gas	298	104.14	2.08	-20.13	—	—
TeF ₆ (g)	335.9 ± 1.7	1369.0 ± 0.8	gas	298	152.08	3.10	-31.71	—	—
TeO(g)	240.6 ± 0.8	-74.5	gas	298	35.31	1.34	-34.73	—	—
TeO ₂	70.1 ± 0.8	316.3 ± 2.1	tetrag	298	65.19	15.06	-7.95	—	—
			liq	1004	112.63	2.18	—	—	29.1
TeO ₂ (g)	274.9 ± 4.2	52.3 ± 8.4	gas	298	54.77	2.43	-11.84	—	—
Th	53.4	0.0	fcc	298	25.10	8.37	-0.23	-0.22	—
			bcc	1633	15.69	11.97	—	—	3.6
			liq	2028	46.02	—	—	—	13.8
Th(g)	190.0	-597.1	gas	298	8.62	21.21	5.86	-3.20	—
ThBr ₄	228.0 ± 6.3	965.7 ± 6.3	orth	298	127.61	15.06	-6.15	—	—
			tetrag	693	127.61	15.06	-6.15	—	4.2
			liq	952	171.54	—	—	—	54.4
ThBr ₄ (g)	429.7 ± 12.6	766.5 ± 10.5	gas	298	110.16	—	-5.02	—	—
ThC	58.0 ± 0.8	126.4 ± 10.5	cubic	298	42.89	7.36	—	—	—
ThC ₂	68.7 ± 0.4	122.2 ± 6.3	monocl	298	63.89	12.09	-9.25	—	—
			monocl	1700	83.68	—	—	—	6.3
			cubic	1763	83.68	—	—	—	6.3
ThCl ₄	190.4 ± 5.0	1186.6 ± 2.9	orth	298	120.29	23.26	-6.15	—	—
			tetrag	679	120.29	23.26	-6.15	—	5.0
			liq	1043	163.18	—	—	—	61.5
ThCl ₄ (g)	390.8 ± 8.4	974.9 ± 9.2	gas	298	108.07	—	-6.15	—	—
ThF ₄	142.0 ± 0.4	2111.2 ± 8.4	monocl	298	111.92	24.48	-7.55	—	—
			liq	1383	152.72	—	—	—	43.9
ThF ₄ (g)	341.8 ± 10.5	1775.3 ± 11.7	gas	298	108.37	—	-13.60	—	—
ThH ₂	59.4 ± 4.2	143.5 ± 4.2	bctet	298	52.76	11.09	—	—	—
ThI ₄	265.7 ± 10.5	664.4 ± 5.9	monocl	298	140.16	12.97	-6.15	—	—
			liq	839	177.40	—	—	—	48.1
ThI ₄ (g)	472.0 ± 10.5	469.4	gas	298	108.11	—	-1.30	—	—
ThN	57.3 ± 1.3	378.7 ± 10.5	cubic	298	48.12	9.41	-5.86	—	—
Th ₃ N ₄	182.8 ± 2.1	1305.4 ± 20.9	hex	298	164.56	26.11	-22.30	—	—
ThO(g)	240.0 ± 0.4	28.5 ± 2.1	gas	298	37.91	—	-5.98	—	—
ThO ₂	65.2 ± 0.4	1226.7 ± 1.3	cubic	298	69.29	9.33	-9.18	—	—
ThOBr ₂	131.0 ± 10.5	1129.7 ± 12.6	cryst	298	98.45	12.22	-7.66	—	—
ThOCl ₂	113.6 ± 7.9	1236.0 ± 5.0	orth	298	98.32	11.21	-9.25	—	—
ThOI ₂	158.6 ± 6.3	992.4 ± 5.0	cryst	298	99.50	11.13	-7.70	—	—
Th ₂ N ₂ O	124.3 ± 6.3	1288.7 ± 25.1	hex	298	116.90	18.74	-15.73	—	—

TABLE I—continued

Substance	$S_{298} \pm \delta S$ (J/deg mol)	$-\Delta H_{298} \pm \delta H$ (kJ/mol)	Phase	T K	$C_p = A + BT + C/T^2 + DT^2$				H_f (kJ/mol)
					A	$B \times 10^3$	$C \times 10^{-5}$	$D \times 10^6$	
					(J/deg mol)				
ThRe ₂	123.6 ± 5.0	174.1 ± 5.0	hex	298	70.96	23.56	—	—	—
Th ₇ Rh ₃	389.1	757.3	hex	298	247.27	81.59	-5.19	—	—
ThRh	64.9	232.6 ± 6.3	orth	298	40.00	16.82	-1.05	—	—
ThRh ₃	120.9	321.7 ± 10.5	cubic	298	77.49	34.81	-2.13	—	—
ThRh ₅	199.8	316.7 ± 12.6	cryst	298	114.93	52.80	-3.22	—	—
ThRu	61.3	121.8 ± 7.5	orth	298	43.05	10.88	—	—	—
Th ₇ Ru ₃	378.7	505.4	hex	298	198.74	77.40	—	—	—
ThS	69.8 ± 0.4	399.6 ± 6.3	cubic	298	50.12	5.46	-3.59	—	—
Th ₂ S ₃	171.5 ± 11.7	1083.2 ± 12.6	orth	298	121.96	15.06	-3.77	—	—
ThS ₂	96.2 ± 0.8	627.6 ± 33.5	orth	298	67.03	11.00	—	—	—
Th(SO ₄) ₂	165.3 ± 20.9	2541.4 ± 20.9	cryst	298	104.60	230.96	—	—	—
Th ₃ Si ₂	163.2 ± 12.6	284.9 ± 20.9	tetrag	298	124.26	28.45	-9.79	—	—
ThSi	58.2 ± 12.6	128.0 ± 12.6	orth	298	49.41	10.29	-4.64	—	—
Th ₃ Si ₅	213.4 ± 20.9	486.2 ± 37.7	hex	298	196.10	35.82	-22.26	—	—
ThSi ₂	82.0 ± 8.4	174.1 ± 16.7	hex	298	73.35	12.76	-8.79	—	—
Ti	30.7	0.0	hex	298	24.94	6.57	-1.63	1.34	—
			bcc	1155	30.84	-8.87	—	6.44	4.2
			liq	1943	41.84	—	—	—	16.7
Ti(g)	180.2	-473.6	gas	298	22.26	-3.26	2.76	2.13	—
TiB	34.7	160.2 ± 16.7	orth	298	54.06	-0.04	-21.63	—	—
TiB ₂	28.5 ± 0.4	315.9 ± 7.5	hex	298	56.38	25.86	-17.47	-3.35	—
			liq	3498	108.78	—	—	—	108.8
TiBr ₂	108.4	405.4	trigon	298	76.09	10.75	-0.51	—	—
TiBr ₂ (g)	308.8	179.1	gas	298	60.28	2.13	-0.62	—	—
TiBr ₃	176.6	551.9 ± 6.7	trigon	298	-10.79	284.34	34.18	-119.2	—
TiBr ₃ (g)	359.0	376.6	gas	298	88.20	-1.20	-7.49	—	—
TiBr ₄	243.5	619.7 ± 2.1	cubic	298	80.92	169.62	—	—	—
			liq	311	151.88	—	—	—	12.9
TiBr ₄ (g)	398.5	551.5	gas	298	107.76	0.17	-6.36	—	—
TiC	24.7 ± 0.4	184.5 ± 4.6	cubic	298	48.43	3.16	-1.36	1.23	—
TiCl ₂ (g)	87.4 ± 12.6	515.5 ± 16.7	gas	298	60.12	2.22	-2.76	—	—
TiCl ₃	139.7 ± 1.3	721.7 ± 5.0	trigon	298	95.81	11.05	-1.80	—	—
TiCl ₃ (g)	316.7 ± 4.2	539.3 ± 6.3	gas	298	87.24	-0.71	-12.93	—	—

Ti ₂ Cl ₆ (g)	482.0 ± 16.7	1248.1 ± 16.7	gas	298	182.59	0.21	-11.55	—	—
TiCl ₄	252.4 ± 0.8	804.2 ± 1.3	liq	298	142.80	8.70	-0.17	—	—
TiCl ₄ (g)	353.1 ± 4.2	763.2 ± 3.8	gas	298	107.19	0.47	-10.54	—	—
TiCr ₂	86.5	- 0.3	cubic	298	72.43	24.77	-6.90	—	—
TiF ₄	134.0	1649.3 ± 3.8	cryst	298	123.30	36.23	-17.64	—	—
TiF ₄ (g)	314.8 ± 2.1	1551.4 ± 4.2	gas	298	104.27	1.98	-18.04	—	—
TiI ₄	246.0 ± 6.7	377.4 ± 3.3	α	298	78.24	158.99	—	—	—
			cubic	379	148.11	—	—	—	9.9
			liq	428	156.48	—	—	—	19.8
TiN	30.3	338.1	cubic	298	49.83	3.93	-12.38	—	—
TiO	34.7 ± 2.1	542.7 ± 12.6	monocl	298	44.22	15.06	-7.78	—	—
			cubic	1265	49.58	12.55	—	—	3.4
Ti ₂ O ₃	77.2 ± 0.4	1520.9 ± 8.4	trigon	298	31.80	213.38	—	—	—
			β	470	147.70	3.43	-47.51	—	1.1
Ti ₃ O ₅	129.4 ± 1.7	2459.1 ± 4.2	monocl	298	231.04	-24.77	-61.25	—	—
			orth	450	158.99	50.21	—	—	13.1
TiO ₂	50.6 ± 0.4	944.0 ± 0.8	rutile	298	73.35	3.05	-17.03	—	—
TiO ₂ (a)	49.9 ± 0.4	941.4 ± 2.9	anatase	298	76.36	0.84	-20.08	—	—
TiOCl(g)	263.6	244.3	gas	298	60.50	0.96	-8.37	—	—
TiOCl ₂ (g)	320.9	545.6	gas	298	81.46	0.88	-8.93	—	—
TiOF(g)	250.6	433.0	gas	298	59.73	1.35	-10.74	—	—
TiOF ₂ (g)	284.5	924.7	gas	298	79.98	1.63	-16.18	—	—
TiS	56.5 ± 8.4	272.0 ± 29.3	hex	298	45.90	7.36	—	—	—
TiS(g)	246.4 ± 2.1	-330.5	gas	298	36.99	0.22	-2.95	—	—
TiS ₂	78.2 ± 6.3	407.1 ± 33.5	hex	298	33.81	114.39	—	—	—
			hex	420	62.72	21.51	—	—	—
Ti ₅ Si ₃	218.0 ± 14.2	579.5 ± 58.6	hex	298	196.44	44.77	-20.08	—	—
TiSi	49.0 ± 7.5	129.7 ± 14.6	orth	298	48.12	11.42	-5.44	—	—
TiSi ₂	61.1 ± 9.2	133.9 ± 20.9	orth	298	70.42	17.57	-9.04	—	—
Tl	64.2	0.0	hcp	298	15.65	25.27	2.80	—	—
			β	507	20.92	20.92	—	—	0.4
			liq	577	30.12	—	—	—	4.3
Tl(g)	180.8	-181.0	gas	298	20.79	—	—	—	—
			gas	700	23.60	-4.56	-3.17	2.08	—
TlBr	122.6 ± 0.4	172.7 ± 0.8	cubic	298	46.32	20.71	—	—	—
			liq	733	105.65	-37.82	—	—	16.4
TlCl	111.5 ± 0.4	204.2 ± 1.7	cubic	298	46.02	16.74	—	—	—
			liq	702	59.41	—	—	—	15.9
TlF	95.7 ± 0.4	325.5 ± 4.6	rhomb	298	54.81	—	—	—	—
			tetrag	356	55.44	—	—	—	0.4
			liq	595	67.28	—	—	—	13.9

TABLE I—continued

Substance	$S_{298} \pm \delta S$ (J/deg mol)	$-\Delta H_{298} \pm \delta H$ (kJ/mol)	Phase	T K	$C_p = A + BT + C/T^2 + DT^2$				H_f (kJ/mol)
					A	$B \times 10^3$ (J/deg mol)	$C \times 10^{-5}$ (J/deg mol)	$D \times 10^6$	
TlI	127.7 ± 0.4	123.7 ± 1.3	rhomb	298	49.25	13.47	—	—	—
			cubic	451	32.30	47.11	—	—	0.8
			liq	715	71.96	—	—	—	14.7
TlI(g)	276.6 ± 1.3	-18.6	gas	298	38.62	—	-2.09	—	
Tl ₂ O	134.3 ± 11.3	167.4 ± 7.5	hex	298	56.07	41.84	—	—	—
			liq	852	94.98	—	—	—	30.3
Tl ₂ O ₃	137.2 ± 13.8	390.4 ± 5.9	cubic	298	131.88	3.56	-22.26	—	
Tl ₂ S	159.0 ± 12.6	95.0 ± 4.6	hex	298	71.55	29.29	—	—	—
			liq	730	99.58	—	—	—	23.0
Tl ₂ SO ₄	200.8 ± 13.8	933.7 ± 0.8	orth	298	100.42	125.52	—	—	—
			liq	905	205.02	—	—	—	23.8
Tl ₂ Se	173.6 ± 7.5	93.3 ± 2.1	tetrag	298	69.75	32.64	—	—	
TlSe	102.9 ± 1.7	61.1 ± 1.0	tetrag	298	39.33	35.15	—	—	
Tl ₂ Te	174.1 ± 12.6	80.3 ± 5.4	cryst	298	67.99	27.20	—	—	
Tm	74.0	0.0	hcp	298	19.83	13.01	3.22	-1.88	—
			bcc	1780	37.24	—	—	—	—
			liq	1818	41.42	—	—	—	16.9
Tm(g)	190.0	-232.2	gas	298	20.79	—	—	—	—
			gas	900	22.52	-2.24	-3.18	0.83	—
TmCl ₃	147.3 ± 11.7	988.3 ± 2.5	monocl	298	95.60	11.72	-1.26	—	—
			liq	1101	148.53	—	—	—	34.9
TmF ₃	95.0 ± 1.3	1694.5	orth	298	100.12	10.50	-16.40	—	—
			hex	1325	97.86	—	—	—	30.3
			liq	1431	140.33	—	—	—	28.9
Tm ₂ O ₃	139.7 ± 0.4	1888.7 ± 5.9	cubic	298	129.70	3.26	-14.31	—	—
			cubic	1680	133.89	—	—	—	1.3
U	50.2	0.0	orth	298	25.10	2.38	—	23.68	—
			tetrag	941	42.93	—	—	—	2.8
			cubic	1049	38.28	—	—	—	4.8
			liq	1408	48.66	—	—	—	9.2
U(g)	199.7	-531.4	gas	298	16.74	6.32	4.98	1.55	—
UAl ₂	97.5 ± 10.5	98.7 ± 5.4	cubic	298	75.31	10.46	—	—	—
UAl ₃	136.0	114.2 ± 16.7	cubic	298	100.42	13.39	—	—	—
UAl ₄	145.6 ± 12.6	130.5 ± 16.7	tetrag	298	119.24	33.47	—	—	—

UAs ₂	206.7 ± 0.4	251.0 ± 12.6	tetrag	298	79.96	—	—	—	—
UB ₂	55.1 ± 0.4	147.7 ± 12.6	hex	298	107.03	-40.25	-35.48	24.52	—
UB ₄	71.1 ± 8.4	245.6 ± 20.9	tetrag	298	112.13	29.08	-37.24	—	—
UB ₁₂	139.7	433.0	tetrag	298	308.57	15.31	-1.28	—	—
UBr ₄	236.4 ± 10.5	802.1 ± 10.5	monocl	298	136.82	20.50	-11.30	—	—
			liq	792	163.18	—	—	—	55.2
UC	59.0 ± 0.6	97.5 ± 3.8	cubic	298	143.59	-1.26	-8.70	4.39	—
U ₂ C ₃	138.4 ± 0.4	181.6 ± 7.5	cubic	298	125.10	12.80	-15.52	—	—
UC ₂	68.8 ± 1.0	88.3 ± 5.0	tetrag	298	69.04	8.54	-9.41	—	—
			cubic	2038	123.01	—	—	—	10.9
UCl ₃	159.0 ± 0.8	861.9 ± 3.3	hex	298	87.03	32.43	4.39	—	—
			liq	1114	129.70	—	—	—	46.4
UCl ₃ (g)	356.9	569.0 ± 16.7	gas	298	91.00	—	-9.62	—	—
UCl ₄	197.3 ± 0.8	1018.8 ± 2.1	tetrag	298	113.80	35.86	-3.31	—	—
			liq	863	162.34	—	—	—	50.0
UCl ₄ (g)	389.9 ± 6.3	828.4 ± 7.1	gas	298	112.97	—	-9.04	—	—
U ₂ Cl ₈	623.8 ± 25.1	1778.6 ± 25.1	gas	298	248.53	—	-19.87	—	—
UCl ₅	246.9 ± 10.5	1041.4 ± 2.1	monocl	298	140.04	35.44	-5.36	—	—
			liq	600	186.69	—	—	—	35.6
U ₂ Cl ₁₀ (g)	633.0 ± 10.5	1960.2	gas	298	287.44	—	-28.87	—	—
UCl ₆	285.8 ± 1.7	1068.2 ± 2.1	hex	298	173.43	35.06	-7.41	—	—
			liq	451	213.97	—	—	—	20.9
UCl ₆ (g)	432.6	987.8 ± 8.4	gas	298	158.03	—	-12.34	—	—
UF ₃	117.2 ± 8.4	1507.1 ± 3.8	hex	298	85.77	31.38	1.05	—	—
UF ₃ (g)	331.8 ± 4.2	1036.8 ± 25.1	gas	298	83.68	—	-8.66	—	—
UF ₄	151.7 ± 0.4	1919.6 ± 4.6	monocl	298	107.53	29.29	-0.25	—	—
			β	1118	150.21	—	—	—	16.3
			liq	1309	165.27	—	—	—	30.7
UF ₄ (g)	349.4 ± 8.4	1600.4	gas	298	110.88	—	-18.12	—	—
UF ₅	188.3 ± 12.6	2072.3 ± 5.0	tetrag	298	125.52	30.21	-1.97	—	—
			liq	621	166.61	—	—	—	46.9
UF ₅ (g)	377.0 ± 8.4	1937.2 ± 20.9	gas	298	126.78	—	-15.48	—	—
UF ₆	227.8 ± 0.6	2197.9 ± 3.3	orth	298	52.72	384.93	—	—	—
			liq	337	198.32	—	—	—	19.2
UF ₆ (g)	376.6 ± 4.2	2148.1 ± 2.5	gas	298	151.04	5.44	-20.38	—	—
UF ₆ (g)	104.6	32.2 ± 1.3	cubic	298	69.87	29.29	—	—	—
UF ₆ (g)			liq	1502	138.07	—	—	—	67.8
UH ₃	63.7 ± 0.4	127.0 ± 0.4	cubic	298	30.38	42.34	5.65	—	—
UI ₄	265.7 ± 16.7	510.4 ± 8.4	cryst	298	149.37	9.96	-15.90	—	—
			liq	793	165.69	—	—	—	23.6
UN	62.5 ± 0.4	294.6 ± 5.0	cubic	298	55.73	4.98	-8.79	—	—

TABLE I—continued

Substance	$S_{298} \pm \delta S$ (J/deg mol)	$-\Delta H_{298} \pm \delta H$ (kJ/mol)	Phase	T K	$C_p = A + BT + C/T^2 + DT^2$				H_f (kJ/mol)
					A	$B \times 10^3$ (J/deg mol)	$C \times 10^{-5}$ (J/deg mol)	$D \times 10^6$	
UO ₂	77.0	1085.0	cubic	298	80.33	6.78	-16.57	—	—
U ₄ O ₉	334.1 ± 0.6	4510.4 ± 7.1	cubic	298	356.27	35.44	-66.40	—	—
U ₃ O ₈	282.5 ± 0.5	3574.8 ± 2.5	orth	298	282.42	36.94	-49.96	—	—
UO ₃	96.2 ± 0.4	1223.8 ± 1.3	monocl	298	93.30	10.88	-10.88	—	—
UOBr ₂	157.6 ± 0.4	977.8 ± 8.4	cryst	298	110.58	13.68	-14.85	—	—
UOBr ₃	205.0 ± 16.7	947.7 ± 16.7	cryst	298	130.54	20.50	-13.81	—	—
UO ₂ Br ₂	169.5 ± 12.6	1132.6 ± 12.6	cryst	298	117.95	17.53	-10.71	—	—
UOCl	102.5 ± 8.4	833.9 ± 4.2	cryst	298	75.81	14.35	-8.28	—	—
UOCl ₂	138.3 ± 0.4	1069.4 ± 2.7	orth	298	98.95	14.64	-7.41	—	—
U ₂ O ₅ Cl ₅	326.4 ± 8.4	2197.4 ± 4.2	cryst	298	234.30	35.56	-22.68	—	—
UOCl ₃	169.9 ± 8.4	1140.1 ± 9.2	cryst	298	122.59	20.92	-11.92	—	—
UO ₂ Cl	112.5 ± 8.4	1169.4 ± 8.4	cryst	298	90.12	22.26	-7.74	—	—
(UO ₂) ₂ Cl ₃	276.1 ± 8.4	2404.5 ± 2.1	cryst	298	225.94	35.56	-29.29	—	—
UO ₂ Cl ₂	150.6 ± 0.4	1242.6 ± 1.3	orth	298	115.23	18.20	-11.42	—	—
			liq	851	159.83	—	—	—	44.1
UO ₂ Cl ₂ (g)	372.4	972.8	gas	298	102.42	3.59	-13.22	—	—
UO ₂ F ₂	135.6 ± 0.4	1651.4 ± 2.1	hex	298	122.93	8.62	-19.87	—	—
UP	78.2 ± 0.6	262.3 ± 12.6	cubic	298	57.36	-5.77	-5.44	8.79	—
US	78.0 ± 0.4	318.0 ± 6.7	cubic	298	52.84	6.53	-3.79	—	—
US ₂	110.4 ± 0.4	526.3 ± 6.3	hex	298	71.80	9.62	—	—	—
US ₃	138.5 ± 0.4	548.1 ± 33.5	monocl	298	95.60	—	—	—	—
UO ₂ SO ₄	154.8 ± 8.4	1845.1 ± 2.1	orth	298	112.47	108.78	—	—	—
USe	96.5 ± 0.4	275.7 ± 14.6	cubic	298	52.89	6.40	—	—	—
U ₃ Si	173.8 ± 0.8	134.7 ± 16.7	tetrag	298	142.97	—	-31.38	—	—
U ₃ Si ₂	197.5 ± 8.4	170.7 ± 6.3	tetrag	298	169.37	2.43	-35.19	—	—
USi	66.5 ± 4.2	83.7 ± 4.2	cubic	298	64.56	1.63	-13.01	—	—
USi ₂	82.0 ± 5.0	129.7 ± 2.5	tetrag	298	89.62	4.06	-16.82	—	—
USi ₃	106.3 ± 6.3	130.5 ± 2.9	cubic	298	113.18	6.44	-20.67	—	—
V	30.9	0.0	bcc	298	24.14	6.19	-1.38	-0.71	—
			bcc	900	25.90	-0.13	—	4.08	—
			liq	2183	47.28	—	—	—	23.0
V(g)	182.2	-514.2	gas	298	25.10	—	—	—	—
VBr ₂	125.5 ± 12.6	364.4 ± 25.1	hex	298	73.64	12.55	—	—	—
VBr ₃	142.3 ± 12.6	446.0 ± 25.1	hex	298	92.05	32.22	—	—	—

VBr ₄ (g)	334.7 ± 16.7	351.5 ± 33.5	gas	298	107.74	0.84	-7.32	—	—
VC _{0.88}	25.1 ± 0.8	101.9 ± 2.1	cubic	298	36.36	13.31	-7.11	—	—
VCl ₂	97.1 ± 1.3	461.5 ± 8.4	hex	298	72.17	11.38	-2.97	—	—
VCl ₃	131.0 ± 1.7	581.2 ± 2.1	hex	298	96.23	16.40	-7.03	—	—
VCl ₄	257.4 ± 2.1	569.9 ± 2.5	liq	298	161.71	—	—	—	—
VCl ₄ (g)	366.1	525.9	gas	298	99.16	8.37	-5.44	—	—
VF ₄	121.3 ± 11.3	1403.3 ± 16.7	hex	298	95.19	39.75	—	—	—
VF ₅ (g)	320.9 ± 0.8	1433.9 ± 12.6	gas	298	130.46	0.63	-28.74	—	—
V ₃ Ge	114.4	141.2	cubic	298	111.50	4.56	-16.78	—	—
V ₅ Ge ₃	109.6	331.8	tetrag	298	226.35	7.28	-33.56	—	—
VN	37.3 ± 0.4	218.0 ± 5.0	cubic	298	45.77	8.79	-9.25	—	—
VO	33.1 ± 0.4	431.8 ± 2.1	cubic	298	50.21	11.84	-13.51	—	—
V ₂ O ₃	92.9 ± 2.9	1218.8 ± 1.7	hex	298	112.97	19.29	-14.98	—	—
VO ₂	47.1 ± 1.0	713.8 ± 1.0	monocl	298	73.01	2.43	-14.98	—	—
			tetrag	341	74.68	7.11	-16.53	—	4.3
			liq	1818	106.69	—	—	—	56.9
V ₂ O ₅	130.5 ± 0.4	1550.2 ± 1.7	orth	298	141.00	42.68	-23.43	—	—
			liq	952	190.37	—	—	—	66.9
VOCl ₃	241.8 ± 3.3	735.5 ± 5.9	liq	298	150.62	—	—	—	—
VOCl ₃ (g)	342.7 ± 0.8	696.2 ± 5.9	gas	298	108.99	—	-17.15	—	—
V ₃ Si	97.9 ± 1.7	172.4 ± 5.0	cubic	298	90.37	16.74	-7.15	—	—
V ₅ Si ₃	178.2 ± 4.2	431.0 ± 16.7	tetrag	298	210.66	15.36	-33.56	—	—
VSi ₂	59.0 ± 2.1	122.2 ± 33.5	hex	298	67.78	14.98	-6.61	—	—
			liq	1953	119.24	—	—	—	152.7
V ₃ Sn	124.7	66.9	cubic	298	104.60	9.08	-8.83	—	—
W	32.6	0.0	bcc	298	23.68	4.06	-0.47	-0.33	—
			bcc	1000	29.41	-2.95	-12.40	2.13	—
			bcc	2000	126.40	-58.68	-879.21	11.17	—
			liq	3693	54.02	—	—	—	50.0
W(g)	173.8	-851.0	gas	298	10.26	17.54	3.28	24.02	—
			gas	600	-46.25	157.86	29.82	-73.35	—
			gas	1000	116.14	-65.43	-227.29	13.25	—
			gas	2000	25.46	-3.52	370.70	1.24	—
			tetrag	298	77.11	6.15	-13.05	—	—
W ₂ B	66.9	66.9 ± 9.2	tetrag	298	50.42	3.10	-15.69	—	—
WB	33.1	66.1	hex	298	89.75	10.88	-14.56	—	—
W ₂ C	81.6 ± 4.2	26.4 ± 2.5	hex	298	43.39	8.62	-9.33	-1.03	—
WC	34.7 ± 2.1	40.6 ± 1.7	hex	298	106.48	77.86	1.38	-18.62	—
WCl ₄	198.3	443.5	rhomb	298	107.40	0.46	-7.78	—	—
WCl ₄ (g)	379.1	336.0	gas	298	124.43	109.91	-1.38	—	—
WCl ₅	217.6	514.2 ± 37.7	monocl	298					

TABLE I—continued

Substance	$S_{298} \pm \delta S$ (J/deg mol)	$-\Delta H_{298} \pm \delta H$ (kJ/mol)	Phase	T K	$C_p = A + BT + C/T^2 + DT^2$				H_f (kJ/mol)
					A	$B \times 10^3$	$C \times 10^{-5}$	$D \times 10^6$	
					(J/deg mol)				
WCl ₅ (g)	405.4	412.5	gas	298	131.38	1.42	-10.29	—	—
W ₂ Cl ₁₀ (g)	711.3	868.6	gas	298	281.71	0.52	-16.53	—	—
WCl ₆	238.5	594.1	rhomb	298	125.52	167.36	—	—	—
			β	450	209.20	—	—	—	4.2
			gamma	503	188.28	—	—	—	15.5
			liq	555	200.83	—	—	—	6.7
			gas	298	157.53	0.21	-12.26	—	—
WCl ₆ (g)	419.2	493.7	gas	298	157.53	0.21	-12.26	—	—
WF ₆ (g)	341.0 ± 0.4	1721.7 ± 2.5	gas	298	154.39	2.76	-31.38	—	—
WO ₃	75.9 ± 1.3	842.7 ± 2.9	monocl	298	91.29	10.46	-19.00	—	—
			orth	603	77.40	25.10	—	—	1.4
			tetrag	1013	99.79	—	—	—	1.9
			tet2	1173	105.86	—	—	—	1.2
			tet3	1490	112.97	—	—	—	0.5
			liq	1745	131.80	—	—	—	73.4
			gas	298	70.92	13.39	-12.30	-3.89	—
			monocl	298	77.40	-7.03	-18.49	8.87	—
WO ₃ (g)	286.2 ± 12.6	292.9 ± 25.1	gas	298	70.92	13.39	-12.30	-3.89	—
WO ₂	50.5 ± 1.7	589.5 ± 6.3	monocl	298	77.40	-7.03	-18.49	8.87	—
WO ₂ (g)	285.3	-76.6	gas	298	49.08	10.00	-7.32	-2.89	—
W(CO) ₆	331.8	946.8 ± 8.4	rhomb	298	164.43	261.92	—	—	—
WOCl ₄	172.8	671.1	tetrag	298	115.06	104.60	—	—	—
			liq	483	182.00	—	—	—	33.5
			gas	298	127.90	2.62	-20.71	—	—
WOCl ₄ (g)	377.0	573.2	gas	298	127.90	2.62	-20.71	—	—
WOF ₄	175.7 ± 4.2	1394.5 ± 62.8	monocl	298	125.52	167.36	—	—	—
			liq	379	182.00	—	—	—	5.0
			gas	298	125.69	4.18	-27.70	—	—
WOF ₄ (g)	334.7 ± 4.2	1336.8 ± 62.8	gas	298	125.69	4.18	-27.70	—	—
WO ₂ I ₂ (g)	377.0 ± 8.4	430.1 ± 10.5	gas	298	102.55	4.60	-10.59	—	—
WS ₂	64.9 ± 6.3	259.4 ± 16.7	hex	298	68.62	15.61	-8.66	—	—
W ₅ Si ₃	229.7 ± 13.8	135.1 ± 20.9	tetrag	298	179.66	39.16	-8.91	—	—
WSi ₂	64.0 ± 5.0	92.9 ± 9.2	tetrag	298	67.82	11.05	-6.11	—	—
Y	44.4	0.0	hcp	298	23.39	7.95	1.21	—	—
			bcc	1751	35.02	—	—	—	5.0
			liq	1795	39.79	—	—	—	11.4
Y(g)	179.4	-423.0	gas	298	26.15	-6.74	2.34	2.30	—
YCl ₃	140.2	1000.0 ± 3.8	monocl	298	104.73	3.22	-12.13	—	—
			liq	994	177.57	—	—	—	31.5

YCl ₃ (g)	351.5 ± 6.7	702.9 ± 8.8	gas	298	83.68	—	-5.23	—	—
YF ₃	109.6 ± 6.3	1718.4 ± 3.3	orth	298	99.41	7.45	-5.69	—	—
			hex	1350	122.38	—	—	—	32.4
			liq	1428	133.68	—	—	—	27.9
YF ₃ (g)	316.7 ± 2.9	1263.1 ± 13.0	gas	298	85.52	—	-13.39	—	—
YH ₂	38.4 ± 0.4	221.8 ± 4.2	cubic	298	32.80	21.25	-4.18	—	—
YH ₃	41.9 ± 0.4	265.7	hex	298	38.74	15.48	—	—	—
YI ₃	207.1	616.7 ± 31.4	hex	298	100.92	11.51	-7.41	—	—
YN	37.7 ± 5.0	299.2 ± 20.9	cubic	298	45.61	6.49	-7.32	—	—
Y ₂ O ₃	99.2 ± 0.4	1905.0 ± 5.0	cubic	298	109.62	20.08	-11.30	—	—
Yb	59.8	0.0	β	298	22.84	14.52	—	-5.44	—
			gamma	1068	36.11	—	—	—	1.8
			liq	1092	36.82	—	—	—	7.7
Yb(g)	172.8	-152.0	gas	298	20.79	—	—	—	—
YbCl ₂	122.6 ± 2.1	799.1 ± 8.4	ortho	298	67.99	20.92	—	—	—
YbCl ₃	135.1 ± 12.6	961.1 ± 3.3	monocl	298	94.68	9.33	-1.88	—	—
			liq	1148	121.34	—	—	—	—
YbN	62.8 ± 0.8	359.8 ± 20.9	cubic	298	46.44	8.37	—	—	—
Yb ₂ O ₃	133.1 ± 0.4	1814.6 ± 3.3	cubic	298	128.66	19.46	-17.15	—	—
Zn	41.6	0.0	hcp	298	22.38	10.04	—	—	—
			liq	693	31.38	—	—	—	7.3
Zn(g)	160.9	-130.4	gas	298	20.79	—	—	—	—
Zn ₃ As ₂	165.3 ± 11.7	134.7 ± 10.5	tetrag	298	112.76	41.84	—	—	—
ZnBr ₂	136.0 ± 4.2	329.7 ± 2.5	tetrag	298	52.72	43.51	—	—	—
			liq	675	113.80	—	—	—	15.6
ZnCl ₂	111.5 ± 0.4	415.1 ± 0.8	tetrag	298	59.83	37.66	—	—	—
			liq	591	100.83	—	—	—	16.1
ZnCl ₂ (g)	276.6 ± 2.1	265.7 ± 2.5	gas	298	61.71	—	-4.31	—	—
ZnF ₂	73.7 ± 0.4	764.4 ± 1.7	tetrag	298	62.30	11.36	—	—	—
			liq	1148	94.14	—	—	—	41.8
ZnI ₂	161.5 ± 4.2	208.2 ± 0.8	tetrag	298	85.14	11.46	-12.55	—	—
Zn ₃ N ₂	140.2 ± 11.7	22.6 ± 8.4	cubic	298	79.50	94.14	—	—	—
ZnO	43.6 ± 0.4	350.5 ± 0.6	hex	298	48.99	5.10	-9.12	—	—
ZnAl ₂ O ₄	87.0 ± 2.1	2071.1 ± 2.5	cubic	298	166.52	15.48	-46.02	—	—
ZnCO ₃	82.4 ± 1.3	818.0 ± 1.3	hex	298	38.91	138.07	—	—	—
ZnCr ₂ O ₄	116.3 ± 1.3	1548.1 ± 4.6		298	167.36	14.23	-25.10	—	—
ZnFe ₂ O ₄	153.3 ± 0.8	1179.1 ± 5.9	cubic	298	22.38	7.32	-48.53	—	—
Zn(OH) ₂	77.0 ± 0.4	645.4	rhomb	298	74.27	—	—	—	—
Zn ₃ P ₂	150.6 ± 10.5	159.0 ± 14.6	tetrag	298	126.23	26.07	-15.23	—	—
			liq	1513	155.64	—	—	—	58.6

TABLE I—continued

Substance	$S_{298} \pm \delta S$ (J/deg mol)	$-\Delta H_{298} \pm \delta H$ (kJ/mol)	Phase	T K	$C_p = A + BT + C/T^2 + DT^2$				H_f (kJ/mol)
					A	$B \times 10^3$ (J/deg mol)	$C \times 10^{-5}$ (J/deg mol)	$D \times 10^6$	
ZnP ₂	60.2 ± 8.4	101.7 ± 12.6	tetrag	298	71.25	16.74	-2.72	—	—
			liq	1255	91.21	—	—	—	37.2
ZnS	57.7 ± 0.4	205.2 ± 2.5	cubic	298	49.25	5.27	-4.85	—	—
			hex	1293	49.45	4.44	-4.35	—	13.4
ZnS(g)	238.1 ± 2.1	-202.1 ± 16.7	gas	298	37.45	0.08	-1.67	—	—
ZnSO ₄	110.5 ± 0.4	981.4 ± 1.7	rhomb	298	76.36	76.15	—	—	—
ZnSO ₄ ·H ₂ O	145.5	1301.5 ± 2.5	monocl	298	127.61	87.03	—	—	—
ZnSO ₄ ·2H ₂ O	192.5 ± 6.3	1596.0	cryst	298	168.11	102.72	—	—	—
ZnSO ₄ ·6H ₂ O	363.6 ± 2.5	2779.0 ± 2.5	monocl	298	316.10	140.42	—	—	—
ZnSO ₄ ·7H ₂ O	388.7 ± 2.1	3078.6 ± 2.5	rhomb	298	334.09	151.13	—	—	—
ZnO·2ZnSO ₄	264.4	2320.4 ± 5.0	cryst	298	201.71	157.40	-9.12	—	—
ZnSb	82.6 ± 1.7	19.0 ± 1.3	rhomb	298	44.69	17.32	—	—	—
			liq	820	62.76	—	—	—	30.8
ZnSe	71.1 ± 6.3	163.2 ± 10.5	cubic	298	50.17	5.77	—	—	—
ZnSeO ₃	98.3 ± 8.4	652.3 ± 3.8	cryst	298	77.19	55.23	—	—	—
			liq	894	140.16	—	—	—	46.4
Zn ₂ SiO ₄	131.4 ± 1.3	1643.1 ± 3.3	hex	298	144.89	36.94	-30.29	—	—
ZnTe	77.8 ± 3.3	119.2 ± 1.7	cubic	298	44.10	18.74	—	—	—
Zn ₂ TiO ₄	144.8 ± 2.9	1649.8 ± 2.9	tetrag	298	166.61	23.18	-32.17	—	—
ZnWO ₄	129.7 ± 8.4	1230.9 ± 7.9	monocl	298	121.71	33.51	-9.12	—	—
Zr	39.0	0.0	hcp	298	22.84	8.95	-0.67	—	—
			bcc	1136	21.51	6.57	36.69	—	3.9
			liq	2128	33.47	—	—	—	18.8
Zr(g)	181.3	-601.2	gas	298	23.00	3.05	3.64	—	—
ZrB ₂	35.9 ± 0.4	323.8 ± 6.3	hex	298	64.22	9.41	-16.57	—	—
ZrBr ₄	224.7	759.8 ± 2.5	cubic	298	133.01	4.74	-8.58	—	—
ZrBr ₄ (g)	414.6	643.5 ± 7.1	gas	298	107.91	0.08	-4.81	—	—
ZrC	33.3 ± 1.7	207.1 ± 3.8	cubic	298	51.13	3.39	-12.97	—	—
ZrCl ₄	181.4 ± 2.5	980.3 ± 1.7	cubic	298	124.98	14.14	-8.37	—	—
ZrCl ₄ (g)	367.7 ± 0.4	868.6 ± 2.1	gas	298	107.45	0.29	-8.26	—	—
ZrF ₄	104.6 ± 0.4	1911.3 ± 3.3	monocl	298	117.49	16.74	-17.24	—	—
ZrF ₄ (g)	318.4	1674.0	gas	298	105.60	1.19	-16.15	—	—
ZrI ₄	260.2 ± 4.2	488.7 ± 6.3	cubic	298	130.79	9.12	-5.10	—	—
ZrN	38.9 ± 1.3	368.2 ± 2.5	cubic	298	46.44	7.03	-7.20	—	—

ZrO(g)	227.3	-58.6	gas	298	26.28	14.90	—	—	—
ZrO ₂	50.4 ± 0.4	1100.8 ± 2.1	monocl	298	69.62	7.53	-14.06	—	—
			tetrag	1450	74.48	—	—	—	5.9
			liq	2950	87.86	—	—	—	87.0
ZrS ₂	78.2 ± 12.6	577.4 ± 20.9	hex	298	64.27	15.06	—	—	—
ZrSiO ₄	84.5 ± 1.7	2034.7 ± 1.7	tetrag	298	131.71	16.40	-33.81	—	—