NBS TECHNICAL NOTE 270-8

U.S. DEPARTMENT OF COMMERCE/National Bureau of Standards

Selected Values of Chemical Thermodynamic Properties

Compounds of Uranium, Protactinium, Thorium, Actinium, and the Alkali Metals

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NBS Technical note

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PREFACE

This is the eighth Technical Note in a series of publications containing selected values of chemical thermodynamic properties of inorganic compounds. This Technical Note essentially completes the revision of National Bureau of Standards Circular 500, Selected Values of Chemical Thermodynamic Properties, by F. D. Rossini, D. D. Wagman, W. H. Evans, S. Levine, and I. Jaffe. This volume covers the compounds of the elements uranium, protactinium, thorium, actinium, lithium, sodium, potassium, rubidium, cesium, and francium. In addition there is an appendix in which are listed revisions to a number of the values given in the preceding Technical Notes in this series (NBS Technical Notes 270-3 through 270-7). These revisions include data for some additional compounds as well as updates and corrections for errors that have been brought to our attention.

The values for the compounds of thorium, sodium, potassium, and rubidium given in this Technical Note supersede those given in the earlier reports, NBSIR 76-1034, Chemical Thermodynamic Properties of Compounds of Sodium, Potassium, and Rubidium: An Interim Tabulation of Selected Values, and NBSIR 77-1300, A Computer-Assisted Evaluation of the Thermochemical Data of the Compounds of Thorium. The latter report utilizes auxiliary data different from that used in this series of Technical Notes.

A combined volume containing all the material published in the Technical Note 270 series is being prepared for publication. This volume will be in SI units.

The continued encouragement and assistance of the Office of Standard Reference Data of the National Bureau of Standards is gratefully acknowledged.

ABSTRACT

This publication contains tables of recommended values for the standard enthalpies (heats) of formation, Gibbs (free) energies of formation, entropies, enthalpy contents and heat capacities at 298.15 K and enthalpies of formation at 0 K for compounds of uranium, protactinium, thorium, actinium, lithium, sodium, potassium, rubidium, cesium, and francium.

Key Words: Enthalpy; entropy; Gibbs energy of formation; heat capacity; uranium compounds; protactinium compounds; thorium compounds; actinium compounds; lithium compounds; sodium compounds; potassium compounds; rubidium compounds; cesium compounds; francium compounds.

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SELECTED VALUES OF CHEMICAL THERMODYNAMIC PROPERTIES

by

Donald D. Wagman, William H. Evans, Vivian B. Parker,
Richard H. Schumm, and Ralph L. Nuttall

INTRODUCTION

Substances and Properties Included in the Tables

The tables contain values where known of the enthalpy and Gibbs energy of formation, enthalpy, entropy and heat capacity at 298.15 K (25 °C), and the enthalpy of formation at 0 K, for all inorganic substances and organic molecules containing not more than two carbon atoms. In some instances such as for metal-organic compounds, data are given for substances in which each organic radical contains one or two carbon atoms.

No values are given in these tables for metal alloys or other solid solutions, fused salts, or for substances of undefined chemical composition.

Physical States

The physical state of each substance is indicated in the column headed "State" as crystalline solid (c), liquid (l),glassy or amorphous (amorp), or gaseous (g). For solutions, the physical state is that normal for the indicated solvent at 298.15 K. Isomeric substances or various crystalline modifications of a given substance are designated by a number following the letter designation, as c2, g2, etc.

Definition of Symbols

The symbols used in these tables are defined as follows: P = pressure; V = volume; T = absolute temperature; S = entropy; H = enthalpy (heat content); G = H - TS = Gibbs energy (formerly the free energy); $C_p = (dH/dT)_p$ = heat capacity at constant pressure.

Conventions Regarding Pure Substances

The values of the thermodynamic properties of the pure substances given in these tables are for the substances in their standard states (indicated by the superscript ^{o} on the thermodynamic symbol). These standard states are defined as follows:

For a pure solid or liquid, the standard state is the substance in the condensed phase under a pressure of one atmosphere.*

For a gas the standard state is the hypothetical ideal gas at unit fugacity, in which state the enthalpy is that of the real gas at the same temperature and zero pressure.

The values of ΔHf^{o} and ΔGf^{o} given in the tables represent the change in the appropriate thermodynamic quantity when one gram-formula weight of the substance in its standard state is formed isothermally at the indicated temperature from the elements, each in its appropriate standard reference state. The standard reference state at 298.15 K for each element except phosphorus has been chosen to be the standard state that is thermodynamically stable at that temperature and one atmosphere pressure. For phosphorus the standard reference state is the crystalline white form; the more stable forms have not been well characterized thermochemically. The same reference states have been maintained for the elements at 0 K except for the liquid elements bromine and mercury, for which the reference states have been chosen as the stable crystalline forms. The standard reference states are indicated in the tables by the fact that the values of ΔHf^{o} and ΔGf^{o} are exactly zero and the letter "s" follows the physical state designation.

The value of $H^{o}_{298} - H^{o}_{0}$ represents the enthalpy difference for the given substance between 298.15 K and 0 K. If the indicated standard state at 298.15 K is the gas, the corresponding state at 0 K is the hypothetical ideal gas; if the state at 298.15 K is solid or liquid, the corresponding state at 0 K is the thermodynamically stable crystalline solid, unless otherwise specifically indicated.

The values of S^{o} represent the virtual or "thermal" entropy of the substance in the standard state at 298.15 K, omitting contributions from nuclear spins. Isotope mixing effects, etc., are also excluded except in the case of the hydrogen-deuterium system. Where data have been available only for a particular isotope, they have been corrected when possible to the normal isotopic composition.

The values of the enthalpies of formation of gaseous ionic species are computed on the convention that the value of ΔHf^{o} for the electron is zero. Conversions between 0 and 298.15 K are calculated using the value of $H^{o}_{298} - H^{o}_{0} = 1.481$ kcal per mole of electrons, and assuming that the values of $H^{o}_{298} - H^{o}_{0}$ for the ionized and non-ionized molecules are the same.

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* One standard atmosphere equals 101325 pascal.

Conventions Regarding Solutions

For all dissolved substances the composition of the solvent is indicated following the chemical formula of the solute. In most instances the number of moles of solvent associated with one mole of solute is stated explicitly. In some cases the concentration of the solute cannot be specified. For aqueous solutions this is indicated in the State column by "au" (aquaous, unspecified). Such solutions may be assumed to be "dilute".

The standard state for a strong electrolyte in aquaous solution is the ideal solution at unit mean molality (unit activity). For a non-dissociating solute in aqueous solution the standard state is the ideal solution at unit molality. These states are indicated in the State column by the designations "a" and "ao" respectively. In previous tables of this Series these solutions were designated as "std. state,m=1" and "undissoc., std. state,m=1".

For non-aqueous solutions the standard state for the solute may be the ideal solution at unit mol fraction of solute or at unit molality. These standard states are designated by adding "X" or "S" respectively to the formula of the solvent. Previously these have been described as "std. state, x_2 =1" or "std. state, m=1". Solutions of unspecified concentration are designated by adding "U" to the formula of the solvent.

The value of ΔHf^o for a solute in its standard state is equal to the apparent molal enthalpy of formation of the substance in the infinitely dilute solution, since the enthalpy of dilution of an ideal solution is zero. At this dilution the partial molal enthalpy is equal to the apparent molal quantity. At concentrations other than the standard state, the value of ΔHf^o represents the apparent enthalpy of the reaction of formation of the solution from the elements comprising the solute, each in its standard reference state, and the appropriate total number of moles of solvent. In this representation the value of ΔHf^o for the solvent is not required. The experimental value for an enthalpy of dilution is obtained directly as the difference between the two values of ΔHf^o at the corresponding concentrations. At finite concentrations the partial molal enthalpy of formation differs from the apparent enthalpy. In some instances the partial molal enthalpy of formation is given in the Tables. In this case the concentration designation is preceded by "D:".

The values for the thermodynamic properties for an individual ion in aqueous solution are for that undissociated ion in the standard state and are based on the convention that ΔHf^o, ΔGf^o, S^o, and Cp^o for H^+(a) are zero. The properties of the neutral strong electrolyte in aqueous solution in the standard state are equal to the sum of these values for the appropriate number of ions assumed to constitute the molecule of the given electrolyte. By adopting the above convention with respect to H^+(a), it follows that for an individual ionic species the G-H-S relation becomes

$$\Delta Gf^o = \Delta Hf^o - T[\Delta Sf^o + (n/2)S^o(H_2(gs))]$$

with n = the algebraic value of the ionic charge. For neutral electrolytes and gaseous ions the normal consistency relation holds (see below).

Unit of Energy and Fundamantal Constants

All of the energy values given in thasa tables are expressad in terms of the tharmochamical caloria. This unit, dafinad as aqual to 4.1840 joules, has been genarally accapted for presentation of chamical thermodynamic data. Valuas raported in othar units hava baen convertad to calories by means of tha conversion factors for molecular anergy given in Tabla A.

Tha following valuas of tha fundamental physical constants hava been used in these calculations:

R = gas constant = 8.3143 $\pm$ 0.0012 J/dag mol = 1.98717 $\pm$ 0.00029 cal/deg mol

F = Faraday constant = 96487.0 $\pm$ 1.6 coulombs/mol
= 23060.9 $\pm$ 0.4 cal/V aquivalent

Z = Nhc = 11.96258 $\pm$ 0.00107 J/cm^{-1} mol = 2.85912 $\pm$ 0.00026 cal/cm^{-1} mol

c_2 = second radiation constant = hc/k = 1.43879 $\pm$ 0.00015 cm dag

$0^{o}C$ = 273.15 K

These constants ara consistant with those givan in tha Tabla of Physical Constants, recommendad by tha National Academy of Sciances - National Research Council [1]. Tha formula waights listed in tha tablas hava bean calculated for the empirical molecular formula given in the Formula and Description column.

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[1] NBS Technical News Bulletin, October 1963. see also Report of the CODATA Task Group on Fundamental Constants, CODATA Bulletin 11, December 1973.

Internal Consistency of the Tables

The various aspects of internal consistency are specified below:

1. Subsidiary and auxiliary quantities used.

All of the values given in these tables have been calculated from the original articles, using consistent values for all subsidiary and auxiliary quantities. The original data were corrected where possible for differences in energy units, molecular weights, temperature scales, etc. Thus we have sought to maintain a uniform scale of energies for all substances in the tables.

2. Physical and thermodynamic relationships for the tabulated properties of a substance.

The tabulated values of the properties of a substance satisfy all the known physical and thermodynamic relationships among these properties. The quantities ΔHf^{o}, ΔGf^{o}, and S^{o} at 298.15 K satisfy the relation (within the assumed uncertainty)

$$\Delta Gf^{o} = \Delta Hf^{o} - T\,\Delta Sf^{o}$$

In addition, the calculated value of any thermodynamic quantity for a reaction is independent of the path chosen for the evaluation.

However, in a few specific cases the G-H-S relation has been relaxed, as explained below.

3. Effect of newer data on values selected and fixed earlier.

In an evaluation as comprehensive and lengthy as this Technical Note Series, in which a sequential method is used [2], values previously selected are considered fixed and are then treated as auxiliary data in subsequent calculations. This maintains the internal consistency necessary to retrieve the experimental data (within the expected uncertainty) and to predict the thermochemical properties of processes not directly measured.

Newer data on some species have become available after their values were fixed and used in subsequent calculations. It is not possible to incorporate these newer data into the tables without a detailed analysis of the effect of this change. Unless great care is used relatively significant errors in the calculated values of ΔH^{o}, ΔG^{o}, or ΔS^{o} for specific processes may result from the introduction of such data. The user is advised not to make these substitutions.

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[2] D.Garvin, V.B.Parker, D.D.Wagman, and W.H.Evans, A Combined Least Sums and Least Squares Approach to the Evaluation of Thermodynamic Data Networks, NBSIR 76-1147 (1976).

In some cases changes can be and have been made; we are certain that the values in question and all values dependent on them can be changed, since only a limited number of compounds are affected. Examples of these are the ClO_3^-[a] and BrO_3^-[a] ions, for which new values are listed in the Appendix. New values for substances dependent on these ions are also given there.

In other cases, as for F^-[a] and I^-[a], for which new data indicate significantly different values of ΔHf^o[3], such changes can not be readily made, as they are "key substances" involved in many sets of reactions used throughout the tables. A major revision of many values would be required.

In some specific cases the G-H-S relationship has been relaxed, so that ΔGf^o[c] does not equal ΔHf^o[c] - T ΔSf^o[c] within the expected uncertainty. They are designated in the tables by the statement:

G-H-S constraint has been relaxed; see Introduction.

These instances are limited to some of the alkali metal salts of I^-[a], SO_4^{-2}[a], and CO_3^{-2}[a]. Newer data on the entropies of solution and Third Law entropies of a number of salts have led to significantly different values of the entropies of these ions from those reported in TN 270-3 and used throughout these tables. In order to retain the basic principle of these tables insofar as possible, namely that the values in the tables should yield "best" values for thermodynamic processes, we have selected values of ΔHf^o and ΔGf^o for the alkali metal salts such that the "best" values of ΔH^o and ΔG^o for the ideal solution process are maintained. The values of S^o for the salts are selected from measurements independent of the solution process. In these cases the following thermodynamic relation:

$$\Delta S^o[\text{solution}] = [\Delta H^o[\text{solution}] - \Delta G^o[\text{solution}]]/T$$

will hold for the ideal solution process but the following relation will not be satisfied within the expected precision of the individual values of S^o:

$$\Delta S^o[\text{solution}] \neq \sum_{\text{ions}} S^o[a] - S^o[c]$$

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[3] See Report of CODATA Task Group on Key Values for Thermodynamics, CODATA Recommended Key Values for Thermodynamics 1977, CODATA Bulletin 28 [April 1978], Paris, France.

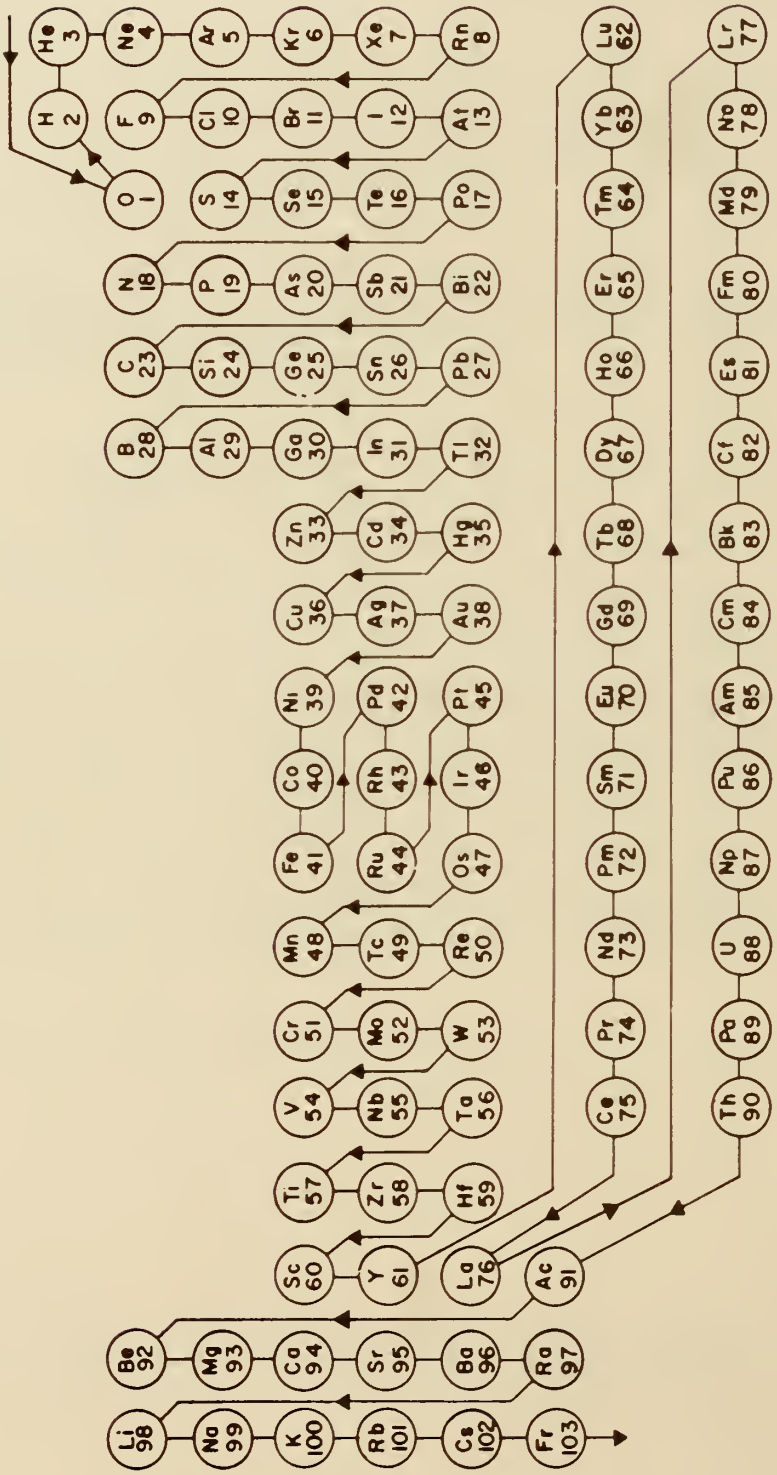
Uncertainties

The uncertainty in any value in the tables depends on the uncertainties of all the determinations in the total chain of reactions used to establish the value.

A discussion of the uncertainties will be included in the final publication of these tables in the National Standard Reference Data System. However we have followed certain rules with respect to significant figures to indicate these uncertainties. Values are tabulated in general such that the overall uncertainty lies between 2 and 20 units of the last figure. On the other hand, values are given so that the experimental data from which they are derived may be recovered with an accuracy equal to that of the original quantities. Thus the number of significant figures for any one value in the tables need not represent the absolute accuracy of that value. For solutions of varying composition values are frequently tabulated to more figures to make possible the recovery of enthalpies of solution and dilution. Similarly values of ΔHf^{o}_{0} and $\Delta Hf^{o}_{298.15}$ may be given to different numbers of significant figures. In this instance the quantity with the lesser number of figures is used to represent the uncertainty estimate. The larger number of figures is used for the other quantity to retain the significance of the temperature correction term.

Arrangement of the Tables

The compounds in the tables are entered according to the Standard Order of Arrangement (see Figure 1), by the principle of latest position. In this scheme a compound is listed under the element occurring latest in the list. Within a given element-table will be found all of the compounds of that element with elements occurring earlier in the list; the arrangement within the table follows the same ordering (water of hydration is neglected). An exception occurs in the carbon table (Table 23), which is divided into subgroups consisting of all compounds with one carbon atom, then all with two carbon atoms, etc.



Standard Order of Arrangement of the Elements and Compounds
based on the
Periodic Classification of the Elements

Explanation: key "finding numbers" below the chemical symbol for each element.

TABLE A

CONVERSION FACTORS FOR UNITS OF MOLECULAR ENERGY

	J/mol	cal/mol	cm^3 atm/mol	kWh/mol	Btu/lb-mol	cm^{-1}/molecule	eV/molecule
1 J/mol =	1	2.390057×10^{-1}	9.86923	2.77778×10^{-7}	0.429923	8.35940×10^{-2}	1.036409×10^{-5}
1 cal/mol =	4.18400	1	41.2929	1.162222×10^{-6}	1.798796	3.49757×10^{-1}	4.33634×10^{-5}
1 cm^3 atm/mol =	0.1013250	2.42173×10^{-2}	1	2.81458×10^{-8}	4.35619×10^{-2}	8.47016×10^{-3}	1.050141×10^{-6}
1 kWh/mol =	3,600,000	860,421	3.55292×10^{7}	1	1,547,721	300,938	37.3107
1 Btu/lb-mol =	2.32600	5.55927×10^{-1}	22.9558	6.46111×10^{-7}	1	1.944396×10^{-1}	2.41069×10^{-5}
1 cm^{-1}/molecule =	11.96258	2.85912	118.0614	3.32294×10^{-6}	5.14299	1	1.239812×10^{-4}
1 eV/molecule =	96487.0	23060.9	952,252	2.68019×10^{-2}	41482.0	8065.73	1

The underlined numbers represent the fundamental values used in deriving this table. The remaining factors were obtained by applying the relationships:

$$n_{ij} = n_{ik} \cdot n_{kj} \qquad n_{ii} = n_{ik} \cdot n_{ki} = 1$$

Table 88. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Uranium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf°_0 kcal/mol	ΔHf°	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$	S° cal/deg mol	C°_p
U	cs	238.0290	0	0	0	1.521	12.00	6.612
	g	238.0290	127.97	128.0	117.4	1.553	47.72	5.663
U^+	g	238.0290	270.81	272.32				
U^{2+}	g	238.0290	520.					
U^{3+}	g	238.0290	960.					
	a	238.0290		-116.9	-113.6		-46.	
U^{4+}	a	238.0290		-141.3	-126.9		-98.	
UO	g	254.0284		5.				
UO_2	c	270.0278	-258.40	-259.3	-246.6	2.696	18.41	15.20
	g	270.0278	-110.85	-111.3	-112.7	3.15	65.6	12.28
UO_2^+	a	270.0278			-230.1			
UO_2^{2+}	a	270.0278		-243.7	-227.9		-23.3	
$UO_{2.86}\cdot 0.5H_2O$	c	292.7950		-326.6				
$UO_{2.86}\cdot 1.5H_2O$	c	310.8104		-398.1				
UO_3 γ, orthorhombic	c	286.0272	-291.35	-292.5	-273.9	3.486	22.97	19.52
ε form, triclinic, red	c2	286.0272		-291.0				
	c3	286.0272	-289.96	-291.0	-272.6	3.596	23.76	19.57
α, orthorhombic, prev. described as hexagonal								
	c4	286.0272	-290.526	-291.65	-273.02	3.509	23.02	19.44
β, orthorhombic, orange-red								
δ, cubic, dark red	c5	286.0272		-291.5				
amorphous, orange	am	286.0272		-288.8				
	g	286.0272	-195.					
$UO_3\cdot H_2O$ β, orthorhombic	c	304.0426		-366.6	-333.4		30.	
ε form, monoclinic	c2	304.0426		-366.0				
α, transition to β 278.3k	c3	304.0426		-365.2				
$UO_3\cdot 2H_2O$	c	322.0580		-436.6	-389.8		40.	
$UO_4\cdot 2H_2O$	c	338.0574		-427.0				
$UO_4\cdot 4H_2O$	c	374.0882		-570.1				
U_3O_7 β, tetragonal	c	826.0828	-816.38	-819.1	-775.1	9.108	59.88	51.51
α, tetragonal	c2	826.0828				9.009	59.19	51.09
U_3O_8 α, orthorhombic	c	842.0822	-851.75	-854.4	-805.4	10.216	67.54	56.97
U_4O_9	c	1096.1106	-1074.71	-1078.0	-1021.8	12.130	79.86	70.11
UH_3 β	c	241.0530	-28.00	-30.4	-17.4	2.155	15.22	11.78
$UO_2(OH)_2$	a	304.0426		-353.6	-303.0		-28.4	
UF	g	257.0274	-5.7	-6.	-13.	2.28	60.	9.04
UF_2	g	276.0258	-134.6	-135.	-138.	3.28	71.	16.0
UF_3	c	295.0242	-360.3	-360.6	-344.2	4.392	29.50	22.73
	g	295.0242	-252.4	-253.	-251.	4.04	79.	17.8
UF_4 monoclinic	c	314.0226	-458.75	-459.1	-437.4	5.390	36.25	27.73
$UF_{4.25}$	c	318.7722		-469.6	-446.5		37.7	
UF_4	g	314.0226	-382.72	-383.7	-377.5	4.76	88.	21.8
$UF_4\cdot 2.5H_2O$ orthorhombic	c	359.0611		-640.1	-584.0		60.0	
$UF_{4.5}$	c	323.5218		-479.9	-455.5		39.4	
UF_5 α	c	333.0210		-496.0	-470.5		47.7	
β	c2	333.0210		-497.9	-471.0		42.9	
	g	333.0210	-462.8	-464.	-452.	5.6	93.	26.2
UF_6	c	352.0194	-524.80	-525.1	-494.4	7.545	54.4	39.86

Table 88. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Uranium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf_0° kcal/mol	ΔHf°	ΔGf° kcal/mol	$H_{298}^\circ - H_0^\circ$	S° cal/deg mol	C_p°
UF_6	g	352.0194	-511.79	-513.25	-493.26	6.384	90.3	30.98
UOF_2	c	292.0252		-358.3	-341.5		28.5	
$UOF_2 \cdot H_2O$	c	310.0406		-429.4	-398.9		38.5	
UO_2F_2	c	308.0246	-392.91	-393.9	-370.9	4.710	32.40	24.67
	a	308.0246		-402.7	-361.2		-29.9	
in 570 H_2O		308.0246		-401.02				
in 17 HF + 380.8 H_2O		308.0246		-402.48				
in 25 HF + 3,110 H_2O		308.0246		-402.25				
in 47 HF + 12,970 H_2O		308.0246		-402.10				
in 4 HF + 1,600 H_2O		308.0246		-401.75				
$UO_2F_2 \cdot 3H_2O$	c	362.0708		-604.5				
UOF(OH)	c	290.0342		-341.				
$UOF(OH) \cdot 0.5H_2O$	c	299.0419		-376.1				
$UO_2(OH)F \cdot H_2O$	c	324.0490		-452.2	-410.9		43.	
$UO_2(OH)F \cdot 2H_2O$	c	342.0644		-523.	-468.1		53.	
UCl_3	c	344.3880	-207.61	-207.1	-191.	5.318	38.0	24.5
UCl_4	c	379.8410	-243.97	-243.6	-222.3	6.28	47.1	29.16
	g	379.8410		-193.5	-188.0		100.	
	a	379.8410		-301.1	-252.4		-44.	
	au	379.8410		-288.6				
in HCl + 7.93 H_2O:Au		379.8410		-282.8				
in HCl + 9.25 H_2O:Au		379.8410		-284.9				
in HCl + 11.10 H_2O:Au		379.8410		-287.3				
in HCl + 13.88 H_2O:Au		379.8410		-289.8				
in HCl + 18.50 H_2O:Au		379.8410		-292.4				
in HCl + 27.75 H_2O:Au		379.8410		-295.1				
in HCl + 55.5 H_2O:Au		379.8410		-298.2				
in $HClO_4$ + 27.75 H_2O:Au		379.8410		-297.2				
in $HClO_4$ + 55.5 H_2O:Au		379.8410		-298.7				
in $HClO_4$ + 111 H_2O:Au		379.8410		-299.3				
in $HClO_4$ + 555 H_2O:Au		379.8410		-296.3				
in $HClO_4$ + 00 H_2O:Au		379.8410		-288.6				
UCl_5	c	415.2940		-253.	-227.		58.	
UCl_6	c	450.7470	-261.8	-261.	-230.	8.90	68.3	42.0
	g	450.7470		-242.2	-221.8		103.	
$UOCl_2$	c	324.9344	-254.83	-255.0	-238.1	4.586	33.06	22.72
UO_2Cl_2	c	340.9338	-296.67	-297.3	-274.0	5.157	35.98	25.78
	g	340.9338		-234.				
	a	340.9338		-323.6	-290.6		3.7	
in 5.405 HCl + 50 H_2O		340.9338		-313.2				
in 4.505 HCl + 50 H_2O		340.9338		-314.6				
in 3.604 HCl + 50 H_2O		340.9338		-316.1				
in 2.703 HCl + 50 H_2O		340.9338		-317.7				
in 1.802 HCl + 50 H_2O		340.9338		-319.4				
in 0.90 HCl + 50 H_2O		340.9338		-321.1				
in HCl + 7.93 H_2O:Au		340.9338		-312.4				
in HCl + 9.25 H_2O:Au		340.9338		-313.7				

Table 88. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Uranium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf_0° kcal/mol	ΔHf°	ΔGf° kcal/mol	$H_{298}^\circ - H_0^\circ$	S° cal/deg mol	C_p°
UO_2Cl_2 in HCl + 11.10 H_2O:Au		340.9338		-315.1				
in HCl + 13.88 H_2O:Au		340.9338		-316.6				
in HCl + 18.50 H_2O:Au		340.9338		-318.2				
in HCl + 27.75 H_2O:Au		340.9338		-319.9				
in HCl + 55.5 H_2O:Au		340.9338		-321.6				
in HCl + 111.0 H_2O:Au		340.9338		-322.5				
in HCl + 50,000 H_2O:Au		340.9338		-323.3				
$UO_2Cl_2 \cdot H_2O$	c	358.9492		-372.9	-335.9		46.	
$UO_2Cl_2 \cdot 3H_2O$	c	394.9800		-517.5	-453.1		65.	
$UOCl_3$	c	360.3874		-278.	-256.		41.	
$(UO_2)_2Cl_3$	c	646.4146		-574.8				
$UO_2(OH)Cl \cdot 2H_2O$	c	358.5190		-480.6				
UF_3Cl	c	330.4772				5.64	38.9	28.4
UF_2Cl_2	c	346.9318				5.85	41.6	28.6
$UFCl_3$	c	363.3864				6.07	44.3	28.9
UBr_3	c	477.7560		-167.1	-161.0		46.	26.0
	g	477.7560		-93.7	-103.0		98.	
UBr_4	c	557.6650		-191.8	-183.5		57.0	30.6
	g	557.6650		-144.2	-151.6		110.	
UBr_5	c	637.5740		-193.8	-184.0		70.	38.4
$UOBr_2$	c	413.8464	-229.27	-232.7	-222.2	4.989	37.66	23.42
UO_2Br_2	c	429.8458		-271.9	-254.9		40.5	
$UO_2Br_2 \cdot H_2O$	c	447.8612		-348.00	-317.3		50.0	
$UO_2Br_2 \cdot 3H_2O$	c	483.8920		-491.91	-433.6		69.	
$UOBr_3$	c	493.7554		-228.	-215.		49.	
$UO_2(OH)Br \cdot 2H_2O$	c	402.9750		-468.04				
UCl_2Br	c	388.8440		-194.2	-181.8		42.	
UCl_3Br	c	424.2970		-231.3	-213.7		51.	
$UClBr_2$	c	433.3000		-179.5	-170.9		46.	
UCl_2Br_2	c	468.7530		-217.1	-203.5		56.	
$UClBr_3$	c	513.2090		-203.8	-193.0		57.	
UI_3	c	618.7422		-110.1	-109.9		53.	26.8
UI_4	c	745.6466		-122.4	-121.1		63.	32.1
	g	745.6466		-72.1	-87.2		118.	
UCl_3I	c	471.2924		-214.8	-198.5		51.	
UBr_3I	c	604.6604		-174.0				
US	c	270.0930	-76.1	-76.	-76.	2.665	18.64	12.08
	g	270.0930		73.				
$US_{1.5}$	c	286.1250	-102.3	-102.	-102.	3.38	23.8	16.9
$US_{1.9}$	c	298.9506				3.605	26.21	17.68
α, hypostoichiometric disulfide								
US_2 β	c	302.1570	-126.1	-126.	-125.8	3.698	26.39	17.84
	g	302.1570		19.				
US_3	c	334.2210	-131.28	-131.3	-130.8	4.663	33.10	22.85
UO_2SO_3	c	350.0900		-397.0				
$UO_2SO_3 \cdot 4.5H_2O$	c	431.1593		-719.3				
UO_2SO_4 β	c	366.0894		-441.0	-402.4		37.0	34.7

Table 88. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Uranium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf°_0 kcal/mol	ΔHf° kcal/mol	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$ kcal/mol	S° cal/deg mol	C°_p cal/deg mol
UO_2SO_4	a	366.0894		-461.0	-405.9		-18.5	
in 50 H_2O		366.0894		-456.1				
in 75 H_2O		366.0894		-456.7				
in 100 H_2O		366.0894		-457.1				
in 200 H_2O		366.0894		-458.8				
in 300 H_2O		366.0894		-460.1				
in 400 H_2O		366.0894		-461.3				
in H_2SO_4 + 34.7 H_2O:Au		366.0894		-455.91				
in H_2SO_4 + 55 H_2O:Au		366.0894		-456.09				
$UO_2SO_4 \cdot H_2O$	c	384.1048		-513.	-461.		47.	
$UO_2SO_4 \cdot 2.5H_2O$	c	411.1279		-623.1	-549.78		59.7	
$UO_2SO_4 \cdot 3H_2O$	c	420.1356		-658.3	-577.9		64.	67.6
$UO_2SO_4 \cdot 3.5H_2O$	c	429.1433		-693.3	-606.47		70.0	
$U(SO_4)_2$	c	430.1522		-554.				
$U(SO_4)_2 \cdot 4H_2O$	c	502.2138		-832.5				
$U(SO_4)_2 \cdot 8H_2O$	c	574.2754		-1114.2				
USe	c	316.9890	-66.3	-66.	-66.	3.097	23.07	13.10
$USe_{1.33}$	c	343.0458		-78.				
$USe_{1.5}$	c	356.4690				4.22	31.2	20.1
USe_2 α	c	395.9490				4.209	32.26	18.92
UO_2SeO_3	c	396.9860		-363.3				
UO_2SeO_4 α form	c	412.9854		-367.1				
in H_2SO_4 + 34.7 H_2O:Au		412.9854		-381.98				
UTe	c	365.6290		-44.				
$UTe_{1.33}$	c	407.7370		-54.5				
UTe_3	c	620.8290				6.38	51.2	28.0
UO_2TeO_3	c	445.6260		-383.7				
$UN_{0.997}$	c	251.9937		-69.4				
UN	c	252.0357	-69.12	-69.5	-63.5	2.173	14.92	11.37
$UN_{1.466}$ β, sesquinitride	c	258.5628		-86.7				
$UN_{1.5}$	c	259.0390		-88.0				
$UN_{1.51}$ α, sesquinitride	c	259.1791		-88.3				
$UN_{1.59}$ α, sesquinitride	c	260.2996	-90.09	-90.9	-81.1	2.354	15.54	12.95
$UN_{1.606}$ α, sesquinitride	c	260.5238		-91.4				
$UN_{1.674}$ α, sesquinitride	c	261.4762		-93.6				
$UN_{1.73}$ α, sesquinitride	c	262.2606	-94.50	-95.4	-84.7	2.410	15.74	13.77
$UO_2(NO_3)_2$	c	394.0376		-322.5	-264.1		58.	
	a	394.0376		-342.8	-281.1		46.7	
in 50 H_2O		394.0376		-342.11				
in 100 H_2O		394.0376		-341.96				
in 200 H_2O		394.0376		-341.92				
in 500 H_2O		394.0376		-342.02				
in 1,000 H_2O		394.0376		-342.10				
in 5,000 H_2O		394.0376		-342.17				
in 10,000 H_2O		394.0376		-342.25				
in 20,000 H_2O		394.0376		-342.26				
in 50,000 H_2O		394.0376		-342.07				

Table 88. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Uranium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf°_0	ΔHf°	ΔGf°	$H^\circ_{298}-H^\circ_0$	S°	C°_p
			kcal/mol	kcal/mol			cal/deg mol	
$UO_2(NO_3)_2$ in 100,000 H_2O		394.0376		-341.66				
in 500,000 H_2O		394.0376		-340.57				
in 1,000,000 H_2O		394.0376		-340.27				
in 0.07 HNO_3 + 9,940 H_2O		394.0376		-342.67				
in 0.45 HNO_3 + 50 H_2O		394.0376		-342.1				
in 0.9 HNO_3 + 50 H_2O		394.0376		-341.9				
in 1.6 HNO_3 + 50 H_2O		394.0376		-341.6				
in HNO_3 + 4.5 H_2O:Au		394.0376		-334.16				
in HNO_3 + 5.0 H_2O:Au		394.0376		-334.70				
in HNO_3 + 6.0 H_2O:Au		394.0376		-335.75				
in HNO_3 + 7.0 H_2O:Au		394.0376		-336.70				
in HNO_3 + 7.50 H_2O:Au		394.0376		-337.11				
in HNO_3 + 8.0 H_2O:Au		394.0376		-337.52				
in HNO_3 + 8.5 H_2O:Au		394.0376		-337.90				
in HNO_3 + 9.0 H_2O:Au		394.0376		-338.25				
in HNO_3 + 9.5 H_2O:Au		394.0376		-338.55				
in HNO_3 + 10.0 H_2O:Au		394.0376		-338.78				
in HNO_3 + 11.0 H_2O:Au		394.0376		-339.30				
in HNO_3 + 12.5 H_2O:Au		394.0376		-339.85				
in HNO_3 + 15.0 H_2O:Au		394.0376		-340.48				
in HNO_3 + 25.0 H_2O:Au		394.0376		-342.2				
in CH_3OH:U		394.0376		-339.9				
in $HCONH_2$:U		394.0376		-348.0				
in C_2H_5OH:U		394.0376		-344.5				
in $(CH_3)_2SO$:U		394.0376		-356.4				
in CH_3CN:U		394.0376		-336.6				
in $(CH_3)_2CO$:U		394.0376		-343.2				
in n-C_3H_7OH:U		394.0376		-342.7				
in $HCON(CH_3)_2$:U		394.0376		-351.7				
in $(C_2H_5)_2O$:U		394.0376		-351.2				
$UO_2(NO_3)_2 \cdot H_2O$	c	412.0530		-397.7	-325.7		68.	
$UO_2(NO_3)_2 \cdot 2H_2O$	c	430.0684		-473.21	-387.78		78.6	66.5
$UO_2(NO_3)_2 \cdot 3H_2O$	c	448.0838		-545.18	-446.11		88.6	
$UO_2(NO_3)_2 \cdot 6H_2O$	c	502.1300		-757.3	-618.0		120.85	111.6
$NH_3(UO_3)_2 \cdot 3H_2O$	c	643.1313		-831.8				
$NH_3(UO_3)_3 \cdot 5H_2O$	c	965.1893		-1269.3				
$(NH_3)_2(UO_3)_3 \cdot 4H_2O$	c	964.2046		-1222.2				
$(NH_4)_3UO_2F_5$	c	419.1359		-744.3	-640.5		90.	
$NH_4(UO_2)_2F_5$	c	653.0863		-911.7	-839.4		86.	
$NH_4(UO_2)_2F_5 \cdot 3H_2O$	c	707.1325		-1124.	-1011.		116.	
$NH_4(UO_2)_2F_5 \cdot 4H_2O$	c	725.1479		-1195.	-1068.		126.	
UP	c	269.0028	-63.8	-64.	-63.	2.58	18.7	11.9
UP_2	c	299.9766	-72.6	-73.	-71.	3.679	24.3	19.12
U_3P_4	c	837.9822	-199.2	-200.	-196.	8.87	61.8	41.8
UAs	c	312.9506		-56.				
UAs_2	c	387.8722				4.282	29.41	19.11
U_3As_4	c	1013.7734	-172.9	-172.	-173.	10.405	73.87	44.82

Table 88. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Uranium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔH_0° kcal/mol	ΔHf°	ΔGf° kcal/mol	$H_{298}^\circ - H_0^\circ$	S° cal/deg mol	C_p°
USb	c	359.7790		-33.				
USb_2	c	481.5290	-42.26	-42.	-42.	4.596	33.81	19.16
U_3Sb_4	c	1201.0870	-108.7	-108.	-109.	10.943	83.60	44.98
UBi	c	447.0090		-28.				
UBi_2	c	655.9890		-26.				
U_3Bi_4	c	1550.0070		-92.				
UC	c	250.0402	-23.90	-23.5	-23.7	2.176	14.15	11.98
	g	250.0402		185.				
$UC_{1.94}$	c	261.3307	-21.31	-20.8	-21.5	2.522	16.98	14.52
randomization entropy of 0.65 included								
UC_2	g	262.0514		158.				
U_2C_3	c	512.0916	-44.43	-43.4	-44.8	4.829	32.93	25.66
UO_2CO_3	c	330.0372		-404.2	-373.5		33.	
	a	330.0372		-405.5	-354.1		-36.9	
$UO_2C_2O_4$	c	358.0478		-429.48				
$UO_2C_2O_4 \cdot H_2O$	c	376.0632		-504.78				
$UO_2C_2O_4 \cdot 3H_2O$	c	412.0940		-649.0				
$UO_2(HCO_2)_2$ uranyl formate	c	360.0638		-442.1				
$UO_2(HCO_2)_2 \cdot H_2O$	c	378.0792		-515.56				
$UO_2(CH_3CO_2)_2$ uranyl acetate	c	388.1182		-469.30				
$UO_2(CH_3CO_2)_2 \cdot 2H_2O$	c	424.1490		-611.59				
USi	c	266.1150		-19.2				
USi_2	c	294.2010		-31.2				
USi_3	c	322.2870		-31.6				
U_3Si	c	742.1730	-32.2	-32.	-32.	5.568	41.59	25.79
U_3Si_2	c	770.2590		-40.5				
USn_3	c	594.0990		-21.6	-21.6		49.0	
UPb_3	c	859.5990		-16.				
UB	g	248.8400		182.				
$UB_{1.98}$	c	259.4348	-38.31	-38.3	-37.8	2.108	13.17	13.23
UB_2	c	259.6510	-38.62	-38.6	-38.1	2.122	13.27	13.33
	g	259.6510		162.				
UB_4	c	281.2730		-38.				
UB_{12}	c	367.7610		-75.				
UAl_2	c	291.9920		-22.				
UAl_3	c	318.9735		-25.				
UAl_4	c	345.9550		-31.				
UGa	c	307.7490		-8.5	-9.0		23.	
UGa_2	c	377.4690		-17.4	-17.8		33.	
UGa_3	c	447.1890		-24.4	-24.7		42.	
UIn_3	c	582.4890		-15.2				
UTl_3	c	851.1390		-14.				
UFe_2	c	349.7230		-7.7				
$UO_2CrO_4 \cdot 5.5H_2O$	c	485.1061		-836.				

Table 89 Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Protactinium

Substance Formula and Description	State	Formula weight	0 K ΔHf°_0 kcal/mol	298.15 K (25 °C) ΔHf°	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$	S° cal/deg mol	C°_p
Pa	cs	231.0359	0	0	0		12.4	
	g	231.0359		145.	134.6	1.518	47.31	5.48
Pa^{4+}	a	231.0359		-148.0				
in HCl + 3.43 H_2O:A		231.0359		-159.6				
Pa^{5+} in HCl + 3.43 H_2O:A		231.0359		-161.8				
Pa^{4+} in HCl + 8.16 H_2O:A		231.0359		-144.8				
in HCl + 54.4 H_2O:A		231.0359		-147.7				
PaO_2	c	263.0347					17.8	
$PaCl_4$	c	372.8479		-249.3	-227.7		46.0	
in HCl + 3.43 H_2O:Au		372.8479		-290.1				
in HCl + 8.16 H_2O:Au		372.8479		-291.6				
in HCl + 54.4 H_2O:Au		372.8479		-304.9				
$PaCl_5$	c	408.3009		-273.6	-247.2		57.	
	g	408.3009		-251.	-236.		94.	
in HCl + 3.43 H_2O:Au		408.3009		-322.2				
$PaBr_4$	c	550.6719		-197.0	-188.3		56.0	
in HCl + 8.16 H_2O:Au		550.6719		-248.70				
in HCl + 54.4 H_2O:Au		550.6719		-262.44				
$PaBr_5$	c	630.5809		-206.	-196.		69.	
	g	630.5809		-180.	-182.		111.	
in HCl + 3.43 H_2O:Au		630.5809		-264.8				
$PaOBr_2$	c	406.8533		-239.				
PaI_4	c	738.6535		-123.2				
in HCl + 54.4 H_2O:Au		738.6535		-199.1				

Table 90. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Thorium

Substance	State	Formula weight	0 K	298.15 K (25 °C)				
Formula and Description			ΔHf_0° kcal/mol	ΔHf°	ΔGf° kcal/mol	$H_{298}^\circ - H_0^\circ$	S° cal/deg mol	C_p°
Th	cs	232.0381	0	0	0	1.556	12.76	6.53
	g	232.0381	143.08	143.0	133.26	1.481	45.420	4.97
Th^+	g	232.0381		283.1				
Th^{2+}	g	232.0381		550.6				
Th^{3+}	g	232.0381		1012.				
Th^{4+}	g	232.0381		1677.				
	a	232.0381		-183.8	-168.5		-101.0	
Th_2	g	464.0762	217.6	217.	203.6	2.54	70.5	8.92
ThO	g	248.0375	-5.5	-6.0	-12.0	2.109	57.350	7.47
ThO^+	g	248.0375		136.0				
ThO_2	c	264.0369	-292.01	-293.12	-279.35	2.523	15.590	14.76
	g	264.0369	-118.3	-119.	-121.1	2.92	68.7	11.3
ThO_2^+	g	264.0369		83.3				
ThH_2	c	234.0541	-31.4	-33.4	-23.9	1.616	12.120	8.77
$ThH_{3.75}$	c	235.8181	-47.0	-50.4	-33.0	1.919	13.010	12.26
$Th(OH)^{3+}$	a	249.0455		-246.2	-220.0		-82.	
$Th(OH)_2^{2+}$	a	266.0529		-306.5	-272.7		-52.	
$Th_2(OH)_2^{6+}$	a	498.0910			-445.			
ThF	g	251.0365				2.23	61.50	8.28
ThF^{3+}	a	251.0365		-264.5	-246.1		-71.7	
ThF_2	g	270.0349	-156.0	-156.6	-159.4	3.11	70.5	12.53
ThF_2^{2+}	a	270.0349		-344.8	-321.2		-49.	
ThF_3	g	289.0333	-281.8	-282.5	-281.2	4.03	81.1	17.5
ThF_3^+	g	289.0333		-103.0				
	a	289.0333		-425.1	-394.2		-34.	
ThF_4	c	308.0317	-499.24	-499.90	-477.30	5.114	33.950	26.420
	g	308.0317	-417.1	-418.0	-409.7	4.90	81.7	22.2
	ao	308.0317		-505.5	-465.4		-25.	
$ThF_4 \cdot 2.5H_2O$	c	353.0702		-680.7	-623.2		56.	
$ThOF_2$	c	286.0343		-398.0	-379.9		25.	
ThCl	g	267.4911				2.35	64.3	8.71
$ThCl^{3+}$	a	267.4911		-223.7	-201.4		-82.	
$ThCl_2$	g	302.9441				3.36	75.8	13.2
$ThCl_2^{2+}$	a	302.9441			-232.3			
$ThCl_3$	g	338.3971				4.47	88.3	18.6
$ThCl_3^+$	a	338.3971			-264.9			
$ThCl_4$	c	373.8501		-283.6	-261.6		45.5	
	g	373.8501	-230.78	-230.9	-223.6	5.82	95.0	24.3
$ThCl_4 \cdot 2H_2O$	c	409.8809		-436.0				
$ThCl_4 \cdot 4H_2O$	c	445.9117		-587.8				
$ThCl_4 \cdot 7H_2O$	c	499.9579		-804.4				
$ThCl_4 \cdot 8H_2O$	c	517.9733		-876.1				
$ThClO_3^+$	a	315.4893			-171.7			
$ThOCl_2$	c	318.9435		-294.5	-276.3		29.5	
ThBr	g	311.9471				2.45	67.1	8.95
$ThBr_2$	g	391.8561				3.56	81.0	13.6
$ThBr_3$	g	471.7651				4.89	97.0	19.3

Table 90. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Thorium

Substance Formula and Description	State	Formula weight	0 K ΔHf_0° kcal/mol	298.15 K (25 °C) ΔHf° kcal/mol	ΔGf° kcal/mol	$H_{298}^\circ - H_0^\circ$ kcal/mol	S° cal/deg mol	C_p° cal/deg mol
$ThBr_4$	c	551.6741		-230.7	-221.6		55.	
	g	551.6741	-175.26	-182.3	-187.5	6.23	103.	25.1
$ThBr_4 \cdot 7H_2O$	c	677.7819		-757.2				
$ThBr_4 \cdot 10H_2O$	c	731.8281		-975.1				
$ThBr_4 \cdot 12H_2O$	c	767.8589		-1119.5				
$Th(BrO_3)^{3+}$	a	359.9453			-166.1			
$ThOBr_2$	c	407.8555		-283.				
$Th(BrO_3)_2^{2+}$	a	487.8525			-162.4			
ThI	g	358.9425				2.49	68.9	8.98
ThI_2	g	485.8469				3.69	85.0	13.7
ThI_3	g	612.7513				5.12	102.7	19.6
ThI_4	c	739.6557		-158.9	-156.6		61.	
	g	739.6557	-108.89	-110.1	-123.1	6.65	112.	25.4
$Th(IO_3)^{3+}$	a	406.9407			-203.9			
$ThOI_2$	c	501.8463		-239.2	-231.2		38.	
$ThOI_2 \cdot 3.5H_2O$	c	564.9002		-490.20				
$Th(IO_3)_2^{2+}$	a	581.8433			-238.0			
$Th(IO_3)_3^{+}$	a	756.7459			-272.6			
$Th(OH)I_3 \cdot 10H_2O$	c	809.9127		-948.5				
ThS	c	264.1021		-94.5	-93.4		16.68	
ThS_2	c	296.1661		-149.7	-148.2		23.0	
Th_2S_3	c	560.2682		-259.0	-257.4		43.	
Th_3S_7	c	920.5623		-454.				
Th_7S_{12}	c	2009.0347		-989.	-985.		166.	
$Th(SO_4)^{2+}$	a	328.0997		-396.4	-353.9		-55.	
$Th(SO_4)_2$	c	424.1613		-607.7	-552.2		38.0	
$Th(SO_4)_3^{2-}$	a	520.2229			-716.7			
$Th(SO_4)_4^{4-}$	a	616.2845			-891.9			
ThN	c	246.0448	-92.93	-93.5	-86.9	2.020	13.40	10.8
	g	246.0448		118.				
Th_3N_4	c	752.1411		-314.3	-289.9		48.	
$Th(NO_3)^{3+}$	a	294.0430			-196.7			
$Th(NO_3)_2^{2+}$	a	356.0479			-224.4			
$Th(NO_3)_4$	c	480.0577		-344.5				
in 350 H_2O		480.0577		-380.85				
$Th(NO_3)_4 \cdot 4H_2O$	c	552.1193		-646.46				
$Th(NO_3)_4 \cdot 5H_2O$	c	570.1347		-718.88	-555.78		129.83	
Th_2N_2O	c	508.0890		-322.				
$ThCl_4 \cdot NH_4Cl$	c	427.3418		-371.7				
$ThCl_4 \cdot 2NH_4Cl \cdot 10H_2O$	c	660.9875		-1169.7				
$ThCl_4 \cdot 4NH_3$	c	441.9729		-406.9				
$Th(NH_3)_4Cl_4$	c2	441.9729		-431.3				
$ThCl_4 \cdot 6NH_3$	c	476.0343		-459.7				
$Th(NH_3)_4Cl_4 \cdot 2NH_3$	c2	476.0343		-497.3				
$ThCl_4 \cdot 7NH_3$	c	493.0650		-482.0				
$Th(NH_3)_4Cl_4 \cdot 3NH_3$	c2	493.0650		-528.8				
$ThCl_4 \cdot 12NH_3$	c	578.2185		-584.9				

Table 90 — Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Thorium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf°_0 kcal/mol	ΔHf°	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$	S° cal/deg mol	C°_p
$Th(NH_3)_6Cl_4 \cdot 6NH_3$	c2	578.2185		-631.6				
$ThCl_4 \cdot 18NH_3$	c	680.4027		-699.3				
$Th(NH_3)_6Cl_4 \cdot 12NH_3$	c2	680.4027		-746.2				
ThP	c	263.0119		-83.2	-81.54		17.0	
	g	263.0119	128.5	128.	116.	2.29	63.9	8.5
Th_3P_4	c	820.0095		-273.0	-266.0		53.0	
$Th(H_2PO_4)^{3+}$	a	329.0255			-445.0			
$Th(H_2PO_4)_2^{2+}$	a	426.0129			-721.0			
ThC	c	244.0493		-29.60				
$ThC_{1.94}$	c	255.3398	-35.4	-35.	-35.3	2.447	16.37	13.55
ThC_2	g	256.0605		173.				
ThC_{35}	c	652.4201			-39.80			
$Th(C_2O_4)^{2+}$	a	320.0581			-342.3			
$Th(C_2O_4)_2 \cdot 6H_2O$	c	516.1705			-864.8			
$Th(C_2O_4)_3^{2-}$	a	496.0981			-686.9			
$Th(C_2H_3O_2)^{3+}$	a	291.0833			-259.3			
$Th(SCN)^{3+}$	a	290.1200			-148.6			
$Th(SCN)_2^{2+}$	a	348.2019			-128.5			
$Th(SCN)_3^{+}$	a	406.2838			-106.9			
$Th(SCN)_4$	ao	464.3657			-86.1			
ThSi	c	260.2101		-29.0				
$ThSi_2$	c	288.2101		-39.5				
Th_3Si_2	c	752.2863		-64.7				
Th_3Si_5	c	836.5443		-110.7				
ThGe	c	304.6281		-19.0				
$ThGe_2$	c	377.2181		-28.0				
$ThGe_3$	c	449.8081		-33.6				
Th_3Ge	c	768.7043		-26.0				
Th_3Ge_2	c	841.2943		-47.5				
Th_3Ge_5	c	1059.0643		-76.0				
$ThSn_3$	c	588.1081		-38.8				
$ThPb_3$	c	853.6081		-28.0				
ThB	g	242.8491	206.6	207.	193.	2.25	61.0	8.4
ThB_6	c	296.9041					28.0	
$ThIn_3$	c	576.4981		-36.0				
$ThTl_3$	c	845.1481		-24.8				
$ThNi_2$	c	349.4581		-32.0	-31.4		25.	
$ThNi_5$	c	525.5881		-62.0	-59.0		38.	
Th_2Ni_{17}	c	1462.1462		-112.6	-110.0		138.	
ThCo	c	290.9713		-22.40	-20.40		13.1	
$ThCo_5$	c	526.7041		-42.8	-39.8		36.	
Th_2Co_7	c	876.6086		-89.8	-80.7		45.	
Th_2Co_{17}	c	1465.9406		-74.8	-70.3		132.	
Th_7Co_3	c	1801.0663		-72.0	-70.0		103.	
$ThFe_3$	c	399.5791		-23.6	-20.0		20.4	
$ThFe_5$	c	511.2731		-27.5	-23.8		33.	

Table 90. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Thorium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf°_0 kcal/mol	ΔHf°	ΔGf°	$H^\circ_{298}-H^\circ_0$	S°	C°_p
				kcal/mol			cal/deg mol	
Th_2Fe_7	c	855.0052		-49.0	-41.8		47.	
Th_2Fe_{17}	c	1413.4752		-56.4	-49.7		114.	
Th_7Fe_3	c	1791.8077		-12.2	-13.4		113.	
ThRu	g	333.1081	160.3	160.	146.7	2.37	64.0	8.7
ThPt	g	427.1281	147.03	146.5	132.7	2.40	69.1	8.8
ThIr	g	424.2381	165.40	165.0	150.7	2.41	69.1	8.8
$ThRe_2$	c	604.4381		-41.6	-41.4		29.7	

Table 91 Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Actinium

Substance			0 K	298.15 K (25 °C)				
Formula and Description	State	Formula weight	ΔHf_0° kcal/mol	ΔHf°	ΔGf° kcal/mol	$H_{298}^\circ - H_0^\circ$	S° cal/deg mol	C_p°
Ac	cs	227.0280	0	0	0		13.5	6.5
	g	227.0280		97.0	87.6	1.481	44.92	4.98

Table 98. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Lithium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf°_0 kcal/mol	ΔHf°	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$	S° cal/deg mol	C°_p
Li	cs	6.941	0	0	0	1.106	6.96	5.92
	g	6.941	37.715	38.09	30.28	1.481	33.14	4.968
Li^+	g	6.941	162.045	162.42				
Li^{2+}	g	6.941		1936.7				
Li^{3+}	g	6.941		4760.5				
Li^+	a	6.941		-66.56	-70.10		3.2	16.4
Li in D:99Hg		6.941		-19.60				
LI Hg:x		6.941			-19.5			
Li_2	g	13.882		51.6	41.7		47.057	
Li_2^+	g	13.882		166.				
LiO	g	22.9404	18.10	18.1	12.5	2.14	50.40	7.75
LiO_2	g	38.9398				2.60	58.27	10.34
Li_2O	c	29.8814	-141.393	-142.91	-134.13	1.732	8.98	12.93
	g	29.8814	-38.18	-38.4	-43.4	3.03	55.30	11.91
Li_2O_2	c	45.8808		-151.6				
	au	45.8808		-158.8				
LiH	c	7.9490	-20.425	-21.64	-16.34	0.903	4.782	6.66
^7Li	c2	8.0240				0.924	4.881	6.88
	g	7.9490	33.322	33.28	27.84	2.076	40.820	7.105
LiD	c	8.9551	-20.684	-21.73	-16.18	1.085	5.640	8.20
	g	8.9551	33.735	33.7	28.3	2.095	42.370	7.34
LiOH	c	23.9484	-114.517	-115.90	-104.92	1.772	10.23	11.87
	g	23.9484	-56.352	-56.9	-57.9	2.607	50.38	11.00
	a	23.9484		-121.53	-107.70		0.67	-19.1
	ao	23.9484		-121.5	-108.0		1.7	
in 12 H_2O		23.9484		-120.632				
in 15 H_2O		23.9484		-120.766				
in 20 H_2O		23.9484		-120.897				
in 30 H_2O		23.9484		-121.024				
in 50 H_2O		23.9484		-121.136				
in 100 H_2O		23.9484		-121.243				
in 110 H_2O		23.9484		-121.256				
in 200 H_2O		23.9484		-121.321				
in 400 H_2O		23.9484		-121.379				
in 500 H_2O		23.9484		-121.393				
in 1,000 H_2O		23.9484		-121.430				
in 2,000 H_2O		23.9484		-121.458				
in 5,000 H_2O		23.9484		-121.483				
in 10,000 H_2O		23.9484		-121.497				
in 50,000 H_2O		23.9484		-121.516				
in 100,000 H_2O		23.9484		-121.521				
$LiOH \cdot H_2O$	c	41.9638	-185.024	-188.34	-162.77	2.900	17.02	19.00
LiOD	c	24.9545		-116.8				
	g	24.9545		-59.9				
LiF	c	25.9394	-146.657	-147.22	-140.47	1.547	8.52	9.94
	g	25.9394	-81.219	-81.22	-86.19	2.109	47.846	7.48
	a	25.9394		-146.06	-136.7		-0.1	-9.10
in 900 H_2O		25.9394		-145.952				

Table 98. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Lithium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf°_0 kcal/mol	ΔHf°	ΔGf°	$H^\circ_{298}-H^\circ_0$	S°	C°_p
				kcal/mol			cal/deg mol	
LiF		25.9394		-145.957				
in 1,000 H_2O		25.9394		-146.013				
in 5,000 H_2O		25.9394		-146.027				
in 10,000 H_2O		25.9394		-146.057				
in 500,000 H_2O		25.9394						
Li_2F_2	g	51.8788	-223.67	-224.8	-224.7	3.19	61.79	15.09
Li_3F_3	g	77.8182	-360.30	-361.9	-357.	4.88	76.	24.5
$LiHF_2$	c	45.9458	-223.66	-225.22	-209.11	2.826	17.0	16.77
in 6,000 H_2O		45.9458		-222.89				
LiCl	c	42.394	-97.68	-97.66	-91.87	2.224	14.18	11.47
	g	42.394	-46.663	-46.7	-51.8	2.165	50.840	7.94
	a	42.394		-106.51	-101.48		16.7	-16.2
in 3 H_2O		42.394		-102.621				
in 5 H_2O		42.394		-104.399				
in 8 H_2O		42.394		-105.289				
in 10 H_2O		42.394		-105.540				
in 12 H_2O		42.394		-105.694				
in 15 H_2O		42.394		-105.840				
in 20 H_2O		42.394		-105.972				
in 30 H_2O		42.394		-106.099				
in 50 H_2O		42.394		-106.202				
in 100 H_2O		42.394		-106.291				
in 110 H_2O		42.394		-106.300				
in 200 H_2O		42.394		-106.349				
in 400 H_2O		42.394		-106.390				
in 500 H_2O		42.394		-106.401				
in 750 H_2O		42.394		-106.418				
in 1,000 H_2O		42.394		-106.428				
in 2,000 H_2O		42.394		-106.449				
in 5,000 H_2O		42.394		-106.471				
in 10,000 H_2O		42.394		-106.482				
in 50,000 H_2O		42.394		-106.500				
in 18.5 D_2O		42.394		-105.523				
in 20 D_2O		42.394		-105.553				
in 27.75 D_2O		42.394		-105.651				
in 50 D_2O		42.394		-105.764				
in 55.5 D_2O		42.394		-105.779				
in 100 D_2O		42.394		-105.846				
in 200 D_2O		42.394		-105.901				
in 500 D_2O		42.394		-105.95				
in 1,000 D_2O		42.394		-105.978				
in 5,000 D_2O		42.394		-106.020				
in 10,000 D_2O		42.394		-106.031				
in 50,000 D_2O		42.394		-106.049				
in D_2O:S		42.394		-106.063				
in 7 CH_3OH		42.394		-106.86				
in 8 CH_3OH		42.394		-107.06				
in 10 CH_3OH		42.394		-107.34				

Table 98. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Lithium

Substance: Formula and Description	State	Formula weight	0 K ΔHf°_0 kcal/mol	298.15 K (25 °C) ΔHf° kcal/mol	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$ kcal/mol	S° cal/deg mol	C°_p cal/deg mol
LiCl in 20 CH_3OH		42.394		-108.04				
in 50 CH_3OH		42.394		-108.64				
in 100 CH_3OH		42.394		-108.96				
in 200 CH_3OH		42.394		-109.18				
in 500 CH_3OH		42.394		-109.36				
in 1,000 CH_3OH		42.394		-109.46				
in 2,000 CH_3OH		42.394		-109.56				
in 20 C_2H_5OH		42.394		-108.92				
in 25 C_2H_5OH		42.394		-109.01				
in 50 C_2H_5OH		42.394		-109.20				
in 100 C_2H_5OH		42.394		-109.34				
in 1,000 C_2H_5OH		42.394		-109.66				
$LiCl\cdot H_2O$	c	60.4094		-170.31	-151.01		24.58	
$LiCl\cdot 2H_2O$	c	78.4248		-242.03				
$LiCl\cdot 3H_2O$	c	96.4402		-313.4				
Li_2Cl_2	g	84.788	-141.20	-141.9	-142.5	3.70	69.0	17.26
Li_3Cl_3	g	127.182	-228.26	-230.	-224.	4.87	80.2	24.4
LiClO in 250 H_2O		58.3934		-91.89				
$LiClO_3$	c	90.3922		-88.2				
	a	90.3922		-91.41	-72.02		42.0	-3.3
in 3 H_2O		90.3922		-88.30				
in 5 H_2O		90.3922		-89.58				
in 10 H_2O		90.3922		-89.77				
in 20 H_2O		90.3922		-90.05				
in 50 H_2O		90.3922		-90.30				
in 100 H_2O		90.3922		-90.48				
in 200 H_2O		90.3922		-90.66				
in 500 H_2O		90.3922		-90.88				
in 1,000 H_2O		90.3922		-91.01				
in 2,000 H_2O		90.3922		-91.11				
in 5,000 H_2O		90.3922		-91.21				
$LiClO_3\cdot 0.25H_2O$	c	94.8960			-78.47			
$LiClO_4$	c	106.3916		-91.06				
	a	106.3916		-97.472	-72.2		46.7	-1.8
in 13.88 H_2O		106.3916		-96.949				
in 15 H_2O		106.3916		-96.981				
in 20 H_2O		106.3916		-97.082				
in 50 H_2O		106.3916		-97.232				
in 100 H_2O		106.3916		-97.280				
in 200 H_2O		106.3916		-97.318				
in 400 H_2O		106.3916		-97.353				
in 500 H_2O		106.3916		-97.362				
in 1,000 H_2O		106.3916		-97.387				
in 2,000 H_2O		106.3916		-97.407				
in 5,000 H_2O		106.3916		-97.429				
in 10,000 H_2O		106.3916		-97.441				
in 50,000 H_2O		106.3916		-97.458				

Table 98. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Lithium

Substance: Formula and Description	State	Formula weight	0 K ΔHf°_0 kcal/mol	298.15 K (25 °C) ΔHf° kcal/mol	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$	S° cal/deg mol	C°_p cal/deg mol
$LiClO_4$ in 100,000 H_2O		106.3916		-97.462				
in CH_3OH:S		106.3916		-103.36				
in C_2H_5OH:S		106.3916		-102.26				
$LiClO_4 \cdot H_2O$	c	124.4070		-166.6	-121.8		37.1	
$LiClO_4 \cdot 3H_2O$	c	160.4378		-310.22	-239.30		60.9	
LiBr	c	86.850		-83.942	-81.74		17.75	
	g	86.850				2.193	53.59	8.11
	a	86.850		-95.612	-94.95		22.9	-17.5
in 3.25 H_2O		86.850		-92.073				
in 4 H_2O		86.850		-93.041				
in 5 H_2O		86.850		-93.764				
in 6 H_2O		86.850		-94.149				
in 8 H_2O		86.850		-94.543				
in 10 H_2O		86.850		-94.748				
in 12 H_2O		86.850		-94.879				
in 15 H_2O		86.850		-94.998				
in 20 H_2O		86.850		-95.116				
in 30 H_2O		86.850		-95.226				
in 50 H_2O		86.850		-95.317				
in 100 H_2O		86.850		-95.400				
in 110 H_2O		86.850		-95.409				
in 200 H_2O		86.850		-95.457				
in 220 H_2O		86.850		-95.462				
in 400 H_2O		86.850		-95.497				
in 50 H_2O		86.850		-95.507				
in 1,000 H_2O		86.850		-95.532				
in 1,50 H_2O		86.850		-95.542				
in 2,000 H_2O		86.850		-95.552				
in 5,000 H_2O		86.850		-95.572				
in 10,000 H_2O		86.850		-95.583				
in 50,000 H_2O		86.850		-95.599				
in 100,000 H_2O		86.850		-96.602				
in 50,000 H_2O		86.850		-95.607				
$LiBr \cdot H_2O$	c	104.8654		-158.36	-142.05		26.2	
$LiBr \cdot 2H_2O$	c	122.8808		-230.1	-200.9		38.8	
$LiBrO_3$	c	134.8482		-82.93				
	a	134.8482		-82.59	-65.67		41.8	
LiI	c	133.8454	-64.663	-64.63	-64.60	2.716	20.74	12.20
	g	133.8454	-18.92	-19.38	-29.71	2.225	55.500	8.28
	a	133.8454		-79.75	-82.4		29.8	-17.6
in 20 H_2O		133.8454		-79.279				
in 30 H_2O		133.8454		-79.383				
in 50 H_2O		133.8454		-79.467				
in 100 H_2O		133.8454		-79.547				
in 110 H_2O		133.8454		-79.562				
in 200 H_2O		133.8454		-79.602				
in 400 H_2O		133.8454		-79.641				

Table 98. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Lithium

Substance: Formula and Description	State	Formula weight	0 K: ΔHf°_0 kcal/mol	298.15 K (25 °C): ΔHf° kcal/mol	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$ kcal/mol	S° cal/deg mol	C°_p cal/deg mol
in 500 H_2O		133.8454		-79.650				
LiI in 1,000 H_2O		133.8454		-79.674				
in 2,000 H_2O		133.8454		-79.694				
in 5,000 H_2O		133.8454		-79.713				
in 10,000 H_2O		133.8454		-79.723				
in 500,000 H_2O		133.8454		-79.747				
in 40 $C_2H_5OC_2H_5$		133.8454		-73.1				
$LiI \cdot H_2O$	c	151.8608		-141.09	-127.0		29.4	
$LiI \cdot 2H_2O$	c	169.8762		-212.81	-186.5		44.	
$LiI \cdot 3H_2O$	c	187.8916		-284.93				
Li_2I_2	g	267.6908	-85.7	-87.	-98.	4.1	79.	18.2
$LiIO_3$	c	181.8436		-120.31				
	a	181.8436		-119.46	-100.70		31.4	-13.2
in 800 H_2O		181.8436		-119.379				
Li_2S	c	45.946		-105.5				
in 1,400 H_2O		45.946		-121.2				
Li_2S_2	c	78.010		-104.7				
in 10,000 H_2O		78.010		-124.4				
$LiSO_4^-$	a	103.0026		-284.6	-249.1		9.2	
Li_2SO_3	c	93.9442		-281.3				
Li_2SO_4	c	109.9436	-340.367	-343.33	-315.91	4.452	27.5	28.10
	a	109.9436		-350.44	-318.18		11.3	-37.2
in 18 H_2O		109.9436		-348.828				
in 20 H_2O		109.9436		-348.998				
in 25 H_2O		109.9436		-349.199				
in 30 H_2O		109.9436		-349.319				
in 35 H_2O		109.9436		-349.400				
in 40 H_2O		109.9436		-349.457				
in 50 H_2O		109.9436		-349.530				
in 60 H_2O		109.9436		-349.576				
in 80 H_2O		109.9436		-349.637				
in 100 H_2O		109.9436		-349.679				
in 150 H_2O		109.9436		-349.749				
in 200 H_2O		109.9436		-349.794				
in 300 H_2O		109.9436		-349.852				
in 400 H_2O		109.9436		-349.904				
in 500 H_2O		109.9436		-349.93				
in 800 H_2O		109.9436		-349.988				
in 1,000 H_2O		109.9436		-350.022				
in 2,000 H_2O		109.9436		-350.112				
in 5,000 H_2O		109.9436		-350.217				
in 8,000 H_2O		109.9436		-350.260				
in 10,000 H_2O		109.9436		-350.278				
in 15,000 H_2O		109.9436		-350.308				
in 20,000 H_2O		109.9436		-350.326				
in 50,000 H_2O		109.9436		-350.367				
in 100,000 H_2O		109.9436		-350.389				

Table 98. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Lithium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf_0° kcal/mol	ΔHf°	ΔGf° kcal/mol	$H_{298}^\circ - H_0^\circ$	S° cal/deg mol	C_p°
Li_2SO_4 in H_2SO_4 + 34.72 H_2O:Au		109.9436		-344.9				
in H_2SO_4 + 1,100 H_2O:Au		109.9436		-347.5				
$Li_2SO_4 \cdot H_2O$	c	127.9590	-410.02	-414.8	-374.2	5.697	39.1	36.11
$Li_2SO_4 \cdot D_2O$	c	129.9712		-416.9	-375.6		40.	
LiHS	c	40.0130		-60.1				
in 700 H_2O		40.0130		-68.7				
$LiI \cdot SO_2$	c	197.9082		-145.3				
$LiI \cdot 2SO_2$	c	261.9710		-225.7				
Li_2Se	c	92.842		-100.2				
in 440 H_2O		92.842		-112.8				
$Li_2Se \cdot 9H_2O$	c	254.9806		-738.4				
$Li_2SeO_3 \cdot H_2O$	c	158.8556		-318.9				
Li_2SeO_4	c	156.8396		-269.4				
in 800 H_2O		156.8396		-277.0				
$Li_2SeO_4 \cdot H_2O$	c	174.8550		-339.3				
LiN_3	c	48.9611		1.9				
	a	48.9611		-0.8	13.1		29.	
Li_3N	c	34.8297	-37.766	-39.3	-30.7	2.680	14.96	17.99
$LiNO_2$	c	52.9465		-89.0	-72.2		23.	
	a	52.9465		-91.56	-77.8		32.7	-6.9
$LiNO_2 \cdot 0.5H_2O$	c	61.9542			-101.2			
$LiNO_2 \cdot H_2O$	c	70.9619		-161.6	-130.1		29.	
$LiNO_3$	c	68.9459		-115.47	-91.1		21.5	
	a	68.9459		-116.12	-96.7		38.3	-4.3
	ao	68.9459			-97.2			
in 3 H_2O		68.9459		-114.870				
in 5 H_2O		68.9459		-114.892				
in 10 H_2O		68.9459		-115.622				
in 27 H_2O		68.9459		-115.858				
in 50 H_2O		68.9459		-115.904				
in 100 H_2O		68.9459		-115.945				
in 400 H_2O		68.9459		-116.015				
in 500 H_2O		68.9459		-116.022				
in 1,000 H_2O		68.9459		-116.05				
in 5,000 H_2O		68.9459		-116.084				
in 10,000 H_2O		68.9459		-116.094				
in 100,000 H_2O		68.9459		-116.112				
in 500,000 H_2O		68.9459		-116.117				
in 30 CH_3OH		68.9459		-111.0				
$LiNO_3 \cdot 3H_2O$	c	122.9921		-328.5	-263.8		53.4	
$LiNH_2$	c	22.9637		-42.9				
$Li(NH_3)_4$	c	75.0638			-20.1			
	l	75.0638		-77.1				
Li_2NH	c	28.8967		-52.8				
$LiCl \cdot NH_3$	c	59.4247		-119.7	-97.9		30.1	
$LiCl \cdot 3NH_3$	c	93.4861		-163.5	-108.0		56.5	
$LiCl \cdot 4NH_3$	c	110.5168		-182.7	-111.5		73.6	

Table 98. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Lithium

Substance		State	Formula weight	0 K	298.15 K (25 °C)				
Formula	Description			ΔHf_0° kcal/mol	ΔHf°	ΔGf° kcal/mol	$H_{298}^\circ - H_0^\circ$	S° cal/deg mol	C_p°
$LiCl \cdot ND_3$		c	62.4430		-123.3	-100.2		31.	
$LiCl \cdot 3ND_3$		c	102.5410		-173.6	-115.2		62.	
$LiCl \cdot 4ND_3$		c	122.5900		-196.6	-121.2		81.	
$LiClO_4 \cdot 2N_2H_4$		c	170.4824		-88.1				
$LiBr \cdot NH_3$		c	103.8807		-108.0				
$LiBr \cdot 2NH_3$		c	120.9114		-130.1				
$LiBr \cdot 3NH_3$		c	137.9421		-153.0				
$LiBr \cdot 4NH_3$		c	154.9728		-173.8				
$LiBr \cdot 5NH_3$		c	172.0035		-193.2				
$LiBr \cdot ND_3$		c	106.8990		-111.9				
$LiBr \cdot 2ND_3$		c	126.9480		-137.3				
$LiBr \cdot 3ND_3$		c	146.9970		-164.1				
$LiBr \cdot 4ND_3$		c	167.0460		-188.2				
$LiI \cdot NH_3$		c	150.8761		-92.2				
$LiI \cdot 2NH_3$		c	167.9068		-118.2				
$LiI \cdot 3NH_3$		c	184.9375		-140.7				
$LiI \cdot 4NH_3$		c	201.9682		-163.0				
$LiPO_3$		c	85.9130		-300.0				
		gl	85.9130		-296.2				
$LiP_2O_7^{3-}$		a	180.8844		-608.3	-533.7		-5.3	
Li_3PO_4		c	115.7944		-500.9				
$Li_4P_2O_7$		c	201.7074		-802.				
$Li_5P_3O_{10}$		gl	287.6204		-1090.				
$Li_6P_4O_{13}$		gl	373.5334		-1384.				
$LiHPO_4^-$		a	102.9204		-369.5	-332.1		21.	
LiH_2PO_4		c	103.9284		-376.1				
$LiHP_2O_7^{2-}$		a	181.8924		-610.0	-544.2		24.	
Li_3Sb		c	142.5730		-77.				
Li_3Sb_2		c	264.3230		-43.5				
Li_3Bi		c	229.8030		-55.				
Li_2C_2		c	37.9044		-14.2				
Li_2CO_3		c	73.8914	-288.652	-290.6	-270.58	3.627	21.60	23.69
	G-H-S constraint has been relaxed; see Introduction								
		a	73.8914		-294.96	-266.4		-7.1	
	in 1,900 H_2O		73.8914		-294.0				
$LiHCO_3$	in 950 H_2O		67.9584		-229.2				
$LiOC_2H_5$		c	52.0028		-76.9				
LiCN	in 110 H_2O		32.9589		-29.9				
	in 220 H_2O		32.9589		-30.0				
Li_2SiO_3		c	89.9662	-391.26	-393.9	-372.2	3.453	19.08	23.68
		gl	89.9662		-389.				
$Li_2Si_2O_5$		c	150.0510	-608.05	-611.8	-577.1	5.187	29.20	34.59
		gl	150.0510		-600.5				
$Li_2Si_3O_7$		gl	210.1358		-803.				
Li_2SiF_6		c	155.9584		-704.4				
		a	155.9584		-704.12	-665.9		36.	

Table 98. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Lithium

Substance: Formula and Description	State	Formula weight	0 K: ΔHf°_0 kcal/mol	298.15 K (25 °C): ΔHf° kcal/mol	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$ kcal/mol	S° cal/deg mol	C°_p cal/deg mol
LiSn	c	125.6310		-16.8				
Li_7Sn_2	c	285.9670		-86.				
$Li_{22}Sn_5$	c	746.1520		-254.				
LiPb	c	214.1310		-14.4				
Li_7Pb_2	c	462.9670		-76.0				
$Li_2PbI_4 \cdot 4H_2O$	c	800.7512		-488.5				
$LiBO_2$	c	49.7508	-245.37	-246.7	-233.3	2.144	12.3	14.3
	l	49.7508		-236.4				
	g	49.7508	-158.04	-158.3	-160.8	3.214	65.6	13.7
$Li_2B_2O_4$	g	99.5016		-384.				
$Li_2B_4O_7$	c	169.1218		-810.3				
	gl	169.1218		-798.8				
$Li_2B_6O_{10}$	c	238.7420		-1118.6				
	gl	238.7360		-1107.5				
$Li_2B_8O_{13}$	gl	308.3622		-1412.8				
$LiBH_4$	c	21.7840	-43.20	-45.6	-29.9	3.049	18.13	19.73
	a	21.7840		-55.05	-42.8		29.7	
$LiBF_4$	c	93.7456		-440.6				
$LiBH_4 \cdot NH_3$	c	38.8147		-64.6				
$LiBH_4 \cdot 2NH_3$	c	55.8454		-85.2				
$LiBH_4 \cdot 3NH_3$	c	72.8761		-106.7				
$LiBH_4 \cdot 4NH_3$	c	89.9068		-127.6				
$LiBH_4 \cdot (CH_3)_2O$	c	67.8538		-113.5	-72.2		53.	
$LiBH_4 \cdot (CH_2)_4O$ tetrahydrofuran	c	93.8922		-99.3	-52.7		69.	
$LiBH_4 \cdot (C_2H_5)_2O$	c	95.9082		-118.5	-62.3		68.	
$LiBH_4 \cdot 2(CH_3)_2O$	c	113.9236		-180.1	-112.3		85.	
$LiBH_4 \cdot (CH(CH_3)_2)_2O$ in isopropyl ether	c	123.9626		-134.7	-61.1		75.	
$(LiBH_4)_2 \cdot (CH_3)_2O$	c	89.6378		-159.7	-102.4		70.	
$(LiBH_4)_2 \cdot (C_2H_5)_2O$	c	117.6922		-163.3	-92.5		90.	
$LiBH_4 \cdot N(CH_3)_3$	c	80.8963		-64.9	-9.4		52.	
$LiBH_4 \cdot 2N(CH_3)_3$	c	140.0086		-81.7	13.9		85.	
LiAl	c	33.9225		-11.5				
$LiAlO_2$	c	65.9213	-283.332	-285.21	-270.4	2.317	12.750	16.20
$LiAl_5O_8$	c	269.8437	-1086.574	-1094.5	-1034.6	6.948	35.80	53.58
$LiAlH_4$	c	37.9545	-24.67	-27.8	-10.7	3.120	18.82	19.88
Li_3AlH_6	c	53.8525	-70.23	-76.3	-47.45	4.410	24.52	30.53
$LiAlF_4$	g	109.9161		-440.4				
Li_2AlF_5	g	135.8555		-581.				
$(LiAlF_4)_2$	g	219.8322		-929.				
Li_3AlF_6	c	161.7949		-804.9	-766.7		44.90	
$LiAlCl_4$	c	175.7345		-268.7				
in 3,000 H_2O		175.7345		-354.1				
$LiAlBr_4$	c	353.5585		-217.6				
in 3,000 H_2O		353.5585		-314.19				

Table 98. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Lithium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf°_0 kcal/mol	ΔHf°	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$	S° cal/deg mol	C°_p
$LiAlSiO_4$ eucryptite, low-temp. form	c	126.0061		-507.7	-480.5		24.8	27.1
$LiAlSi_2O_6$ α spodumene	c	186.0909		-730.1	-688.71		30.90	38.0
β spodumene	c2	186.0909		-723.4	-683.79		36.90	38.9
$Li_2Al_2Si_8O_{20}$ petalite	c	612.5210	-2322.57	-2335.6	-2203.7	18.269	111.0	117.2
LiGaO	g	92.6604		-25.				
$LiGaF_4$	g	152.6546		-360.	-351.		85.	
Li_2GaF_5	g	178.5940		-497.	-485.		105.	
$(LiGaF_4)_2$	g	305.3092		-761.	-736.		142.	
$GaF_3 \cdot 3LiF$	c	204.5334		-724.	-687.		53.	
LiInO	g	137.7604		-17.				
LiTl	c	211.3110		-12.8				
$LiNO_3 \cdot Zn(NO_3)_2$ in 82 H_2O		258.3257		-251.5				
LiHg	c	207.5310		-20.6				
$LiHg_2$	c	408.1210		-24.2				
$LiHg_3$	c	608.7110	-24.917	-26.6	-23.66	6.122	51.6	28.15
$LiBr \cdot 0.125HgBr_2$ in 740 H_2O		131.9010		-101.0				
$LiBr \cdot 0.25HgBr_2$ in 1,250 H_2O		176.9520		-106.1				
$LiBr \cdot 0.5HgBr_2$ in 2,370 H_2O		267.0540		-116.0				
$LiBr \cdot HgBr_2$ in 4,510 H_2O		447.2580		-135.2				
$LiCN \cdot 0.5Hg(CN)_2$ in 330 H_2O		159.2718		-3.0				
$LiCN \cdot Hg(CN)_2$ in 550 H_2O		285.5847		+29.5				
$LiCl \cdot 0.5Hg(CN)_2$ in 330 H_2O		168.7069		-73.2				
$LiCl \cdot Hg(CN)_2$ in 550 H_2O		295.0198		-40.0				
$LiBr \cdot 0.5Hg(CN)_2$ in 330 H_2O		213.1629		-62.7				
$LiBr \cdot Hg(CN)_2$ in 550 H_2O		339.4758		-29.5				
$LiBr \cdot Hg(CN)_2 \cdot 3.5H_2O$	c	402.5297		-277.5				
$LiI \cdot 0.5Hg(CN)_2$ in 330 H_2O		260.1583		-48.2				
$LiI \cdot Hg(CN)_2$ in 550 H_2O		386.4712		-15.9				
$LiI \cdot Hg(CN)_2 \cdot 3.5H_2O$	c	449.5251		-265.0				
CuLi	g	70.4810		73.3				
AgLi	g	114.8110		63.7				
AuLi	g	203.9080		57.6				
$Li_{0.5}Fe_{2.5}O_4$	c	207.0856				5.184	29.20	34.43
$LiFeO_2$	c	94.7868	-178.191	-179.3	-166.0	3.145	18.00	19.81
$LiFe(CN)_6^{3-}$	a	218.8954			93.6			
$Li_{0.05}Zn_{0.9}Fe_{2.05}O_4$ annealed	c	237.6640				5.464	36.04	33.39
quenched	c2	237.6640				5.646	36.26	34.06

Table 98 Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Lithium

Substance Formula and Description	State	Formula weight	0 K ΔHf°_0 kcal/mol	298.15 K (25 °C) ΔHf° kcal/mol	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$	S° cal/deg mol	C°_p cal/deg mol
Li_2PtCl_6	c	421.6900		-276.				
$LiReO_4$	c	257.1386		-251.				
	a	257.1386		-254.8	-236.1		51.	
$LiReO_4 \cdot H_2O$	c	275.1540		-323.				
$LiReO_4 \cdot 2H_2O$	c	293.1694		-393.				
Li_2CrO_4	c	129.8756		-331.9				
	a	129.8756		-343.7	-314.2		18.5	
in 800 H_2O		129.8756		-342.7				
$Li_2CrO_4 \cdot 2H_2O$	c	165.9064		-474.3	-421.		50.	
Li_2MoO_4	c	173.8196		-363.36	-336.9		30.	
	g	173.8196		-279.	-268.		80.	
Li_2WO_4	c	261.7296		-335.				
	g	261.7296		-241.				
$LiWF_6$	c	304.7814		-532.0				
$LiNbO_3$	c	147.8452			-302.6			
Li_2TiO_3	c	109.7802	-396.780	-399.3	-377.6	3.953	21.93	26.54
Li_2ZrO_3	c	153.1002		-420.7				
Li_4ZrO_4	c	182.9816		-567.				
Li_8ZrO_6	c	242.7444		-855.				
Li_2HfO_3	c	240.3702		-431.				
$LiScF_4$	g	127.8905		-452.				
$LiLuCl_4$	g	323.7230		-267.				
Li_4PuF_8	c	418.8012		-1033.				
Li_2UO_4	c α	315.9086		-471.3				
Li_4UO_5	c	345.7900		-631.1				
Li_2UCl_6	c	464.6290		-438.0				
in 100 HCl + 10,000 H_2O		464.6290		-498.3				
$LiUO_2AsO_4$	c	415.8880			-478.7			
$LiThCl_5 \cdot 8H_2O$	c	560.3673		-968.4				
Li_2ThCl_6	c	458.6381		-484.				
$Li_2O \cdot 2BeO$	c	79.9046		-438.				
$LiBeF_3$	c	72.9484		-394.3				
	g	72.9484		-332.3				
Li_2BeF_4	c	98.8878		-543.9				
	g	98.8878		-465.9				
Li_2BeCl_4	c	164.7062		-314.5				
$Ca_{1.5}Li_3P_4O_{13}$	gl	412.8304		-1382.				

Table 99. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Sodium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf_0° kcal/mol	ΔHf°	ΔGf° kcal/mol	$H_{298}^\circ - H_0^\circ$	S° cal/deg mol	C_p°
Na	cs	22.9898	0	0	0	1.54	12.24	6.75
	g	22.9898	25.709	25.65	18.354	1.481	36.712	4.968
Na^+	g	22.9898		145.55				
Na^{2+}	g	22.9898		1237.48				
Na^{3+}	g	22.9898		2891.0				
Na^{4+}	g	22.9898		5173.5				
Na^{5+}	g	22.9898		8366.				
Na^+	a	22.9898		-57.39	-62.593		14.1	11.1
Na in 40 NH_3		22.9898		-1.490				
in 50 NH_3		22.9898		-1.480				
in 100 NH_3		22.9898		-1.470				
in 200 NH_3		22.9898		-1.400				
in 400 NH_3		22.9898		-1.190				
in 500 NH_3		22.9898		-1.120				
in 600 NH_3		22.9898		-1.050				
in 800 NH_3		22.9898		-0.970				
in 1,000 NH_3		22.9898		-0.910				
in 2,000 NH_3		22.9898		-0.750				
in 5,000 NH_3		22.9898		-0.590				
in 10,000 NH_3		22.9898		-0.500				
in 17.9 Hg		22.9898			-19.190			
in 19 Hg		22.9898			-19.260			
in 24 Hg		22.9898			-19.500			
in 32 Hg		22.9898			-19.830			
in 49 Hg		22.9898			-20.150			
in 99 Hg		22.9898			-20.700			
in 999 Hg		22.9898			-22.000			
Na_2	g	45.9796	34.548	33.95	24.85	2.486	55.00	8.98
Na_2^+	g	45.9796		148.0				
NaO	g	38.9892	25.4	25.	19.7	2.22	54.6	8.3
NaO^+	g	38.9892		189.				
NaO^-	g	38.9892		0.4				
NaO_2	c	54.9886	-62.96	-62.2	-52.2	4.37	27.7	17.24
	g	54.9886				2.74	63.7	10.7
Na_2O	c	61.9790	-97.85	-99.00	-89.74	2.964	17.94	16.52
	g	61.9790	-7.7	-8.5	-12.5	3.3	62.4	13.2
Na_2O_2	c	77.9784	-120.70	-122.10	-107.00	3.75	22.70	21.33
$Na_2O_2 \cdot 8H_2O$	c	222.1016		-703.4				
Na_3O	c	84.9688		-101.5				
NaH	c	23.9978	-12.394	-13.450	-8.00	1.496	9.564	8.700
	g	23.9978	31.60	31.13	26.02	2.087	44.997	7.24
NaOH	c	39.9972	-100.641	-101.723	-90.709	2.507	15.405	14.23
	g	39.9972	-48.6	-49.5	-50.2	2.72	54.57	11.56
	a	39.9972		-112.360	-100.187		11.5	-24.4
in 2.5 H_2O		39.9972		-108.100				
in 3 H_2O		39.9972		-109.053				
in 4 H_2O		39.9972		-110.405				

Table 99. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Sodium

Substance: Formula and Description	State	Formula weight	0 K ΔHf_0° kcal/mol	298.15 K (25 °C) ΔHf° kcal/mol	ΔGf° kcal/mol	$H_{298}^\circ - H_0^\circ$ kcal/mol	S° cal/deg mol	C_p° cal/deg mol
NaOH in 4.5 H_2O		39.9972		-110.847				
in 5 H_2O		39.9972		-111.182				
in 6 H_2O		39.9972		-111.633				
in 8 H_2O		39.9972		-112.071				
in 10 H_2O		39.9972		-112.248				
in 12 H_2O		39.9972		-112.326				
in 15 H_2O		39.9972		-112.370				
in 20 H_2O		39.9972		-112.380				
in 25 H_2O		39.9972		-112.364				
in 30 H_2O		39.9972		-112.347				
in 40 H_2O		39.9972		-112.316				
in 50 H_2O		39.9972		-112.293				
in 75 H_2O		39.9972		-112.261				
in 100 H_2O		39.9972		-112.248				
in 150 H_2O		39.9972		-112.242				
in 200 H_2O		39.9972		-112.239				
in 300 H_2O		39.9972		-112.244				
in 400 H_2O		39.9972		-112.250				
in 500 H_2O		39.9972		-112.256				
in 800 H_2O		39.9972		-112.270				
in 1,000 H_2O		39.9972		-112.276				
in 1,500 H_2O		39.9972		-112.288				
in 2,000 H_2O		39.9972		-112.295				
in 3,000 H_2O		39.9972		-112.305				
in 5,000 H_2O		39.9972		-112.316				
in 10,000 H_2O		39.9972		-112.328				
in 20,000 H_2O		39.9972		-112.337				
in 50,000 H_2O		39.9972		-112.345				
in 100,000 H_2O		39.9972		-112.349				
in ∞ H_2O		39.9972		-112.36				
$NaOH \cdot H_2O$	c	58.0126	-172.635	-175.560	-150.435	3.725	23.780	21.55
$NaOH \cdot 2H_2O$	l	76.0280	-243.075	-243.565	-208.705	9.221	46.840	57.22
$NaOH \cdot 3.5H_2O$	l	103.0511	-348.037	-348.900	-295.545	13.44	68.377	84.71
$NaOH \cdot 4H_2O$	l	112.0588		-383.64	-324.30		76.17	
$NaOH \cdot 5H_2O$	l	130.0742		-452.75	-381.60		92.27	
$NaOH \cdot 7H_2O$	l	166.1050		-590.11	-495.74		125.79	
$NaHO_2$ from HO_2^-	a	55.9966		-95.71	-78.7		19.8	
$(NaOH)_2$	g	79.9944	-147.0	-150.0	-140.5	4.14	73.	18.9
NaF	c	41.9882	-136.542	-137.105	-129.902	2.031	12.30	11.20
	g	41.9882	-69.2	-69.6	-74.2	2.205	51.98	8.179
	a	41.9882		-136.89	-129.23		10.8	-14.4
in 50 H_2O		41.9882		-136.833				
in 75 H_2O		41.9882		-136.798				
in 100 H_2O		41.9882		-136.783				
in 150 H_2O		41.9882		-136.775				
in 200 H_2O		41.9882		-136.771				
in 300 H_2O		41.9882		-136.775				

Table 99. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Sodium

Substance		State	Formula weight	0 K	298.15 K (25 °C)				
Formula	Description			ΔHf_0° kcal/mol	ΔHf°	ΔGf° kcal/mol	$H_{298}^\circ - H_0^\circ$	S° cal/deg mol	C_p°
NaF	in 500 H_2O		41.9882		-136.786				
	in 800 H_2O		41.9882		-136.800				
	in 1,000 H_2O		41.9882		-136.806				
	in 1,500 H_2O		41.9882		-136.818				
	in 2,000 H_2O		41.9882		-136.825				
	in 2,500 H_2O		41.9882		-136.869				
	in 3,000 H_2O		41.9882		-136.835				
	in 5,000 H_2O		41.9882		-136.846				
	in 10,000 H_2O		41.9882		-136.858				
	in 20,000 H_2O		41.9882		-136.867				
	in 50,000 H_2O		41.9882		-136.875				
	in 100,000 H_2O		41.9882		-136.879				
	in ∞ H_2O		41.9882		-136.89				
	in 1,100 HF	l	41.9882		-152.315				
	in KOH + 20 H_2O:U		41.9882		-137.033				
Na_2F_2		g	83.9764	-197.03	-198.2	-197.8	4.02	71.5	17.9
$NaHF_2$		c	61.9946	-218.62	-219.95	-203.68	3.334	21.73	17.93
	from HF_2^-	a	61.9946		-212.73	-200.77		36.2	
	in 400 H_2O		61.9946		-214.1				
NaH_2F_3		c	82.0010		-295.2				
NaCl		c	58.4428	-98.168	-98.268	-91.815	2.536	17.24	12.07
		g	58.4428	-41.9	-42.22	-47.00	2.298	54.90	8.55
		a	58.4428		-97.34	-93.965		27.6	-21.5
	in 9 H_2O		58.4428		-97.820				
	in 10 H_2O		58.4428		-97.809				
	in 12 H_2O		58.4428		-97.770				
	in 15 H_2O		58.4428		-97.707				
	in 20 H_2O		58.4428		-97.614				
	in 25 H_2O		58.4428		-97.547				
	in 30 H_2O		58.4428		-97.496				
	in 40 H_2O		58.4428		-97.425				
	in 50 H_2O		58.4428		-97.381				
	in 75 H_2O		58.4428		-97.320				
	in 100 H_2O		58.4428		-97.291				
	in 150 H_2O		58.4428		-97.266				
	in 200 H_2O		58.4428		-97.257				
	in 300 H_2O		58.4428		-97.252				
	in 400 H_2O		58.4428		-97.253				
	in 500 H_2O		58.4428		-97.255				
	in 1,000 H_2O		58.4428		-97.267				
	in 1,500 H_2O		58.4428		-97.276				
	in 2,000 H_2O		58.4428		-97.281				
	in 3,000 H_2O		58.4428		-97.289				
	in 5,000 H_2O		58.4428		-97.298				
	in 10,000 H_2O		58.4428		-97.309				
	in 20,000 H_2O		58.4428		-97.318				
	in 50,000 H_2O		58.4428		-97.326				

Table 99. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Sodium

Substance: Formula	Substance: Description	State	Formula weight	0 K: ΔHf°_0 kcal/mol	298.15 K (25 °C): ΔHf° kcal/mol	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$ kcal/mol	S° cal/deg mol	C°_p cal/deg mol
NaCl	in 100,000 H_2O		58.4428		-97.329				
	in ∞ H_2O		58.4428		-97.34				
	in 3.762 HCl + 3,190 H_2O		58.4428		-97.160				
	in 23.77 HCl + 5,288 H_2O		58.4428		-97.111				
	in 40 HCl + 800 H_2O		58.4428		-96.821				
	in CH_3OH:X		58.4428		-100.27				
	in $HCONH_2$:S		58.4428		-100.37				
Na_2Cl_2	in formamide	g	116.8856	-135.68	-136.5	-136.57	4.45	78.0	18.84
Na_3Cl_4		g	175.3284		-209.0				
NaClO		a	74.4422		-83.0	-71.4		24.	
	in 400 H_2O		74.4422		-82.8				
$NaClO_2$		c	90.4416		-73.38				
		a	90.4416		-73.3	-58.5		38.3	
	in 1,000 H_2O		90.4416		-73.27				
$NaClO_2 \cdot 3H_2O$		c	144.4878		-285.08				
$NaClO_3$		c	106.4410		-87.422	-62.697		29.5	
		a	106.4410		-82.24	-64.51		52.9	
	in 6 H_2O		106.4410		-83.92				
	in 8 H_2O		106.4410		-83.71				
	in 10 H_2O		106.4410		-83.55				
	in 12 H_2O		106.4410		-83.42				
	in 15 H_2O		106.4410		-83.25				
	in 20 H_2O		106.4410		-83.05				
	in 25 H_2O		106.4410		-82.92				
	in 30 H_2O		106.4410		-82.81				
	in 40 H_2O		106.4410		-82.67				
	in 50 H_2O		106.4410		-82.57				
	in 75 H_2O		106.4410		-82.44				
	in 100 H_2O		106.4410		-82.37				
	in 150 H_2O		106.4410		-82.30				
	in 200 H_2O		106.4410		-82.26				
	in 300 H_2O		106.4410		-82.23				
	in 500 H_2O		106.4410		-82.20				
	in 1,000 H_2O		106.4410		-82.19				
	in 2,000 H_2O		106.4410		-82.20				
	in 5,000 H_2O		106.4410		-82.20				
	in 10,000 H_2O		106.4410		-82.21				
	in 20,000 H_2O		106.4410		-82.22				
	in ∞ H_2O		106.4410		-82.24				
$NaClO_4$		c	122.4404		-91.61	-60.93		34.0	
		a	122.4404		-88.30	-64.65		57.6	
	in 3.25 H_2O		122.4404		-90.48				
	in 3.5 H_2O		122.4404		-90.46				
	in 4 H_2O		122.4404		-90.41				
	in 4.5 H_2O		122.4404		-90.36				
	in 5 H_2O		122.4404		-90.31				
	in 6 H_2O		122.4404		-90.19				

Table 99. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Sodium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf°_0 kcal/mol	ΔHf°	ΔGf°	$H^\circ_{298}-H^\circ_0$	S°	C°_p
				kcal/mol			cal/deg mol	
$NaClO_4$ in 8 H_2O		122.4404		-89.98				
in 10 H_2O		122.4404		-89.81				
in 12 H_2O		122.4404		-89.66				
in 15 H_2O		122.4404		-89.48				
in 20 H_2O		122.4404		-89.24				
in 25 H_2O		122.4404		-89.09				
in 30 H_2O		122.4404		-88.97				
in 40 H_2O		122.4404		-88.81				
in 50 H_2O		122.4404		-88.70				
in 75 H_2O		122.4404		-88.55				
in 100 H_2O		122.4404		-88.47				
in 150 H_2O		122.4404		-88.38				
in 200 H_2O		122.4404		-88.34				
in 300 H_2O		122.4404		-88.30				
in 500 H_2O		122.4404		-88.27				
in 1,000 H_2O		122.4404		-88.26				
in 1,500 H_2O		122.4404		-88.25				
in 2,000 H_2O		122.4404		-88.26				
in 10,000 H_2O		122.4404		-88.27				
in 20,000 H_2O		122.4404		-88.28				
in 100,000 H_2O		122.4404		-88.29				
in ∞ H_2O		122.4404		-88.3				
in CH_3OH:X		122.4404		-94.0				
in C_2H_5OH:X		122.4404		-92.0				
$NaClO_4 \cdot H_2O$	c	140.4558		-161.99	-118.17		45.6	
NaBr	c	102.8988	-84.596	-86.296	-83.409	2.770	20.75	12.28
	g	102.8988	-32.08	-34.2	-42.31	2.346	57.62	8.68
	a	102.8988		-86.440	-87.440		33.8	-22.8
in 6.5 H_2O		102.8988		-87.178				
in 8 H_2O		102.8988		-87.165				
in 10 H_2O		102.8988		-87.099				
in 12 H_2O		102.8988		-87.026				
in 15 H_2O		102.8988		-86.929				
in 20 H_2O		102.8988		-86.808				
in 25 H_2O		102.8988		-86.722				
in 30 H_2O		102.8988		-86.659				
in 40 H_2O		102.8988		-86.574				
in 50 H_2O		102.8988		-86.521				
in 75 H_2O		102.8988		-86.450				
in 100 H_2O		102.8988		-86.417				
in 150 H_2O		102.8988		-86.386				
in 200 H_2O		102.8988		-86.374				
in 500 H_2O		102.8988		-86.365				
in 800 H_2O		102.8988		-86.369				
in 1,000 H_2O		102.8988		-86.372				
in 1,500 H_2O		102.8988		-86.380				
in 2,000 H_2O		102.8988		-86.384				

Table 99. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Sodium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔH_0° kcal/mol	ΔH_f°	ΔG_f° kcal/mol	$H_{298}^\circ - H_0^\circ$	S° cal/deg mol	C_p°
NaBr		102.8988						
in 3,000 H_2O		102.8988		-86.391				
in 5,000 H_2O		102.8988		-86.400				
in 10,000 H_2O		102.8988		-86.410				
in 20,000 H_2O		102.8988		-86.419				
in 50,000 H_2O		102.8988		-86.426				
in 100,000 H_2O		102.8988		-86.429				
in ∞ H_2O		102.8988		-86.44				
in 187 HBr + 2,600 H_2O		102.8988		-85.70				
in CH_3OH:S		102.8988		-90.38				
in C_2H_5OH:S		102.8988		-88.95				
in $HCONH_2$:S		102.8988		-90.71				
in $HCON(CH_3)_2$ in dimethylformamide		102.8988		-93.43				
in $HCON(CH_3)_2$:S		102.8988		-93.43				
in 1,400 $HCONHC_2H_5$ in ethylformamide		102.8988		-90.40				
$NaBr \cdot 2H_2O$	c	138.9296		-227.52	-197.99		42.8	
$NaBr_3$	a	262.7168		-88.56	-88.18		65.6	
$NaBr_5$	a	422.5348		-91.4	-87.4		89.8	
$(NaBr)_2$	g	205.7976	-112.02	-116.3	-123.05	4.66	83.5	19.15
NaBrO	a	118.8982		-79.9	-70.6		24.	
in 500 H_2O		118.8982		-79.60				
$NaBrO_2$ in 2,000 H_2O		134.8976		-68.80				
$NaBrO_3$	c	150.8970		-79.85	-58.04		30.8	
	a	150.8970		-73.42	-58.16		52.8	
in 50 H_2O		150.8970		-73.81				
in 75 H_2O		150.8970		-73.67				
in 100 H_2O		150.8970		-73.59				
in 150 H_2O		150.8970		-73.51				
in 200 H_2O		150.8970		-73.47				
in 300 H_2O		150.8970		-73.43				
in 500 H_2O		150.8970		-73.398				
in 800 H_2O		150.8970		-73.386				
in 1,000 H_2O		150.8970		-73.384				
in 1,500 H_2O		150.8970		-73.381				
in 2,000 H_2O		150.8970		-73.380				
in 3,000 H_2O		150.8970		-73.382				
in 5,000 H_2O		150.8970		-73.387				
in 7,000 H_2O		150.8970		-73.390				
in 10,000 H_2O		150.8970		-73.394				
in 20,000 H_2O		150.8970		-73.400				
in 50,000 H_2O		150.8970		-73.406				
in 100,000 H_2O		150.8970		-73.410				
in ∞ H_2O		150.8970		-73.42				
$NaBrO_4$	a	166.8964		-54.30	-34.40		61.80	
$NaBrF_4$	c	178.8924		-222.00				
in BrF_3:X		178.8924		-221.06				

Table 99. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Sodium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf_0° kcal/mol	ΔHf°	ΔGf° kcal/mol	$H_{298}^\circ - H_0^\circ$	S° cal/deg mol	C_p°
NaI	c	149.8942	-68.593	-68.78	-68.37	2.93	23.55	12.45
G-H-S constraint has been relaxed; see Introduction								
	g	149.8942	-18.3	-19.0	-28.9	2.379	59.481	8.76
	a	149.8942		-70.58	-74.92		40.7	-22.9
in 4.5 H_2O		149.8942		-71.385				
in 5 H_2O		149.8942		-71.471				
in 6 H_2O		149.8942		-71.539				
in 6.5 H_2O		149.8942		-71.544				
in 8 H_2O		149.8942		-71.504				
in 10 H_2O		149.8942		-71.408				
in 12 H_2O		149.8942		-71.314				
in 15 H_2O		149.8942		-71.193				
in 20 H_2O		149.8942		-71.042				
in 25 H_2O		149.8942		-70.938				
in 30 H_2O		149.8942		-70.863				
in 40 H_2O		149.8942		-70.764				
in 50 H_2O		149.8942		-70.702				
in 75 H_2O		149.8942		-70.619				
in 100 H_2O		149.8942		-70.579				
in 150 H_2O		149.8942		-70.541				
in 200 H_2O		149.8942		-70.525				
in 300 H_2O		149.8942		-70.512				
in 500 H_2O		149.8942		-70.508				
in 800 H_2O		149.8942		-70.511				
in 1,000 H_2O		149.8942		-70.514				
in 1,500 H_2O		149.8942		-70.522				
in 2,000 H_2O		149.8942		-70.526				
in 3,000 H_2O		149.8942		-70.532				
in 4,000 H_2O		149.8942		-70.537				
in 5,000 H_2O		149.8942		-70.541				
in 10,000 H_2O		149.8942		-70.550				
in 20,000 H_2O		149.8942		-70.559				
in 50,000 H_2O		149.8942		-70.566				
in 100,000 H_2O		149.8942		-70.569				
in ∞ H_2O		149.8942		-70.58				
in 100 HI + 10,000 H_2O		149.8942		-70.45				
in 200 HI + 2,500 H_2O		149.8942		-70.32				
in CH_3OH:S		149.8942		-75.94				
in C_2H_5OH:S		149.8942		-74.58				
in $HCONH_2$:S		149.8942		-76.21				
in $HCONHC_2H_5$:S		149.8942		-76.88				
in 2,000 $HCONHC_2H_5$		149.8942		-76.84				
$NaI \cdot 2H_2O$ in ethylformamide	c	185.9250		-211.065	-184.32		46.90	
G-H-S constraint has been relaxed; see Introduction								
NaI_3	c	403.7030		-56.2				

Table 99. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Sodium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf_0° kcal/mol	ΔHf°	ΔGf° kcal/mol	$H_{298}^\circ - H_0^\circ$	S° cal/deg mol	C_p°
NaI_3	a	403.7030		-69.7	-74.9		71.3	
$(NaI)_2$	g	299.7884	-83.30	-84.7	-95.33	4.83	87.9	19.3
NaIO	a	165.8936		-83.1	-71.8		12.8	
$NaIO_3$	c	197.8924		-115.150				22.0
	a	197.8924		-110.30	-93.20		42.4	
in 500 H_2O		197.8924		-110.370				
in 600 H_2O		197.8924		-110.346				
in 800 H_2O		197.8924		-110.324				
in 1,000 H_2O		197.8924		-110.310				
in 2,000 H_2O		197.8924		-110.290				
in 5,000 H_2O		197.8924		-110.280				
in 20,000 H_2O		197.8924		-110.283				
in 50,000 H_2O		197.8924		-110.290				
in 100,000 H_2O		197.8924		-110.293				
in ∞ H_2O		197.8924		-110.3				
$NaIO_3 \cdot H_2O$	c	215.9078		-186.30	-151.56		38.8	
$NaIO_3 \cdot 5H_2O$	c	287.9694		-466.60				
$NaIO_4$	c	213.8918		-102.60	-77.22		39.0	
	a	213.8918		-93.60	-76.60		67.	
in 2,000 H_2O		213.8918		-93.808				
$NaIO_4 \cdot 3H_2O$	c	267.9380			-247.8			
NaH_4IO_6 from $H_4IO_6^-$	au	249.9226		-237.8				
$Na_2H_3IO_6$ from $H_3IO_6^{2-}$	au	271.9044		-294.4				
$NaIO_2F_2$	c	219.8898		-202.50				
$NaICl_2$	c	220.8002		-96.0				
	a	220.8002			-101.1			
$NaICl_4$	c	291.7062		-112.0				
$NaIBr_2$	c	309.7122		-83.0				
	a	309.7122			-92.0			
$NaBrI_2$	a	356.7076		-88.0	-88.9		61.3	
NaIBrCl	a	265.2562			-97.6			
Na_2S	c	78.0436		-87.2	-83.6		20.0	
	a	78.0436		-106.9	-104.7		24.7	
in 20 H_2O		78.0436		-107.21				
in 30 H_2O		78.0436		-106.89				
in 40 H_2O		78.0436		-106.73				
in 50 H_2O		78.0436		-106.60				
in 100 H_2O		78.0436		-106.34				
in 200 H_2O		78.0436		-106.20				
in 300 H_2O		78.0436		-106.15				
in 400 H_2O		78.0436		-106.090				
in 500 H_2O		78.0436		-106.06				
in 1,000 H_2O		78.0436		-105.940				
in 5,000 H_2O		78.0436		-105.910				
$Na_2S \cdot 4.5H_2O$	c	159.1129		-412.5				
$Na_2S \cdot 5H_2O$	c	168.1206		-450.9				
$Na_2S \cdot 9H_2O$	c	240.1822		-734.7				
Na_2S_2	c	110.1076		-94.9	-90.5		25.	

Table 99 — Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Sodium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf_0° kcal/mol	ΔHf°	ΔGf°	$H_{298}^\circ - H_0^\circ$	S°	C_p°
				kcal/mol			cal/deg mol	
Na_2S_2	a	110.1076		-107.6	-106.2		35.0	
in 10,000 H_2O		110.1076		-106.81				
Na_2S_3	c	142.1716		-98.2				
	a	142.1716		-108.6	-107.6		44.0	
in 600 H_2O		142.1716		-106.72				
Na_2S_4	c	174.2356		-98.4				
	a	174.2356		-109.3	-108.7		52.9	
in 600 H_2O		174.2356		-108.66				
in 10,000 H_2O		174.2356		-108.38				
Na_2S_5	c	206.2996		-98.4				
	a	206.2996		-109.7	-109.5		61.8	
$NaSO_4^-$	a	119.0514		-273.59	-241.56		26.0	
$NaS_2O_3^-$	a	135.1160		-212.23	-188.35		36.5	
Na_2SO_3	c	126.0418	-261.21	-263.1	-242.0	5.36	34.88	28.74
	a	126.0418		-266.70	-241.50		21.0	
in 200 H_2O		126.0418		-266.51				
in 800 H_2O		126.0418		-266.41				
$Na_2SO_3 \cdot 7H_2O$	c	252.1496		-755.8	-639.7		106.0	
Na_2SO_4	c	142.0412	-328.789	-331.52	-303.59	5.551	35.75	30.64
(c,V, orthorhombic) G-H-S constraint has been relaxed; see Introduction								
(c,III,metastable)	c2	142.0412				5.624	37.030	30.90
	a	142.0412		-332.10	-303.16		33.0	-48.
in 18 H_2O		142.0412		-333.852				
in 20 H_2O		142.0412		-333.800				
in 25 H_2O		142.0412		-333.593				
in 28.37 H_2O		142.0412		-333.491				
in 30 H_2O		142.0412		-333.432				
in 40 H_2O		142.0412		-333.165				
in 50 H_2O		142.0412		-332.988				
in 60 H_2O		142.0412		-332.840				
in 80 H_2O		142.0412		-332.605				
in 100 H_2O		142.0412		-332.420				
in 120 H_2O		142.0412		-332.275				
in 140 H_2O		142.0412		-332.184				
in 160 H_2O		142.0412		-332.122				
in 180 H_2O		142.0412		-332.076				
in 200 H_2O		142.0412		-332.04				
in 250 H_2O		142.0412		-331.980				
in 300 H_2O		142.0412		-331.943				
in 350 H_2O		142.0412		-331.918				
in 400 H_2O		142.0412		-331.901				
in 500 H_2O		142.0412		-331.879				
in 600 H_2O		142.0412		-331.867				
in 800 H_2O		142.0412		-331.857				
in 1,000 H_2O		142.0412		-331.855				

Table 99. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Sodium

Substance: Formula and Description	State	Formula weight	0 K: ΔHf°_0 kcal/mol	298.15 K (25 °C): ΔHf° kcal/mol	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$	S° cal/deg mol	C°_p cal/deg mol
Na_2SO_4 in 2,000 H_2O		142.0412		-331.872				
in 3,000 H_2O		142.0412		-331.892				
in 4,000 H_2O		142.0412		-331.907				
in 5,000 H_2O		142.0412		-331.92				
in 10,000 H_2O		142.0412		-331.958				
in 20,000 H_2O		142.0412		-331.992				
in 50,000 H_2O		142.0412		-332.027				
in 100,000 H_2O		142.0412		-332.047				
in ∞ H_2O		142.0412		-332.10				
in 1.54 H_2SO_4 + 1,700 H_2O		142.0412		-329.14				
in 127.5 H_2SO_4 + 7,141 H_2O		142.0412		-327.97				
$Na_2SO_4 \cdot 10H_2O$	c	322.1952		-1034.24	-871.75		141.5	
G-H-S constraint has been relaxed; see Introduction								
$Na_2SO_4 \cdot 10D_2O$	c	342.3172		-1055.82	-886.79		154.4	
$Na_2S_2O_3$	c	158.1058		-268.4	-245.7		37.	
	a	158.1058		-270.65	-250.0		44.0	
in 8 H_2O		158.1058		-272.780				
in 10 H_2O		158.1058		-272.760				
in 15 H_2O		158.1058		-272.560				
in 20 H_2O		158.1058		-272.340				
in 25 H_2O		158.1058		-272.140				
in 40 H_2O		158.1058		-271.690				
in 50 H_2O		158.1058		-271.490				
in 100 H_2O		158.1058		-270.990				
in 200 H_2O		158.1058		-270.611				
in 300 H_2O		158.1058		-270.502				
in 500 H_2O		158.1058		-270.460				
in 1,000 H_2O		158.1058		-270.440				
in 2,000 H_2O		158.1058		-270.455				
in 3,000 H_2O		158.1058		-270.473				
in 5,000 H_2O		158.1058		-270.499				
in 10,000 H_2O		158.1058		-270.532				
in 20,000 H_2O		158.1058		-270.563				
in 50,000 H_2O		158.1058		-270.597				
$Na_2S_2O_3 \cdot 5H_2O$	c	248.1828		-623.31	-533.0		89.0	
$Na_2S_2O_4$	c	174.1052		-294.5				
	a	174.1052		-294.9	-268.7		50.0	
$Na_2S_2O_5$	c	190.1046		-353.3				
in 700 H_2O		190.1046		-351.24				
$Na_2S_2O_6$	c	206.1040		-406.08				
in 400 H_2O		206.1040		-400.98				
$Na_2S_2O_6 \cdot 2H_2O$	c	242.1348		-548.71				
$Na_2S_2O_7$	c	222.1034		-460.1	-411.6		48.3	
in 50 H_2O		222.1034		-451.3				
$Na_2S_2O_8$	a	238.1028		-436.2	-391.7		86.6	
$Na_2S_3O_6$ in 1,000 H_2O		238.1680		-402.				
$Na_2S_3O_6 \cdot 3H_2O$	c	292.2142		-616.7				

Table 99. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Sodium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf°_0 kcal/mol	ΔHf°	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$	S° cal/deg mol	C°_p
$Na_2S_4O_6$ in 600 H_2O		270.2320		-408.0				
$Na_2S_4O_6 \cdot 2H_2O$	c	306.2628		-553.9				
$Na_2S_5O_6$ from $S_5O_6^{2-}$	au	302.2960		-410.3				
NaHS	c	56.0618		-56.70				
	a	56.0618		-61.60	-59.71		29.1	
in 5 H_2O		56.0618		-62.39				
in 10 H_2O		56.0618		-62.52				
in 15 H_2O		56.0618		-62.26				
in 20 H_2O		56.0618		-62.07				
in 40 H_2O		56.0618		-61.78				
in 50 H_2O		56.0618		-61.66				
in 100 H_2O		56.0618		-61.57				
in 200 H_2O		56.0618		-61.51				
in 400 H_2O		56.0618		-61.49				
in 800 H_2O		56.0618		-61.51				
$NaHS \cdot 2H_2O$	c	92.0926		-200.40				
$NaHSO_3$ from HSO_3^-	a	104.0600		-207.06	-188.74		47.5	
$NaHSO_4$	c	120.0594		-269.0	-237.3		27.0	
from HSO_4^-	a	120.0594		-269.47	-243.28		45.6	-9.
in 10 H_2O		120.0594		-269.590				
in 20 H_2O		120.0594		-270.020				
in 25 H_2O		120.0594		-270.040				
in 50 H_2O		120.0594		-270.120				
in 100 H_2O		120.0594		-270.145				
in 200 H_2O		120.0594		-270.294				
in 300 H_2O		120.0594		-270.470				
in 400 H_2O		120.0594		-270.604				
in 500 H_2O		120.0594		-270.710				
in 800 H_2O		120.0594		-270.970				
in 1,000 H_2O		120.0594		-271.11				
in 2,000 H_2O		120.0594		-271.58				
in 5,000 H_2O		120.0594		-272.26				
$NaHSO_4 \cdot H_2O$	c	138.0748		-339.8	-294.4		37.	
$NaHS_2O_4$ from $HS_2O_4^-$	a	152.1234			-209.5			
$NaSO_3F$	c	122.0504		-268.2				
in 3,000 H_2O		122.0504		-265.39				
in 300 HSO_3F		122.0504		-275.67				
$(NaI \cdot 4SO_2)$	c	406.1454		-393.0	-356.5		130.0	
$(3NaI \cdot 8SO_2)$	c	962.1850		-856.7	-787.0		294.0	
Na_2Se	c	124.9396		-81.6				
	a	124.9396			-94.3			
$Na_2Se \cdot 4.5H_2O$	c	206.0089		-416.1				
$Na_2Se \cdot 9H_2O$	c	287.0782		-726.6				
$Na_2Se \cdot 16H_2O$	c	413.1860		-1217.0				
Na_2Se_2	c	203.8996		-89.5				
Na_2SeO_3	c	172.9378		-229.1				
	a	172.9378		-236.5	-213.6		31.	
in 1,000 H_2O		172.9378		-236.0				

Table 99. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Sodium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf°_0 kcal/mol	ΔHf°	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$	S° cal/deg mol	C°_p
$Na_2SeO_3 \cdot 5H_2O$	c	263.0148		-574.60				
Na_2SeO_4	c	188.9372		-255.5				
	a	188.9372		-258.0	-230.7		41.1	
in 500 H_2O		188.9372		-257.5				
in 5,000 H_2O		188.9372		-257.9				
$Na_2SeO_4 \cdot 10H_2O$	c	369.0912		-957.6				
NaHSe	c	102.9578		-39.				
in 4,000 H_2O		102.9578		-44.8				
$NaHSeO_3$	c	150.9560		-181.46				
from $HSeO_3^-$	a	150.9560		-180.37	-160.95		46.4	
in 1,000 H_2O		150.9560		-180.1				
$NaHSeO_4$	c	166.9554		-196.32				
from $HSeO_4^-$	a	166.9554		-196.4	-170.7		49.8	
in 800 H_2O		166.9554		-198.25				
$NaH_3(SeO_3)_2$	c	279.9302		-314.91				
in 800 H_2O		279.9302		-302.92				
$NaTe_3$	c	405.7898		-32.				
Na_2Te	c	173.5796		-83.5				
Na_2Te_2	c	301.1796		-101.0				
in 85 NH_3		301.1796		-105.4				
Na_2TeO_3	c	221.5778		-239.7				
in 1,000 H_2O		221.5778		-248.7				
$Na_2TeO_3 \cdot 5H_2O$	c	311.6548		-593.5				
Na_2TeO_4	c	237.5772		-303.7				
NaH_5TeO_6 from $H_5TeO_6^-$	au	251.6262		-358.9				
$Na_2H_4TeO_6$ from $H_4TeO_6^{2-}$	au	273.6080		-406.9				
NaN_3	c	65.0099	6.316	5.19	22.41	3.522	23.15	18.31
	a	65.0099		8.37	20.6		39.9	
in 25 H_2O		65.0099		8.818				
in 30 H_2O		65.0099		8.733				
in 35 H_2O		65.0099		8.683				
in 40 H_2O		65.0099		8.648				
in 50 H_2O		65.0099		8.608				
in 55 H_2O		65.0099		8.593				
in 2,000 H_2O		65.0099		8.378				
$NaNO_2$	c	68.9953		-85.72	-68.02		24.8	
	a	68.9953		-82.4	-70.3		43.5	-12.2
in 4.5 H_2O		68.9953		-83.21				
in 5 H_2O		68.9953		-83.19				
in 6 H_2O		68.9953		-83.14				
in 8 H_2O		68.9953		-83.08				
in 10 H_2O		68.9953		-83.03				
in 12 H_2O		68.9953		-82.99				
in 15 H_2O		68.9953		-82.95				
in 20 H_2O		68.9953		-82.89				
in 25 H_2O		68.9953		-82.85				
in 30 H_2O		68.9953		-82.82				

Table 99. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Sodium

Substance: Formula	Description	State	Formula weight	0 K: ΔHf_0° kcal/mol	298.15 K (25 °C): ΔHf° kcal/mol	ΔGf° kcal/mol	$H_{298}^\circ - H_0^\circ$ kcal/mol	S° cal/deg mol	C_p° cal/deg mol
$NaNO_2$	in 40 H_2O		68.9953		-82.78				
	in 50 H_2O		68.9953		-82.73				
	in 75 H_2O		68.9953		-82.65				
	in 100 H_2O		68.9953		-82.59				
	in 150 H_2O		68.9953		-82.50				
	in 200 H_2O		68.9953		-82.44				
	in 300 H_2O		68.9953		-82.36				
	in ∞ H_2O		68.9953		-82.4				
$NaNO_3$		c	84.9947	-110.248	-111.82	-87.73	4.115	27.85	22.20
		a	84.9947		-106.95	-89.20		49.1	-9.6
$NaONO_2$	sodium peroxynitrite; from ONO_2^-	au2	84.9947		-68.6				
$NaNO_3$	in 6 H_2O		84.9947		-108.658				
	in 8 H_2O		84.9947		-108.523				
	in 10 H_2O		84.9947		-108.381				
	in 12 H_2O		84.9947		-108.253				
	in 15 H_2O		84.9947		-108.094				
	in 20 H_2O		84.9947		-107.889				
	in 25 H_2O		84.9947		-107.741				
	in 30 H_2O		84.9947		-107.628				
	in 40 H_2O		84.9947		-107.469				
	in 50 H_2O		84.9947		-107.362				
	in 75 H_2O		84.9947		-107.205				
	in 100 H_2O		84.9947		-107.123				
	in 150 H_2O		84.9947		-107.036				
	in 200 H_2O		84.9947		-106.993				
	in 300 H_2O		84.9947		-106.952				
	in 400 H_2O		84.9947		-106.932				
	in 500 H_2O		84.9947		-106.921				
	in 600 H_2O		84.9947		-106.915				
	in 800 H_2O		84.9947		-106.909				
	in 1,000 H_2O		84.9947		-106.906				
	in 3,000 H_2O		84.9947		-106.910				
	in 5,000 H_2O		84.9947		-106.915				
	in 10,000 H_2O		84.9947		-106.922				
	in 20,000 H_2O		84.9947		-106.928				
	in 50,000 H_2O		84.9947		-106.935				
	in 100,000 H_2O		84.9947		-106.939				
	in ∞ H_2O		84.9947		-106.95				
	in HNO_3 + 7.50 H_2O:Au		84.9947		-108.130				
$Na_2N_2O_2$	sodium hyponitrite	au	105.9918		-118.9				
$Na_2N_2O_3$		c	121.9912		-133.04				
	in 5 NaOH + 2,775 H_2O		121.9912		-136.65				
$NaNH_2$		c	39.0125	-27.84	-29.6	-15.3	2.842	18.38	15.81
$NaNH_3$		c	40.0205		-16.27	-2.94		37.2	
$NaHN_2O_2$	sodium hyponitrite; from $HN_2O_2^-$	au	84.0100		-69.8				

Table 99. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Sodium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf°_0 kcal/mol	ΔHf° kcal/mol	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$ kcal/mol	S° cal/deg mol	C°_p cal/deg mol
$NaNO_2 \cdot NaOH$	c	108.9925		-189.01				
$NaNO_3 \cdot NaOH$	c	124.9919		-214.71				
$NaNO_3 \cdot 2NaOH$	c	164.9891		-317.04				
$NaCl \cdot 5NH_3$	c	143.5963		-191.1	-103.9		95.	
$NaBr \cdot 5.25NH_3$	c	192.3100		-190.6				
$NaBr \cdot 5.75NH_3$	c	200.8253		-199.0				
$NaI \cdot 4.5NH_3$	I	226.5323		-154.2	-87.5		116.	
$NaI \cdot 4.5ND_3$	I	240.1147		-168.				
$Na_2SO_4 \cdot (NH_4)_2SO_4 \cdot H_2O$	c	292.1956		-692.7				
Na_2P	g	76.9534		-50.				
Na_3P	c	99.9432		-22.1				
NaOP	g	69.9630	-48.2	-49.2	-54.6	2.86	64.72	11.41
NaPO	g2	69.9630				3.05	67.26	11.65
$NaPO_2$	g	85.9624	-120.0	-121.7	-121.0	3.23	68.8	14.3
$NaPO_3$	g	101.9618	-204.7	-207.	-200.3	3.65	73.	17.1
sodium metaphosphate	au	101.9618		-290.9				
$NaP_2O_7^{3-}$	a	196.9332		-600.99				
$(NaPO_3)_2$	g	203.9236		-463.				
$Na_2P_2O_7^{2-}$	a	219.9230			-587.2			
Na_3PO_4	c	163.9408	-454.79	-458.27	-427.55	6.566	41.54	36.68
	a	163.9408		-477.5	-431.3		-11.	
in 300 H_2O		163.9408		-474.50				
in 500 H_2O		163.9408		-474.30				
in 800 H_2O		163.9408		-473.87				
in 1,000 H_2O		163.9408		-473.60				
$(NaPO_3)_3$	c	305.8854	-865.9	-873.	-808.	10.720	68.47	62.00
$Na_3P_3O_9$	am	305.8854		-866.				
$Na_4P_2O_7$	c	265.9026	-756.2	-762.	-709.7	10.180	64.60	57.63
	a	265.9026		-772.4	-709.1		28.	
in 2,000 H_2O		265.9026		-770.5				
$Na_4P_2O_7 \cdot 10H_2O$	c	446.0566		-1467.				
$Na_4P_4O_{12}$	c	407.8472		-1162.				
$Na_5P_3O_{10}$ form I, quenched	c	367.8644	-1043.57	-1051.4	-978.5	14.070	91.25	78.16
form II	c2	367.8644	-1045.76	-1054.0	-980.0	13.67	87.37	77.72
in 5,200 H_2O		367.8644		-1068.1				
$Na_5P_3O_{10} \cdot 6H_2O$	c	475.9568	-1463.5	-1480.6	-1324.4	23.19	146.1	137.1
NaH_2PO_2	c	87.9784		-200.5				
in 50 H_2O		87.9784		-202.9				
in 100 H_2O		87.9784		-203.10				
in 200 H_2O		87.9784		-203.23				
in 300 H_2O		87.9784		-203.30				
in 400 H_2O		87.9784		-203.32				
NaH_2PO_3	c	103.9778		-288.0				
in 600 H_2O		103.9778		-289.1				
$NaH_2PO_3 \cdot 2.5H_2O$	c	149.0163		-465.1				
NaH_2PO_4	c	119.9772	-363.06	-367.3	-331.3	4.75	30.47	27.93
from $H_2PO_4^-$	a	119.9772		-367.21	-332.76		35.7	
in 10 H_2O		119.9772		-367.40				

Table 99. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Sodium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf°_0 kcal/mol	ΔHf°	ΔGf°	$H^\circ_{298}-H^\circ_0$	S°	C°_p
				kcal/mol			cal/deg mol	
NaH_2PO_4 in 20 H_2O		119.9772		-367.29				
in 50 H_2O		119.9772		-367.12				
in 400 H_2O		119.9772		-367.02				
in 700 H_2O		119.9772		-366.98				
in 5,000 H_2O		119.9772		-367.16				
$NaH_2PO_4 \cdot H_2O$	c	137.9926		-438.1				
$NaH_2PO_4 \cdot 2H_2O$	c	156.0080		-508.7				
$NaHP_2O_7^{2-}$	a	197.9412			-531.9			
$NaH_3P_2O_7$	c	199.9572		-600.33				
in 1,200 H_2O		199.9572		-601.5				
Na_2HPO_3	c	125.9596		-336.8				
in 800 H_2O		125.9596		-346.3				
$Na_2HPO_3 \cdot 5H_2O$	c	216.0366		-692.5				
Na_2HPO_4	c	141.9590	-413.92	-417.8	-384.4	5.646	35.97	32.34
from HPO_4^{2-}	a	141.9590		-423.61	-385.53		20.2	
in 200 H_2O		141.9590		-424.24				
in 300 H_2O		141.9590		-424.094				
in 400 H_2O		141.9590		-424.014				
in 500 H_2O		141.9590		-423.954				
in 700 H_2O		141.9590		-423.864				
in 1,000 H_2O		141.9590		-423.794				
in 3,600 H_2O		141.9590		-423.557				
$Na_2HPO_4 \cdot 2H_2O$	c	177.9898		-560.7	-499.2		52.9	
$Na_2HPO_4 \cdot 7H_2O$	c	268.0668		-913.4	-784.0		103.87	
$Na_2HPO_4 \cdot 12H_2O$	c	358.1438		-1266.2	-1068.0		151.49	
$Na_2H_2P_2O_5$	c	189.9402		-503.				
	au	189.9402		-502.				
$Na_2H_2P_2O_7$	c	221.9390	-654.06	-660.8	-602.9	8.184	52.63	47.36
from $H_2P_2O_7^{2-}$	a	221.9390		-659.4	-605.7		67.	
in 1,200 H_2O		221.9390		-659.4				
$Na_2H_2P_2O_7 \cdot 6H_2O$	c	330.0314		-1083.				
$Na_3HP_2O_7$	c	243.9208		-708.8				
from $HP_2O_7^{3-}$	a	243.9208		-715.9	-659.2		53.	
in 1,200 H_2O		243.9208		-715.9				
$Na_3HP_2O_7 \cdot H_2O$	c	261.9362		-783.1				
$Na_3HP_2O_7 \cdot 6H_2O$	c	352.0132		-1133.1				
Na_2PO_3F	a	143.9500			-406.0			
$NaNH_4HPO_4$ in 550 H_2O		137.0079		-397.85				
$NaNH_4HPO_4 \cdot 4H_2O$	c	209.0695		-681.71				
NaAs	c	97.9114		-23.0	-21.3		15.0	
$NaAs_2$	c	172.8330		-25.5	-24.0		24.	
Na_3As	c	143.8910		-49.	-44.8		31.	
$NaAsO_2$	c	129.9102		-157.87				
	a	129.9102		-159.93	-146.25		23.8	
in 64 NaOH + 2,000 H_2O		129.9102		-162.75				
Na_3AsO_3 in 500 H_2O		191.8892		-316.5				
Na_3AsO_4	c	207.8886		-368.				
	a	207.8886		-384.44	-342.78		3.4	

Table 99. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Sodium

Substance: Formula and Description		State	Formula weight	0 K	298.15 K (25 °C)				
				ΔHf_0° kcal/mol	ΔHf°	ΔGf° kcal/mol	$H_{298}^\circ - H_0^\circ$	S° cal/deg mol	C_p°
Na_3AsO_4	in 500 H_2O		207.8886		-383.5				
$Na_3AsO_4 \cdot 12H_2O$		c	424.0734		-1217.				
NaH_2AsO_4	from $H_2AsO_4^-$	a	147.9256		-228.23	-202.94		40.5	
	in 400 H_2O		147.9256		-228.0				
NaH_2AsO_4	from H_3AsO_4	a	163.9250		-274.78	-242.63		42.	
	in 300 H_2O		163.9250		-274.8				
Na_2HAsO_4	in 400 H_2O		169.9074		-272.4				
Na_2HAsO_4	from $HAsO_4^{2-}$	a	185.9068		-331.40	-296.01		27.8	
	in 400 H_2O		185.9068		-331.2				
Na_2AsO_3F		a	187.8978			-370.78			
NaSb		c	144.7398		-15.	-15.		23.	
Na_3Sb		c	190.7194		-49.	-43.		30.	
$NaSbO_2$		a	176.7386			-143.91			
$Na_2Sb_2S_4$	in 400 H_2O		417.7356		-167.2				
Na_3SbS_3	in 900 H_2O		286.8114		-191.0				
Na_3Bi		c	277.9494		-42.				
Na_3BiO_4		c	341.9470		-291.				
$NaBiCl_4$		a	373.7818			-177.7			
Na_3BiCl_6		a	490.6674			-366.29			
$NaBiBr_4$		a	551.6058			-152.8			
Na_2BiI_4		a	762.5772			-112.5			
$Na_2NH_4BiCl_6$		a	485.7163			-322.8			
Na_2C_2	sodium carbide	c	70.0020		4.1				
$NaCO_3^-$		a	82.9992		-223.69	-189.50		-11.9	
Na_2CO_3		c	105.9890	-268.76	-270.24	-249.64	4.959	32.26	26.84
	G-H-S constraint has been relaxed; see Introduction.								
		a	105.9890		-276.62	-251.36		14.6	
	in 15 H_2O		105.9890		-278.27				
	in 20 H_2O		105.9890		-278.13				
	in 25 H_2O		105.9890		-277.760				
	in 30 H_2O		105.9890		-277.610				
	in 40 H_2O		105.9890		-277.349				
	in 50 H_2O		105.9890		-277.140				
	in 55.5 H_2O		105.9890		-277.045				
	in 75 H_2O		105.9890		-276.808				
	in 100 H_2O		105.9890		-276.626				
	in 150 H_2O		105.9890		-276.416				
	in 200 H_2O		105.9890		-276.292				
	in 300 H_2O		105.9890		-276.158				
	in 400 H_2O		105.9890		-276.096				
	in 500 H_2O		105.9890		-276.052				
	in 800 H_2O		105.9890		-276.03				
	in 1,000 H_2O		105.9890		-275.906				
	in 1,500 H_2O		105.9890		-275.810				
	in 2,000 H_2O		105.9890		-275.728				
	in 2,500 H_2O		105.9890		-275.660				

Table 99. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Sodium

Substance: Formula	Description	State	Formula weight	0 K ΔHf_0° kcal/mol	298.15 K (25 °C) ΔHf° kcal/mol	ΔGf° kcal/mol	$H_{298}^\circ - H_0^\circ$ kcal/mol	S° cal/deg mol	C_p° cal/deg mol
Na_2CO_3	in 3,000 H_2O		105.9890		-275.598				
	in 4,000 H_2O		105.9890		-275.482				
	in 5,000 H_2O		105.9890		-275.380				
	in 7,000 H_2O		105.9890		-275.194				
	in 10,000 H_2O		105.9890		-274.965				
	in 20,000 H_2O		105.9890		-274.310				
	in 50,000 H_2O		105.9890		-273.170				
$Na_2CO_3 \cdot H_2O$		c	124.0044	-338.87	-342.08	-307.22	6.296	40.18	34.80
	G-H-S constraint has been relaxed; see Introduction.								
$Na_2CO_3 \cdot 7H_2O$		c	232.0968		-764.81	-648.8		102.	
	G-H-S constraint has been relaxed; see Introduction								
$Na_2CO_3 \cdot 10H_2O$		c	286.1430	-959.62	-975.46	-819.36	21.21	134.8	131.53
	G-H-S constraint has been relaxed; see Introduction								
$Na_2C_2O_4$	sodium oxalate	c	133.9996		-315.0				34.
		a	133.9996		-312.0	-286.3		39.1	
	in 1,000 H_2O		133.9996		-311.65				
$NaHC_2$	sodium acetylide	c	48.0202		24.7				
HCOONa		c	68.0078	-158.19	-159.3	-143.4	3.767	24.80	19.76
		a	68.0078		-159.10	-146.5		36.	-9.9
	in 400 H_2O		68.0078		-159.0				
$HCOONa \cdot 2H_2O$		c	104.0386		-300.9	-257.5		44.	
$HCOONa \cdot 3H_2O$		c	122.0540		-371.				
$NaHCO_3$		c	84.0072	-225.15	-227.25	-203.4	3.81	24.3	20.94
	G-H-S constraint has been relaxed; see Introduction								
	from HCO_3^-	a	84.0072		-222.78	-202.85		35.9	
		ao	84.0072		-225.6	-203.1		27.2	
	in 40 H_2O		84.0072		-223.001				
	in 50 H_2O		84.0072		-222.939				
	in 75 H_2O		84.0072		-222.842				
	in 100 H_2O		84.0072		-222.792				
	in 150 H_2O		84.0072		-222.742				
	in 200 H_2O		84.0072		-222.720				
	in 300 H_2O		84.0072		-222.703				
	in 400 H_2O		84.0072		-222.693				
	in 500 H_2O		84.0072		-222.691				
	in 1,000 H_2O		84.0072		-222.697				
	in 2,000 H_2O		84.0072		-222.702				
	in 5,000 H_2O		84.0072		-222.722				
	in 10,000 H_2O		84.0072		-222.730				
	in 50,000 H_2O		84.0072		-222.736				
	in 500,000 H_2O		84.0072		-222.675				
$NaOCH_3$		c	54.0244	-85.41	-87.9	-70.46	3.374	26.43	16.60
		a	54.0244		-103.63	-79.55		4.2	
	in 100 H_2O		54.0244		-99.71				

Table 99. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Sodium

Substance: Formula and Description	State	Formula weight	0 K ΔH_f° kcal/mol	298.15 K (25 °C) ΔH_f° kcal/mol	ΔG_f° kcal/mol	$H_{298}^\circ - H_0^\circ$ kcal/mol	S° cal/deg mol	C_p° cal/deg mol
$NaOCH_3$ in 60 CH_3OH		54.0244		-105.20				
$NaHC_2O_4$ sodium bioxalate	c	112.0178		-258.6				
in 400 H_2O		112.0178		-253.3				
$NaHC_2O_4 \cdot H_2O$	c	130.0332		-330.8				
$NaC_2H_3O_2$	c	82.0350		-169.41	-145.14		29.4	19.1
	a	82.0350		-173.55	-150.88		34.8	9.6
in 3 H_2O		82.0350		-170.320				
in 3.5 H_2O		82.0350		-170.790				
in 4 H_2O		82.0350		-171.140				
in 4.5 H_2O		82.0350		-171.430				
in 5 H_2O		82.0350		-171.660				
in 5.5 H_2O		82.0350		-171.858				
in 6 H_2O		82.0350		-172.020				
in 7 H_2O		82.0350		-172.270				
in 8 H_2O		82.0350		-172.450				
in 9 H_2O		82.0350		-172.584				
in 10 H_2O		82.0350		-172.680				
in 12 H_2O		82.0350		-172.800				
in 15 H_2O		82.0350		-172.905				
in 20 H_2O		82.0350		-172.994				
in 25 H_2O		82.0350		-173.056				
in 30 H_2O		82.0350		-173.091				
in 40 H_2O		82.0350		-173.143				
in 50 H_2O		82.0350		-173.178				
in 75 H_2O		82.0350		-173.232				
in 100 H_2O		82.0350		-173.264				
in 150 H_2O		82.0350		-173.307				
in 200 H_2O		82.0350		-173.335				
in 300 H_2O		82.0350		-173.370				
in 400 H_2O		82.0350		-173.391				
in 500 H_2O		82.0350		-173.407				
in 600 H_2O		82.0350		-173.418				
in 800 H_2O		82.0350		-173.434				
in 1,000 H_2O		82.0350		-173.446				
in 1,500 H_2O		82.0350		-173.464				
in 2,000 H_2O		82.0350		-173.475				
in 3,000 H_2O		82.0350		-173.488				
in 4,000 H_2O		82.0350		-173.496				
in 5,000 H_2O		82.0350		-173.502				
in 10,000 H_2O		82.0350		-173.515				
in 20,000 H_2O		82.0350		-173.525				
in 50,000 H_2O		82.0350		-173.534				
in 100,000 H_2O		82.0350		-173.538				
in ∞ H_2O		82.0350		-173.55				
in 2,000 $HC_2H_3O_2$		82.0350		-174.2				
in 1,100 C_2H_5OH		82.0350		-170.8				
$NaC_2H_3O_2 \cdot 3H_2O$	c	136.0812		-383.2	-317.6		58.	

Table 99. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Sodium

Substance	State	Formula weight	0 K	298.15 K (25 °C)				
Formula and Description			ΔHf_0° kcal/mol	ΔHf°	ΔGf° kcal/mol	$H_{298}^\circ - H_0^\circ$	S° cal/deg mol	C_p°
$CH_2OHCOONa$ sodium hydroxyacetate	c	98.0344		-215.3				
	a	98.0344		-213.3				
in 10 H_2O		98.0344		-213.57				
in 15 H_2O		98.0344		-213.46				
in 20 H_2O		98.0344		-213.38				
in 25 H_2O		98.0344		-213.32				
in 30 H_2O		98.0344		-213.27				
in 40 H_2O		98.0344		-213.17				
in 50 H_2O		98.0344		-213.10				
in 100 H_2O		98.0344		-212.99				
in 200 H_2O		98.0344		-213.0				
$CH_2OHCOONa \cdot 1/2H_2O$	c	107.0421		-250.7				
$CH(OH)_2COONa$	c	114.0338		-258.6				
sodium dihydroxyacetate								
in 200 H_2O		114.0338		-253.9				
$NaOC_2H_5$	c	68.0516		-98.90				
	a	68.0516		-113.				
in 50 H_2O		68.0516		-112.8				
in 60 C_2H_5OH		68.0516		-111.3				
$NaC_2H_5O_2$ sodium ethylene glycolate	c	84.0510		-148.4				
$NaC_2H_5O_2 \cdot CH_3OH$	c	116.0936		-211.5				
sodium ethylene glycolate;methanol								
$CH_2OHCOONa \cdot CH_2OHCOOH$	c	174.0870		-377.0				
sodium acid hydroxyacetate								
$NaC_2H_5O_2 \cdot C_2H_5OH$	c	130.1208		-220.1				
sodium ethylene glycolate;ethanol								
$NaC_2H_5O_2 \cdot C_2H_6O_2$	c	146.1202		-264.7				
sodium ethylene glycolate;glycol								
$NaOC_2H_5 \cdot 2C_2H_5OH$	c	160.1912		-240.10				
$NaOCH_2CO_2Na$	c	120.0162		-247.9				
disodium hydroxyacetate								
in 300 H_2O		120.0162		-257.1				
disodium hydroxyacetate								
$NaOCH_2CO_2Na \cdot 2H_2O$	c	156.0470		-394.2				
disodium hydroxyacetate dihydrate								
$NaHCO_3 \cdot Na_2CO_3 \cdot 2H_2O$	c	226.0270		-641.7	-569.69		72.0	
$3NaHCO_3 \cdot Na_2CO_3$	c	358.0106		-951.9				
CCl_3COONa sodium trichloroacetate	c	185.3700		-178.9				
in 400 H_2O		185.3700		-180.77				
$CH_2ClCOONa$	a	116.4800		-177.20				
in 400 H_2O		116.4800		-177.14				
$CHCl_2COONa$ in 400 H_2O		150.9250		-179.8				
$NaI \cdot 3CH_3OH$	c	246.0220		-248.6				
$NaC_2H_5SO_4$ in 600 H_2O		148.1138		-266.2				
sodium ethylsulfate								

Table 99. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Sodium

Substance: Formula and Description	State	Formula weight	0 K ΔHf°_0 kcal/mol	298.15 K (25 °C) ΔHf° kcal/mol	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$ kcal/mol	S° cal/deg mol	C°_p cal/deg mol
$(CHO)_2 \cdot 2NaHSO_3$		266.1572		-512.1				
in 800 H_2O								
glyoxal sodium bisulfite								
$(CHO)_2 \cdot 2NaHSO_3 \cdot H_2O$	c	284.1726		-589.8				
NaCN (c,I,cubic)	c	49.0077	-22.56	-20.91	-18.27	4.480	27.63	16.82
(c,II,orthorhombic)	c2	49.0077		-21.69				
	g	49.0077	25.78	26.	19.11	3.044	59.59	12.23
	a	49.0077		-21.4	-21.4		36.6	
in 200 H_2O		49.0077		-21.0				
$NaCN \cdot 1/2H_2O$	c	58.0154		-56.35				
$NaCN \cdot 2H_2O$	c	85.0385		-162.47				
NaCNO	c	65.0071		-96.89	-85.6		23.1	20.7
	a	65.0071		-92.3	-85.9		39.6	
$NaHCN_2$ in 700 H_2O		64.0224		-29.83				
sodium cyanamide								
NH_2COONa sodium carbamate	c	83.0225		-213.7				
$NaCNH_2O_2$	au	83.0225		-77.7				
sodium salt of nitromethane								
NH_2CH_2COONa in 200 H_2O		97.0497		-169.7				
$NaCNI_2$	a	302.8165			-30.06			
$Na(CN)_2I$	a	201.9300		23.02				
NaCNS	c	81.0717		-40.75				
	a	81.0717		-39.12	-40.44		48.6	1.5
in 4 H_2O		81.0717		-40.264				
in 4.5 H_2O		81.0717		-40.295				
in 5 H_2O		81.0717		-40.317				
in 6 H_2O		81.0717		-40.313				
in 7 H_2O		81.0717		-40.269				
in 8 H_2O		81.0717		-40.212				
in 9 H_2O		81.0717		-40.149				
in 10 H_2O		81.0717		-40.086				
in 12 H_2O		81.0717		-39.972				
in 15 H_2O		81.0717		-39.838				
in 20 H_2O		81.0717		-39.684				
in 25 H_2O		81.0717		-39.580				
in 30 H_2O		81.0717		-39.504				
in 40 H_2O		81.0717		-39.397				
in 50 H_2O		81.0717		-39.328				
in 75 H_2O		81.0717		-39.227				
in 100 H_2O		81.0717		-39.175				
in 150 H_2O		81.0717		-39.123				
in 200 H_2O		81.0717		-39.099				
in 300 H_2O		81.0717		-39.077				
in 500 H_2O		81.0717		-39.065				
in 800 H_2O		81.0717		-39.060				
in 1,000 H_2O		81.0717		-39.062				
in 2,000 H_2O		81.0717		-39.069				

Table 99. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Sodium

Substance: Formula	Description	State	Formula weight	0 K ΔHf°_0 kcal/mol	298.15 K (25 °C) ΔHf° kcal/mol	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$ kcal/mol	S° cal/deg mol	C°_p cal/deg mol
NaCNS	in 3,000 H_2O		81.0717		-39.074				
	in 4,000 H_2O		81.0717		-39.079				
	in 5,000 H_2O		81.0717		-39.082				
	in 10,000 H_2O		81.0717		-39.091				
	in 20,000 H_2O		81.0717		-39.098				
	in 50,000 H_2O		81.0717		-39.106				
	in 100,000 H_2O		81.0717		-39.109				
	in ∞ H_2O		81.0717		-39.12				
	in 9 C_2H_5OH		81.0717		-39.82				
	in 10 C_2H_5OH		81.0717		-39.90				
	in 12 C_2H_5OH		81.0717		-40.15				
	in 15 C_2H_5OH		81.0717		-40.55				
	in 20 C_2H_5OH		81.0717		-41.05				
	in 25 C_2H_5OH		81.0717		-41.25				
	in 30 C_2H_5OH		81.0717		-41.37				
	in 50 C_2H_5OH		81.0717		-41.63				
	in 100 C_2H_5OH		81.0717		-41.79				
	in 200 C_2H_5OH		81.0717		-41.87				
	in NH_2CHO:S		81.0717		-44.45				
	in CH_3NHCHO:S		81.0717		-45.53				
	in C_2H_6NCHO:S		81.0717		-49.38				
$NaCNS{\cdot}2SO_2$		c	209.1973		-203.4				
NH_2CSSNa		a	115.1517		-49.9				
	sodium dithiocarbamate; from $NH_2CS_2^-$								
$NHC(S_2Na_2)$		a	137.1335		-97.4				
	disodium dithioiminocarbonate; from $NHCS_2^{2-}$								
Na_2SiO_3	sodium metasilicate	c	122.0638		-371.63	-349.19		27.21	
		gl	122.0638		-368.1				
		au	122.0638		-379.1				
$Na_2SiO_3{\cdot}5H_2O$		c	212.1408		-728.6				
$Na_2SiO_3{\cdot}9H_2O$		c	284.2024		-1010.7				
$Na_2Si_2O_5$		c	182.1486		-589.8	-555.0		39.21	
	sodium disilicate, stable up to 951K [formerly β]								
		c2	182.1486		-589.22				
	stable 951K to m.pt.(1147K)[formerly α]								
	unstable	c3	182.1486		-587.28				
		gl	182.1486		-584.56				
Na_4SiO_4		c	184.0428					46.76	
$Na_6Si_2O_7$		c	306.1066		-868.				
$NaHSi(OH)_6$		a	154.1282		-477.2				
Na_2SiF_6		c	188.0560		-695.4	-656.7		44.7	
	in 630 H_2O		188.0560		-685.1				
$NaHSiF_6$	in 400 H_2O		166.0742		-628.0				
NaSn		c	141.6798		-11.5				
Na_4Sn		c	210.6492		-20.7				
Na_2SnO_3		c	212.6678		-276.				
$NaSnCl_3$		a	248.0388		-173.8	-165.4		76.	

Table 99. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Sodium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf°_0 kcal/mol	ΔHf° kcal/mol	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$ kcal/mol	S° cal/deg mol	C°_p cal/deg mol
Na_2SnCl_6 from $SnCl_6^{2-}$	au	377.3876		-346.7				
$NaSnBr_3$	a	381.4068		-147.0	-145.5		74.	
$NaPb$	c	230.1798		-11.6				
Na_2Pb_2	c	529.3290		-35.0				
Na_2PbO_3	c	301.1678		-206.				
$NaHPbO_2$ from $HPbO_2^-$	a	263.1866			-143.49			
$NaPb(OH)_3$	a	281.2020			-200.2			
$NaPbCl_3$	a	336.5388			-164.5			
$NaPbBr_3$	a	469.9068			-144.6			
$NaPbI_3$	a	610.8930			-110.1			
$(NaI)_2PbI_2{\cdot}4H_2O$	c	832.8488		-480.84				
$(NaI)_2PbI_2{\cdot}6H_2O$	c	868.8796		-620.40				
$PbS_2O_3(Na_2S_2O_3)_2$	c	635.5278		-703.20				
	au	635.5278		-700.50				
$Na_2PbP_2O_7$	a	427.1130			-605.0			
$Na_6PbP_2O_7$	au	519.0722			-1430.9			
$Na_6Pb(P_2O_7)_2$	au	693.0156		-1430.9				
$NaBO_2$	c	65.7996	-232.38	-233.5	-220.06	2.780	17.57	15.76
	g	65.7996	-153.4	-154.	-156.	3.27	68.6	13.9
	a	65.7996		-241.99	-224.86		5.20	
in 220 H_2O		65.7996		-242.0				
$NaBO_2{\cdot}2H_2O$	c	101.8304		-378.	-337.0		37.	
$NaBO_2{\cdot}4H_2O$	c	137.8612		-520.	-451.3		55.	
$NaBO_3$	au	81.7990		-220.4				
$NaBO_3{\cdot}4H_2O$	c	153.8606		-505.3				
NaB_3O_5	c	135.4198		-550.1				
$NaB_5O_8{\cdot}5H_2O$	c	295.1170					90.85	
$Na_2B_4O_7$	c	201.2194	-782.36	-786.6	-740.0	7.262	45.30	44.64
	am	201.2194		-781.8	-735.4		46.1	
	a	201.2194			-747.8			
$Na_2B_4O_7{\cdot}4H_2O$	c	273.2810		-1077.3				
$Na_2B_4O_7{\cdot}5H_2O$	c	291.2964		-1147.8				
$Na_2B_4O_7{\cdot}10H_2O$	c	381.3734		-1503.0	-1318.5		140.	147.
borax								
$Na_2O{\cdot}3B_2O_3$	c	270.8396		-1100.2				
	am	270.8396		-1092.2				
$Na_2O{\cdot}4B_2O_3$	c	340.4598		-1413.0				
	am	340.4598		-1399.				
$NaBH_4$	c	37.8328	-43.100	-45.08	-29.62	3.890	24.21	20.74
	a	37.8328		-45.88	-35.28		40.5	
in 350 H_2O		37.8328		-45.789				
$NaBH_4{\cdot}2H_2O$	c	73.8636		-187.6	-144.58		43.	
$NaB(OH)_4$	a	101.8304		-378.62	-338.24		38.6	
$NaH_2BO_3{\cdot}H_2O_2$	a	117.8298			-315.4			
$NaHB_4O_7$ from $HB_4O_7^-$	a	179.2376			-704.4			
$NaBF_4$	c	109.7944	-440.04	-440.9	-418.30	5.191	34.73	28.74

Table 99. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Sodium

Substance	State	Formula weight	0 K	298.15 K (25 °C)				
Formula and Description			ΔHf_0° kcal/mol	ΔHf°	ΔGf° kcal/mol	$H_{298}^\circ - H_0^\circ$	S° cal/deg mol	C_p°
$NaBF_4$	a	109.7944		-433.8	-418.0		58.	
$NaBF_2(OH)_2$	a	105.8124			-383.1			
$NaOH \cdot BF_3$	c	107.8034		-394.7				
$NaBF_3OH$	a	107.8034		-422.4	-400.7		54.	
$NaBH_4 \cdot 3NH_3$	c	88.9249		-104.	-40.7		73.	
$NaBH_4 \cdot 4.5NH_3$	c	114.4709		-132.	-44.1		95.	
$NaB(OCH_3)_4$	c	157.9392		-335.5	-265.2		68.6	
$NaAlO_2$	c	81.9701		-271.30	-256.06		16.90	17.52
	a	81.9701		-277.0	-259.4		9.	
$NaAlH_4$	c	54.0033		-27.6				
$NaAl(OH)_4$	a	118.0009		-413.6	-372.8		42.	
$NaAlF_4$	g	125.9649	-445.0	-446.7	-436.8	5.156	82.6	25.3
Na_3AlF_6	c	209.9413		-789.0	-749.7		57.0	51.60
	au	209.9413		-798.7				
$Na_3AlF_6 \cdot 3.5H_2O$	c	272.9952		-1050.5				
$AlCl_3 \cdot NaCl$	c	191.7833		-272.61				
$AlBr_3 \cdot NaBr$	c	369.6073		-218.0				
$(AlBr_3)_2 \cdot NaBr$	c	636.3158		-337.1				
$AlCl_3 \cdot NaBr$	c	236.2393		-258.0				
$AlBr_3 \cdot NaCl$	c	325.1513		-229.7				
$(AlBr_3)_2 \cdot NaCl$	c	591.8598		-351.1				
$NaAl(SO_4)_2$ from SO_4^{2-}, Al^{3+}	a	242.0945		-619.	-535.		-53.2	
$NaAl(SO_4)_2 \cdot 2H_2O$	c	278.1253		-723.10				
$NaAl(SO_4)_2 \cdot 5H_2O$	c	332.1715		-940.45				
$NaAl(SO_4)_2 \cdot 6H_2O$	c	350.1869		-1011.82				
$NaAl(SO_4)_2 \cdot 12H_2O$	c	458.2793		-1434.69				
alum								
$NaAlSiO_4$ nepheline, nephelite	c	142.0549		-500.2	-472.8		29.7	
$NaAlSi_2O_6$ jadeite	c	202.1397		-724.4	-681.7		31.9	
dehydrated analcite	c2	202.1397		-713.5	-673.8		41.9	39.30
$NaAlSi_2O_6 \cdot H_2O$	c	220.1551		-788.9	-736.8		56.0	50.17
analcite								
$NaAlSi_3O_8$ low albite	c	262.2245	-935.26	-940.50	-887.1	7.995	49.57	49.02
analbite	c2	262.2245	-933.65	-938.9	-886.9	7.988	54.11	48.95
	am	262.2245	-921.15	-926.2	-876.0	8.187	60.2	50.17
Na_3GaO_3	a	186.6876			-336.			
NaH_2GaO_3	a	142.7240			-241.			
Na_2HGaO_3 from $HGaO_3^{2-}$	a	164.7058			-289.			
$NaGaBr_4$	a	412.3458		-215.6	-194.1		22.7	
NaTl	c	227.3598		-7.81	-7.00		24.9	
$NaTl(CN)_4$	a	331.4314			105.			
Na_2ZnO_2	c	143.3484		-189.				
	a	143.3484			-217.04			
$NaHZnO_2$ from $HZnO_2^-$	a	121.3666			-171.85			
$NaZn(OH)_3$	a	139.3820			-228.54			
$Na_2Zn(OH)_4$	a	179.3792			-330.42			
$NaZnCl_3$	a	194.7188			-191.8			

Table 99 — Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Sodium

Substance Formula and Description	State	Formula weight	0 K ΔHf°_0 kcal/mol	298.15 K (25 °C) ΔHf° kcal/mol	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$ kcal/mol	S° cal/deg mol	C°_p cal/deg mol
Na_2ZnCl_4	a	253.1616			-284.8			
$NaZnBr_3$	a	328.0868			-169.9			
$NaZnI_3$	a	469.0730			-132.3			
Na_2ZnI_4	a	618.9672			-206.5			
$Na_2Zn(SO_4)_2$	c	303.4728		-578.				
$Na_2Zn(SO_4)_2 \cdot 2H_2O$	c	339.5036		-720.4				
$Na_2Zn(SO_4)_2 \cdot 4H_2O$	c	375.5344		-858.5				
$Na_2Zn(CN)_4$	a	215.4212		-33.0	-18.4		82.	
$Na_2Zn(CNS)_4$	a	343.6772			-73.5			
Na_2CdO_2	a	190.3784			-193.2			
$NaHCdO_2$ from $HCdO_2^-$	a	168.3966			-149.5			
$NaCd(OH)_3$	a	186.4120			-206.5			
$Na_2Cd(OH)_4$	a	226.4092			-306.5			
$NaCdCl_3$	a	241.7488		-191.5	-179.0		62.6	
$NaCdBr_3$	a	375.1168			-160.0			
$NaCdI_3$	a	516.1030			-124.6			
Na_2CdI_4	a	665.9972		-196.5	-200.7		106.	
$Na_2Cd(N_3)_4$	a	326.4600			184.3			
$Na_2CdP_2O_7$	a	332.3230			-614.3			
$NaCd(CN)_3$	a	213.4435			22.2			
$Na_2Cd(CN)_4$	a	262.4512		-12.5	-3.9		105.	
$NaCd(CNS)_3$	a	309.6355			-17.3			
NaHg	c	223.5798		-11.3	-9.76		25.	
$NaHg_2$	c	424.1698		-18.2	-16.2		42.	
$NaHg_4$	c	825.3498		-21.2	-17.7		73.	
Na_3Hg	c	269.5594		-11.0	-10.84		54.	
Na_3Hg_2	c	470.1494		-21.9	-20.7		69.	
Na_5Hg_2	c	516.1290			-21.7			
Na_7Hg_8	c	1765.6486		-84.4	-76.0		203.	
$NaHgCl_3$	a	329.9388		-150.3	-136.5		64.	
Na_2HgCl_4	a	388.3816		-247.2	-232.0		98.	
$NaHgBr_3$	a	463.3068		-127.5	-124.6		76.	
Na_2HgBr_4	a	566.2056		-217.8	-213.9		102.	
Na_4HgBr_6	a	772.0032		-387.8				
Na_8HgBr_{10}	a	1183.5984		-734.5				
$NaHgI_3$	a	604.2930		-93.9	-98.1		86.	
Na_2HgI_4	a	754.1872		-171.0	-175.8		114.	
Na_8HgS_5	a	544.8284		-443.9				
$NaHg(CN)_3$	a	301.6335		37.5	48.1		67.9	
$Na_2Hg(CN)_4$	a	350.6412		11.0	22.6		101.1	
$NaHg(CN)_2Cl$ in 550 H_2O		311.0686		-31.3				
$NaHg(CN)_2Cl \cdot 1.25H_2O$	c	333.5878		-124.4				
$Na_2Hg(CN)_2Cl_2$		369.5114		-128.3				
$NaHg(CN)_2Br$ in 550 H_2O		355.5246		-21.0				
$NaHg(CN)_2Br \cdot 2H_2O$	c	391.5554		-169.3				

Table 99 — Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Sodium

Substance			0 K	298.15 K (25 °C)				
Formula and Description	State	Formula weight	ΔHf_0° kcal/mol	ΔHf°	ΔGf° kcal/mol	$H_{298}^\circ - H_0^\circ$	S° cal/deg mol	C_p°
$Na_2Hg(CN)_2Br_2$ in 500 H_2O		458.4234		-108.3				
$NaHg(CN)_2I$ in 550 H_2O		402.5200		-6.75				
$NaHg(CN)_2I{\cdot}2H_2O$	c	438.5508		-154.5				
$Na_2Hg(CN)_2I_2$ in 550 H_2O		552.4142		-78.5				
$NaHg(CNS)_3$	a	397.8255			15.9			
$Na_2Hg(CNS)_4$	a	478.8972		-36.8	-26.9		137.	
NaCu	g	86.5298	65.4	65.	54.0	2.35	56.9	8.66
Na_2CuO_2	a	141.5184			-169.1			
Na_2CuO_3	c	157.5178		-169.3				
$NaHCuO_2$	a	119.5366			-124.4			
$NaCuCl_2$	a	157.4358			-120.0			
$Na_2Cu(CO_3)_2$	c	229.5384		-409.3				
$Na_2Cu(CO_3)_2{\cdot}3H_2O$	c	283.5846		-623.54				
$NaCu(CN)_2$	a	138.5656			-1.0			
$Na_2Cu(CN)_3$	a	187.5733			-28.7			
$Na_3Cu(CN)_4$	a	236.5810			-52.4			
$Na_3Cu(CNS)_4$	a	364.8370		-93.7	-100.8		196.	
NaAg	g	130.8598	61.1	60.6	49.8	2.37	58.7	8.71
$Na_2Ag_2O_3$	c	309.7178		-149.				
$NaAgCl_2$	a	201.7658		-116.0	-114.1		69.4	
$NaAgBr_2$	a	290.6778			-103.8			
Na_2AgBr_3	a	393.5766			-193.2			
$NaAgI_2$	a	384.6686			-83.4			
Na_2AgI_3	a	534.5628		-158.3	-162.0		88.7	
Na_3AgI_4	a	684.4570			-237.9			
$NaAg(CN)_2$	a	182.8956		7.20	10.4		60.	
$Na_2Ag(CN)_3$	a	231.9033		-15.13				
$NaAg(SCN)_2$	a	247.0236			-11.2			
$Na_2Ag(SCN)_3$	a	328.0953			-53.3			
$Na_3Ag(SCN)_4$	a	409.1670			-94.1			
NaAu	g	219.9568	62.5	61.8	50.9	2.31	60.0	8.56
$NaAuCl_4$	a	361.7688		-134.4	-118.81		77.9	
$NaAuBr_4$	a	539.5728		-103.2	-102.6			
$NaAu(CN)_2$	a	271.9926		0.5	5.7		55.	
$NaAu(SCN)_2$	a	336.1206			-2.4			
$NaAu(SCN)_4$	a	452.2844			71.6			
$Na_2Ni(CN)_4$	a	208.7612		-26.9	-12.4		80.	
Na_2CoO_3	c	152.9110		-205.				
$Na_3(Co(NO_2)_6)$	c	403.9356		-340.1				
in 14,000 H_2O		403.9356		-322.7				
$Na_3Co(CN)_6$	a	284.0100					97.9	
$Na(Co(NH_3)_2(NO_2)_2C_2O_4)$	c	296.0154		-359.6				
$NaFeO_2$	c	110.8356		-166.87	-152.96		21.1	
$NaFeF_3$	c	135.8320		-307.7				
$NaFeCl_4$	c	220.6488		-194.6				

Table 99. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Sodium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf_0° kcal/mol	ΔHf°	ΔGf° kcal/mol	$H_{298}^\circ - H_0^\circ$	S° cal/deg mol	C_p°
$NaFeCl_4$	g	220.6488		-154.6				
$NaFe(SO_4)_2$	a	270.9600			-427.0			
$Na_3Fe(CN)_6$	a	280.9238		-37.9	-13.5		106.9	
in 500 H_2O		280.9238		-37.29				
in 800 H_2O		280.9238		-37.25				
in 1,000 H_2O		280.9238		-37.30				
in 2,000 H_2O		280.9238		-37.33				
in 3,000 H_2O		280.9238		-37.38				
in 5,000 H_2O		280.9238		-37.45				
in 10,000 H_2O		280.9238		-37.54				
in 20,000 H_2O		280.9238		-37.61				
in 50,000 H_2O		280.9238		-37.69				
in 100,000 H_2O		280.9238		-37.74				
$Na_4Fe(CN)_6$	a	303.9136		-120.7	-84.28		79.1	
$Na_3FeCO(CN)_5$	c	282.9165		-119.9				
	au	282.9165		-125.7				
$Na_3FeCO(CN)_5 \cdot 7H_2O$	c	409.0243		-611.2				
$NaH_3Fe(CN)_6$	a	237.9682		51.5				
$Na_2H_2Fe(CN)_6$	a	259.9500		-5.9	32.18		80.	
$Na_3HFe(CN)_6$	a	281.9318		-63.3	-27.38		84.	
$NaH_2FeCO(CN)_5$	a	238.9529		-11.1				
$Na_2HFeCO(CN)_5$	a	260.9347		-68.8				
$NaPdCl_3$	a	235.7488			-128.6			
Na_2PdCl_4	a	294.1916		-246.3	-224.8		68.	
Na_2PdCl_6	a	365.0976			-228.0			
$NaPdBr_3$	a	369.1168			-111.4			
Na_2PdBr_4	a	472.0156		-206.8	-201.2		87.	
Na_2PdBr_6	a	631.8336			-205.3			
Na_2PdI_4	a	659.9972			-163.2			
Na_2PdI_6	a	913.8060			-165.9			
$Na_2Pd(NO_2)_4$	a	336.4016			-146.3			
$Na_2Pd(CN)_4$	a	256.4512			25.0			
$Na_2Pd(CNS)_4$	a	384.7072			-27.1			
Na_3RhCl_6	c	384.5924		-366.7				
	a	384.5924		-375.0				
$Na_3RhCl_6 \cdot 12H_2O$	c	600.7772		-1215.4				
$NaRuO_4$	a	188.0574			-121.3			
Na_2RuO_4	a	211.0472			-197.8			
in 0.97 NaOH	au	211.0472		-227.5				
$NaPtCl_3$	a	324.4388			-115.6			
Na_2PtCl_4	a	382.8816		-234.1	-211.6		65.	
Na_2PtCl_6	c	453.7876		-266.7				
in 400 H_2O		453.7876		-275.7				
in 4,500 H_2O		453.7876		-274.4				
$Na_2PtCl_6 \cdot 2H_2O$	c	489.8184		-412.0				
$Na_2PtCl_6 \cdot 6H_2O$	c	561.8800		-696.0				
Na_2PtBr_4	au	560.7056		-202.8				

Table 99. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Sodium

Substance: Formula and Description	State	Formula weight	0 K ΔHf°_0 kcal/mol	298.15 K (25 °C) ΔHf° kcal/mol	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$ kcal/mol	S° cal/deg mol	C°_p cal/deg mol
Na_2PtBr_6	c	720.5236		-216.8				
in 1,500 H_2O		720.5236		-227.1				
$Na_2PtBr_6 \cdot 6H_2O$	c	828.6160		-645.4				
Na_2PtI_6 in 800 H_2O		1002.4960		-165.8				
$Na_2Pt(CN)_4$	a	345.1412			43.7			
Na_2IrCl_6	c	450.8976		-233.2				
	au	450.8976		-251.				
Na_3IrCl_6	c	473.8874		-318.2				
	au	473.8874		-345.				
Na_2OsCl_6	c	448.8976		-268.				
$NaMnO_4$	a	141.9254		-186.8	-169.5		59.8	
$NaMnO_4 \cdot H_2O$	c	159.9408		-257.92				
$NaMnO_4 \cdot 3H_2O$	c	195.9716		-399.82				
Na_2MnO_4	c	164.9152		-276.3				
	a	164.9152		-271.	-244.9		42.	
$NaMnCl_3$	c	184.2868		-214.01				
in 1,200 H_2O		184.2868		-229.24				
$Na_2Mn(SO_4)_2$	c	293.0408		-595.3				
$Na_2Mn(SO_4)_2 \cdot 2H_2O$	c	329.0716		-736.2				
$Na_4Mn(CN)_6$	a	303.0046		-97.				
$NaReO_4$	c	273.1874		-252.65	-227.95		36.2	32.00
	g	273.1874		-196.				
	a	273.1874		-245.6	-228.6		62.2	7.9
in 5,000 H_2O		273.1874		-245.558				
in 20,000 H_2O		273.1874		-245.578				
$(NaReO_4)_2$	g	546.3748		-434.				
Na_2ReCl_6	a	444.8976		-297.	-266.		88.	
$NaCrO_2$	c	106.9846		-209.9				
Na_2CrO_4	c	161.9732	-318.92	-320.8	-295.17	6.323	42.21	33.97
	a	161.9732		-325.38	-299.15		40.2	
in 800 H_2O		161.9732		-324.5				
	au	161.9732		-325.2				
in 6000 H_2O + 0.11 NaOH								
$Na_2CrO_4 \cdot 4H_2O$	c	234.0348		-604.4				
$Na_2CrO_4 \cdot 10H_2O$	c	342.1272		-1023.2				
$Na_2Cr_2O_7$	c	261.9674		-472.9				
	a	261.9674		-471.0	-436.2		90.8	
in 200 H_2O		261.9674		-470.5				
in 300 H_2O		261.9674		-470.3				
in 400 H_2O		261.9674		-470.1				
in 500 H_2O		261.9674		-470.0				
in 600 H_2O		261.9674		-469.9				
in 800 H_2O		261.9674		-469.8				
in 1,000 H_2O		261.9674		-469.7				
in 1,200 H_2O		261.9674		-469.6				
$Na_2Cr_2O_7 \cdot 2H_2O$	c	297.9982		-615.4				
$NaHCrO_4$ from $HCrO_4^-$	a	139.9914		-267.3	-245.4		58.1	
$Na_2CrO_4 \cdot 4NaOH$	c	321.9620		-730.6				

Table 99 Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Sodium

Substance Formula and Description	State	Formula weight	0 K ΔHf°_0 kcal/mol	298.15 K (25 °C) ΔHf°	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$	S° cal/deg mol	C°_p
Na_3CrCl_6	c	333.6834		-433.60				
Na_2MoO_4	c	205.9172	-348.63	-350.89	-323.71	6.070	38.17	33.87
	g	205.9172		-253.0				
	a	205.9172		-353.3	-325.1		34.7	
in dilute NaOH	au	205.9172		-353.1				
$Na_2MoO_4 \cdot 2H_2O$	c	241.9480		-492.1	-437.46		57.5	
Na_2MoO_5 in 1,100 H_2O		221.9166		-327.5				
$Na_2MoO_6 \cdot H_2O$	c	255.9314		-396.4				
$Na_2MoO_8 \cdot 2H_2O$	c	305.9456		-422.2				
$Na_2MoO_8 \cdot 4H_2O$	c	341.9764		-561.2				
$Na_2Mo_2O_7$	c	349.8554	-533.40	-536.58	-491.92	9.35	59.9	51.90
$NaHMoO_5$ in 1,100 H_2O		199.9348		-279.2				
$NaMoF_7$	c	251.9186		-521.1	-479.5		49.	
Na_2MoF_8	c	293.9068		-661.2	-611.1		57.	
Na_2MoCl_6	c	354.6376		-326.9				
Na_2WO_4	c	293.8272	-367.83	-370.2	-342.86	6.05	38.6	33.41
	a	293.8272		-371.9				
in dilute NaOH	au	293.8272		-371.6				
$Na_2WO_4 \cdot 2H_2O$	c	329.8580		-511.5				
$Na_2WO_6 \cdot H_2O$	c	343.8414		-418.8				
$Na_2WO_8 \cdot 2H_2O$	c	393.8556		-438.2				
$Na_2W_2O_7$	c	525.6754	-571.44	-574.8	-529.84	9.36	60.8	51.36
$Na_2W_4O_{13}$	c	989.3718		-993.7				
$Na_6W_{12}O_{39}$	a	2968.1154		-2953.				
$Na_5HW_6O_{21}$	au	1555.0444		-1682.6				
$NaWF_6$	c	320.8302		-529.				
$NaWF_7$	c	339.8286		-564.	-527.		65.	
Na_2WF_8	c	381.8168		-707.	-661.		71.	
$Na_3PW_3O_{13}$	a	859.4854		-1089.7				
in 25,000 H_2O		859.4854		-1089.7				
$Na_3PW_3O_{13} \cdot 4H_2O$	c	931.5470		-1352.0				
$Na_3PW_3O_{13} \cdot 5.5H_2O$	c	958.5701		-1459.5				
$Na_3PW_3O_{13} \cdot 6.5H_2O$	c	976.5855		-1531.0				
$Na_3PW_3O_{13} \cdot 8.5H_2O$	c	1012.6163		-1673.0				
$NaVO_3$	c	121.9300	-272.31	-273.85	-254.33	4.217	27.17	23.32
	a	121.9300		-269.7	-249.9		26.	
Na_3VO_4	c	183.9090	-417.36	-420.14	-391.45	7.093	45.4	39.40
	a	183.9090			-402.7			
$Na_3VO_4 \cdot 1/2H_2O$ (ortho)	c	192.9167		-456.4				
('pseudosalt')	c2	192.9167		-456.6				
$Na_3VO_4 \cdot 2H_2O$ (ortho)	c	219.9398		-564.1				
$Na_3VO_4 \cdot 7/2H_2O$ ('pseudosalt')	c	246.9629		-672.8				
$Na_3VO_4 \cdot 7H_2O$ (ortho)	c	310.0168		-921.9				
$Na_3VO_4 \cdot 8H_2O$ ('pseudosalt')	c	328.0322		-993.0				

Table 99. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Sodium

Substance Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf_0° kcal/mol	ΔHf°	ΔGf° kcal/mol	$H_{298}^\circ - H_0^\circ$	S° cal/deg mol	C_p°
$Na_3VO_4 \cdot 10H_2O$ (ortho)	c	364.0630		-1132.4				
('pseudosalt')	c2	364.0630		-1133.5				
$Na_3VO_4 \cdot 12H_2O$ (ortho)	c	400.0938		-1272.5				
('pseudosalt')	c2	400.0938		-1273.8				
$Na_4V_2O_7$	c	305.8390	-693.73	-697.62	-650.46	11.75	76.1	64.47
$Na_4V_2O_7 \cdot 2H_2O$	c	341.8698		-839.6				
$Na_4V_2O_7 \cdot 10H_2O$	c	485.9930		-1405.7				
$Na_4V_2O_7 \cdot 12H_2O$	c	522.0238		-1546.9				
$Na_4V_2O_7 \cdot 18H_2O$	c	630.1162		-1970.9				
NaH_2VO_4	a	139.9454		-338.0	-306.6		43.	
$NaH_3V_2O_7$	a	239.8936			-508.1			
$Na_3HV_2O_7$	a	283.8572			-616.2			
$Na_4H_2V_{10}O_{28}$	a	1051.3784			-2096.			
$Na_5HV_{10}O_{28}$	a	1073.3602		-2365.	-2154.		124.	
$NaVF_4$	g	149.9254		-351.0				
NaV_2F_7	g	257.8626		-625.0				
$Na_2V_3F_{11}$	c	407.7880		-1125.0				
Na_3VF_6	c	233.9018		-704.0				
$Na_5V_3F_{14}$	c	533.7526		-1547.0				
Na_3VCl_6	c	332.6294		-438.2				
$NaNbO_3$	c	163.8940		-314.5	-294.7		28.	
	a	163.8940		-302.5	-285.4		37.	
$NaNbO_3 \cdot 3.5H_2O$	c	226.9479			-486.7			
$(3Na_2O \cdot Nb_2O_5)$	c	451.7460		-854.				
Na_2NbF_7	c	271.8744		-724.1				
$NaNbCl_6$	c	328.6138		-290.7				
$NaNbOCl_4$	c	273.7072		-307.3				
$NaTaF_6$	a	317.9282			-271.8			
Na_2TaF_7	c	359.9164		-757.8				
	a	359.9164			-405.4			
$NaTaCl_6$	c	416.6558		-307.5				
Na_2TiO_3	c	141.8778	-377.88	-380.3	-357.6	4.917	29.08	30.03
$Na_2Ti_2O_5$	c	221.7766				6.910	41.56	41.68
$Na_2Ti_3O_7$	c	301.6754				9.160	55.9	54.85
$NaTiCl_3$	c	177.2488		-227.8				
Na_3TiCl_6	c	329.5874		-469.7				
$NaZrF_5$	c	209.2018		-598.				
	g	209.2018		-534.				
Na_2ZrCl_6	c	349.9176		-437.				
Na_2ZrSiO_5	c	245.2826		-634.5	-599.5		43.5	
$Na_2ZrSi_2O_7$	c	305.3674		-861.9				
$Na_6Zr_2Si_4O_{15}$	c	672.7138		-1889.4				
$Na_{14}Zr_2Si_{10}O_{31}$	c	1281.1386		-3833.				
Na_2HfCl_6	c	437.1876		-435.8				
$NaScF_4$	g	143.9394		-446.				

Table 99. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Sodium

Substance	State	Formula weight	0 K	298.15 K (25 °C)				
Formula and Description			ΔHf_0° kcal/mol	ΔHf°	ΔGf° kcal/mol	$H_{298}^\circ - H_0^\circ$	S° cal/deg mol	C_p°
Na_3ScF_6	c	227.9158		-815.				
$NaErCl_4$	g	332.0618		-269.				
$NaNdCl_4$	g	309.0418		-275.				
Na_4CeO_4	c	296.0768		-465.				
$NaLaCl_4$	g	303.7118		-285.				
$NaUO_3$	c	309.0170		-360.				
Na_2UO_4 α form	c	348.0062	-450.02	-452.5	-424.90	6.268	39.68	35.05
β form	c2	348.0062		-450.2				
$Na_2U_2O_7$	c	634.0334		-763.9				
$Na_2U_2O_7 \cdot 1.5H_2O$	c	661.0565		-873.21				
Na_3UO_4	c	370.9960	-481.15	-484.0	-454.4	7.435	47.37	41.35
Na_4UO_5	c	409.9852		-586.9				
$Na_4O_4UO_4$ in 1,350 H_2O		457.9834		-586.9				
$Na_4O_4UO_4 \cdot 9H_2O$	c	620.1220		-1216.0				
$Na_6U_7O_{24}$	c	2188.1273		-2713.1				
$NaUF_6$	c	375.0092		-643.36				
$Na(UO_2)_2F_5$	c	658.0374		-933.03				
$Na_3UO_2F_5$	c	433.9892		-812.73				
$NaUCl_6$ α form	c	473.7368		-352.0				
β form	c2	473.7368		-352.2				
Na_2UCl_6	c	496.7266		-441.7				
$NaThCl_5 \cdot 10H_2O$	c	612.4469		-1129.7				
Na_2ThCl_6	c	490.7357		-484.4				
$NaBeF_3$	g	88.9972		-325.				
Na_2BeF_4	g	130.9854		-443.				
$(NaBeF_3)_2$	g	177.9944		-691.				
$NaBeCl_3$	g	138.3610		-182.				
Na_2BeCl_4	c	196.8038		-315.6				
$NaMgF_3$	c	104.2970		-401.3				
$(2NaCl \cdot MgCl_2)$	c	212.1036		-348.4				
$Na_2Mg(SO_4)_2$	c	262.4148		-643.2				
$Na_2Mg(SO_4)_2 \cdot 2H_2O$	c	298.4456		-810.2				
$NaMgFe(CN)_6$	a	259.2562			-0.8			
$Na_2MgFe(CN)_6$	a	282.2460			-73.0			
Na_2CaCl_4	c	227.8716		-387.6				
$Na_2Ca(SO_4)_2$	c	278.1828		-676.2				
$Na_4Ca(SO_4)_3$	c	420.2240		-1011.0				
$NaCaFe(CN)_6$	a	275.0242			-24.5			
$Na_2CaFe(CN)_6$	a	298.0140			-96.6			
$(2NaCl \cdot SrCl_2)$	c	275.4116		-393.9				
$Na_2SO_4 \cdot SrSO_4$	c	325.7228		-676.4				
$(2Na_2SO_4 \cdot SrSO_4)$	c	467.7640		-1006.0				
$NaSrFe(CN)_6$	a	322.5642			-25.9			
$(2NaCl \cdot BaCl_2)$	c	325.1316		-401.2				
$Na_2SO_4 \cdot BaSO_4$	c	375.4428		-682.1				
$(2Na_2SO_4 \cdot BaSO_4)$	c	517.4840		-1013.4				
$Na_2CO_3 \cdot BaCO_3$	c	303.3384		-561.3				

Table 99. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Sodium

Substance			0 K	298.15 K (25 °C)				
Formula and Description	State	Formula weight	ΔHf_0° kcal/mol	ΔHf°	ΔGf° kcal/mol	$H_{298}^\circ - H_0^\circ$	S° cal/deg mol	C_p°
$NaLiF_2$	g	67.9276		-211.5	-211.7		68.	
NaLiICl	c	192.2882		-165.9				
$(0.25Na_2O{\cdot}0.75Li_2O{\cdot}2B_2O_3)$	c	177.1462		-801.61				
	am	177.1462		-792.35				
$(0.25Na_2O{\cdot}0.75Li_2O{\cdot}3B_2O_3)$	c	246.7664		-1109.34				
	am	246.7664		-1100.24				
$(0.25Na_2O{\cdot}0.75Li_2O{\cdot}4B_2O_3)$	c	316.3866		-1408.55				
	am	316.3866		-1400.11				
$(0.5Na_2O{\cdot}0.5Li_2O{\cdot}2B_2O_3)$	c	185.1706		-798.98				
	am	185.1706		-788.19				
$(0.5Na_2O{\cdot}0.5Li_2O{\cdot}3B_2O_3)$	c	254.7908		-1106.58				
	am	254.7908		-1096.44				
$(0.5Na_2O{\cdot}0.5Li_2O{\cdot}4B_2O_3)$	c	324.4110		-1410.27				
	am	324.4110		-1398.63				
$(0.75Na_2O{\cdot}0.25Li_2O{\cdot}2B_2O_3)$	c	193.1950		-793.23				
	am	193.1950		-784.27				
$(0.75Na_2O{\cdot}0.25Li_2O{\cdot}3B_2O_3)$	c	262.8152		-1103.70				
	am	262.8152		-1093.61				
$(0.75Na_2O{\cdot}0.25Li_2O{\cdot}4B_2O_3)$	c	332.4354		-1408.90				
	am	332.4354		-1397.73				

Table 100. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Potassium

Substance: Formula and Description	State	Formula weight	0 K: ΔHf°_0 kcal/mol	298.15 K (25 °C): ΔHf° kcal/mol	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$ kcal/mol	S° cal/deg mol	C°_p cal/deg mol
K	cs	39.1020	0	0	0	1.695	15.34	7.07
	g	39.1020	21.544	21.33	14.49	1.481	38.295	4.968
K^+	g	39.1020		122.92				
K^{2+}	g	39.1020		853.70				
K^{3+}	g	39.1020		1909.5				
K^{4+}	g	39.1020		3315.6				
K^+	a	39.1020		-60.32	-67.70		24.5	5.2
K in 88.81 Hg		39.1020			-24.41			
K_2	g	78.2040	30.38	29.56	20.92	2.565	59.66	9.055
KO_2	c	71.1008		-68.10	-57.23		27.9	18.53
KO_3	c	87.1002		-62.2				
K_2O	c	94.2034		-86.4				
	g	94.2034		-15.				
K_2O_2	c	110.2028		-118.1	-101.6		24.4	
	g	110.2028		-38.				
KH	c	40.1100		-13.80				
	g	40.1100	32.01	31.4	26.9	2.102	45.96	7.421
KD	c	41.1160		-13.21				
	g	41.1160	32.37	31.8	27.4	2.150	47.52	7.849
KOH	c	56.1094	-100.681	-101.521	-90.61	2.904	18.85	15.51
	g	56.1094	-54.25	-55.2	-55.6	2.790	56.92	11.76
	a	56.1094		-115.29	-105.29		21.9	-30.3
in 3 H_2O		56.1094		-112.204				
in 3.5 H_2O		56.1094		-112.644				
in 4 H_2O		56.1094		-113.039				
in 4.5 H_2O		56.1094		-113.409				
in 5 H_2O		56.1094		-113.698				
in 6 H_2O		56.1094		-114.028				
in 8 H_2O		56.1094		-114.430				
in 10 H_2O		56.1094		-114.657				
in 12 H_2O		56.1094		-114.796				
in 15 H_2O		56.1094		-114.920				
in 20 H_2O		56.1094		-115.007				
in 25 H_2O		56.1094		-115.034				
in 30 H_2O		56.1094		-115.050				
in 40 H_2O		56.1094		-115.072				
in 50 H_2O		56.1094		-115.086				
in 75 H_2O		56.1094		-115.104				
in 100 H_2O		56.1094		-115.114				
in 150 H_2O		56.1094		-115.129				
in 200 H_2O		56.1094		-115.139				
in 300 H_2O		56.1094		-115.156				
in 400 H_2O		56.1094		-115.166				
in 500 H_2O		56.1094		-115.175				
in 700 H_2O		56.1094		-115.188				
in 800 H_2O		56.1094		-115.193				
in 1,000 H_2O		56.1094		-115.201				

Table 100. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Potassium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf°_0 kcal/mol	ΔHf° kcal/mol	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$ kcal/mol	S° cal/deg mol	C°_p cal/deg mol
KOH in 1,500 H_2O		56.1094		-115.215				
in 2,000 H_2O		56.1094		-115.223				
in 3,000 H_2O		56.1094		-115.234				
in 5,000 H_2O		56.1094		-115.246				
in 7,000 H_2O		56.1094		-115.252				
in 10,000 H_2O		56.1094		-115.258				
in 20,000 H_2O		56.1094		-115.267				
in 50,000 H_2O		56.1094		-115.274				
in 100,000 H_2O		56.1094		-115.279				
in ∞ H_2O		56.1094		-115.29				
in C_2H_5OH:U		56.1094		-110.52				
$KOH \cdot H_2O$	c	74.1248		-179.0	-154.2		28.	
$KOH \cdot 2H_2O$	c	92.1402		-251.2	-212.1		36.	
$K_2(OH)_2$	g	112.2188	-153.83	-156.9	-147.2	4.42	78.4	19.5
KF	c	58.1004	-135.223	-135.58	-128.53	2.392	15.91	11.72
	g	58.1004	-77.290	-77.78	-82.13	2.259	54.14	8.42
	a	58.1004		-139.82	-134.34		21.2	-20.3
in 3.5 H_2O		58.1004		-138.155				
in 4 H_2O		58.1004		-138.441				
in 4.5 H_2O		58.1004		-138.670				
in 5 H_2O		58.1004		-138.850				
in 6 H_2O		58.1004		-139.101				
in 8 H_2O		58.1004		-139.362				
in 10 H_2O		58.1004		-139.478				
in 12 H_2O		58.1004		-139.536				
in 15 H_2O		58.1004		-139.579				
in 20 H_2O		58.1004		-139.607				
in 25 H_2O		58.1004		-139.617				
in 30 H_2O		58.1004		-139.625				
in 50 H_2O		58.1004		-139.639				
in 75 H_2O		58.1004		-139.649				
in 100 H_2O		58.1004		-139.655				
in 150 H_2O		58.1004		-139.666				
in 200 H_2O		58.1004		-139.674				
in 300 H_2O		58.1004		-139.688				
in 400 H_2O		58.1004		-139.699				
in 500 H_2O		58.1004		-139.707				
in 700 H_2O		58.1004		-139.719				
in 800 H_2O		58.1004		-139.724				
in 1,000 H_2O		58.1004		-139.731				
in 1,500 H_2O		58.1004		-139.745				
in 2,000 H_2O		58.1004		-139.753				
in 3,000 H_2O		58.1004		-139.764				
in 5,000 H_2O		58.1004		-139.776				
in 7,000 H_2O		58.1004		-139.782				
in 10,000 H_2O		58.1004		-139.788				
in 20,000 H_2O		58.1004		-139.797				

Table 100. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Potassium

Substance	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf°_0	ΔHf°	ΔGf°	$H^\circ_{298}-H^\circ_0$	S°	C°_p
Formula and Description			kcal/mol	kcal/mol			cal/deg mol	
KF		58.1004		-139.805				
in 50,000 H_2O		58.1004		-139.809				
in 100,000 H_2O		58.1004		-139.82				
in ∞ H_2O		58.1004		-139.650				
in 500 D_2O		58.1004		-138.76				
in $HCONH_2$:S		58.1004		-138.18				
in formamide								
in $HCONHCH_3$:S		58.1004						
in methyl formamide								
$KF{\cdot}2H_2O$	c	94.1312		-278.112	-244.17		37.1	
K_2F_2	g	116.2008	-204.17	-205.3	-204.6	4.372	76.7	18.71
KHF_2	c α	78.1068	-220.560	-221.72	-205.48	3.655	24.92	18.39
from HF_2^-	a	78.1068		-215.66	-205.88		46.6	
in 25 H_2O		78.1068		-215.77				
in 50 H_2O		78.1068		-215.53				
in 100 H_2O		78.1068		-215.47				
in 200 H_2O		78.1068		-215.50				
in 400 H_2O		78.1068		-215.55				
in ∞ H_2O		78.1068		-215.66				
$KF{\cdot}2HF$	c	98.1132		-300.1				
$KF{\cdot}3HF$	c	118.1196		-377.0				
KCl	c	74.5550	-104.310	-104.385	-97.79	2.717	19.74	12.26
	g	74.5550	-50.751	-51.18	-55.69	2.362	57.12	8.72
	a	74.5550		-100.27	-99.07		38.0	-27.4
in 12 H_2O		74.5550		-100.720				
in 15 H_2O		74.5550		-100.635				
in 20 H_2O		74.5550		-100.533				
in 25 H_2O		74.5550		-100.460				
in 30 H_2O		74.5550		-100.409				
in 40 H_2O		74.5550		-100.343				
in 50 H_2O		74.5550		-100.302				
in 60 H_2O		74.5550		-100.280				
in 75 H_2O		74.5550		-100.247				
in 100 H_2O		74.5550		-100.220				
in 150 H_2O		74.5550		-100.198				
in 200 H_2O		74.5550		-100.189				
in 300 H_2O		74.5550		-100.185				
in 400 H_2O		74.5550		-100.186				
in 500 H_2O		74.5550		-100.188				
in 700 H_2O		74.5550		-100.194				
in 800 H_2O		74.5550		-100.196				
in 1,000 H_2O		74.5550		-100.200				
in 1,200 H_2O		74.5550		-100.203				
in 1,500 H_2O		74.5550		-100.208				
in 2,000 H_2O		74.5550		-100.213				
in 3,000 H_2O		74.5550		-100.220				
in 5,000 H_2O		74.5550		-100.229				
in 7,000 H_2O		74.5550		-100.234				

Table 100. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Potassium

Substance: Formula and Description	State	Formula weight	0 K ΔHf°_0 kcal/mol	298.15 K (25 °C) ΔHf° kcal/mol	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$ kcal/mol	S° cal/deg mol	C°_p cal/deg mol
KCl		74.5550						
in 10,000 H_2O		74.5550		-100.239				
in 20,000 H_2O		74.5550		-100.248				
in 50,000 H_2O		74.5550		-100.256				
in 100,000 H_2O		74.5550		-100.260				
in ∞ H_2O		74.5550		-100.27				
in 500 D_2O		74.5550		-99.596				
in HCO_2H:S		74.5550		-104.68				
in formic acid								
in CH_3OH:U		74.5550		-102.82				
in $HCONH_2$:S		74.5550		-103.565				
in formamide								
in $HCONHCH_3$:S		74.5550		-104.04	-95.91		14.6	
in methyl formamide								
in $HCON(CH_3)_2$:S		74.5550			-90.38			
in dimethyl formamide								
K_2Cl_2	g	149.1100	-148.08	-148.9	-148.8	4.765	83.7	19.28
KClO	a	90.5544		-85.9	-76.5		35.	
$KClO_2$	a	106.5538		-76.2	-63.6		48.7	
$KClO_3$	c	122.5532		-95.06	-70.82		34.2	23.96
	a	122.5532		-85.17	-69.62		63.3	
in 100 H_2O		122.5532		-85.650				
in 150 H_2O		122.5532		-85.480				
in 200 H_2O		122.5532		-85.363				
in 300 H_2O		122.5532		-85.264				
in 400 H_2O		122.5532		-85.220				
in 500 H_2O		122.5532		-85.193				
in 1,000 H_2O		122.5532		-85.156				
in 3,000 H_2O		122.5532		-85.140				
in 10,000 H_2O		122.5532		-85.146				
in 100,000 H_2O		122.5532		-85.160				
in ∞ H_2O		122.5532		-85.17				
$KClO_4$	c	138.5526	-101.525	-103.43	-72.46	5.036	36.1	26.86
	a	138.5526		-91.23	-69.76		68.0	
in 600 H_2O		138.5526		-91.33				
in 800 H_2O		138.5526		-91.30				
in 900 H_2O		138.5526		-91.29				
in 1,000 H_2O		138.5526		-91.28				
in 1,300 H_2O		138.5526		-91.26				
in 5,000 H_2O		138.5526		-91.22				
in 10,000 H_2O		138.5526		-91.21				
in 100,000 H_2O		138.5526		-91.22				
in ∞ H_2O		138.5526		-91.23				
in $HCONH_2$:S		138.5526		-99.93				
in formamide								
in $HCONHCH_3$:S		138.5526		-101.93				
in methyl formamide								
in $HCON(CH_3)_2$:S		138.5526		-105.73				
in dimethyl formamide								

Table 100. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Potassium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf°_0 kcal/mol	ΔHf° kcal/mol	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$ kcal/mol	S° cal/deg mol	C°_p cal/deg mol
KBr	c	119.0110	-92.414	-94.120	-90.98	2.919	22.92	12.50
	g	119.0110	-40.832	-43.04	-50.89	2.416	59.85	8.824
	a	119.0110		-89.37	-92.55		44.2	-28.7
in 10 H_2O		119.0110		-90.195				
in 12 H_2O		119.0110		-90.084				
in 15 H_2O		119.0110		-89.954				
in 20 H_2O		119.0110		-89.860				
in 25 H_2O		119.0110		-89.713				
in 30 H_2O		119.0110		-89.643				
in 40 H_2O		119.0110		-89.549				
in 50 H_2O		119.0110		-89.490				
in 75 H_2O		119.0110		-89.407				
in 100 H_2O		119.0110		-89.368				
in 150 H_2O		119.0110		-89.332				
in 200 H_2O		119.0110		-89.317				
in 300 H_2O		119.0110		-89.306				
in 400 H_2O		119.0110		-89.303				
in 500 H_2O		119.0110		-89.303				
in 800 H_2O		119.0110		-89.305				
in 1,000 H_2O		119.0110		-89.307				
in 1,500 H_2O		119.0110		-89.313				
in 2,000 H_2O		119.0110		-89.317				
in 3,000 H_2O		119.0110		-89.324				
in 5,000 H_2O		119.0110		-89.332				
in 10,000 H_2O		119.0110		-89.341				
in 20,000 H_2O		119.0110		-89.349				
in 50,000 H_2O		119.0110		-89.356				
in 100,000 H_2O		119.0110		-89.360				
in ∞ H_2O		119.0110		-89.37				
in 500 D_2O		119.0110		-88.542				
in 10.86 HCO_2H in formic acid		119.0110		-92.25				
in 21.73 HCO_2H		119.0110		-92.86				
in CH_3OH:U		119.0110		-92.78				
in $HCONH_2$:S in formamide		119.0110		-93.89				
in $HCONHCH_3$:S in methyl formamide		119.0110		-94.94				
in $HCON(CH_3)_2$:S in dimethyl formamide		119.0110		-98.01				
KBr_3	a	278.8290		-91.49	-93.29		76.0	
in 110 H_2O		278.8290		-91.3				
KBr_5	a	438.6470		-94.3	-92.5		100.2	
K_2Br_2	g	238.0220	-125.22	-129.5	-136.2	4.97	89.7	19.47
KBrO	a	135.0104		-82.8	-75.7		34.	
$KBrO_4$	c	167.0092	-83.957	-86.10	-64.82	5.593	35.65	28.72
	a	167.0092		-76.35	-63.27		63.15	

Table 100. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Potassium

Substance: Formula	Description	State	Formula weight	0 K: ΔHf°_0 kcal/mol	298.15 K (25 °C): ΔHf° kcal/mol	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$ kcal/mol	S° cal/deg mol	C_p° cal/deg mol
$KBrO_3$	in 120 H_2O		167.0092		-76.698				
	in 150 H_2O		167.0092		-76.605				
	in 200 H_2O		167.0092		-76.526				
	in 300 H_2O		167.0092		-76.446				
	in 400 H_2O		167.0092		-76.407				
	in 500 H_2O		167.0092		-76.385				
	in 600 H_2O		167.0092		-76.371				
	in 800 H_2O		167.0092		-76.354				
	in 1,000 H_2O		167.0092		-76.345				
	in 2,000 H_2O		167.0092		-76.329				
	in 5,000 H_2O		167.0092		-76.324				
	in 10,000 H_2O		167.0092		-76.327				
	in 50,000 H_2O		167.0092		-76.336				
	in 100,000 H_2O		167.0092		-76.340				
	in ∞ H_2O		167.0092		-76.35				
	in 1,667 D_2O		167.0092		-75.675				
$KBrO_4$		c	183.0086	-65.619	-68.80	-41.70	5.593	40.65	28.72
		a	183.0086		-57.2	-39.5		72.2	
	in 2,500 H_2O		183.0086		-57.20				
$KF{\cdot}BrF_3$		c	195.0046		-229.8				
KBr_2Cl		a	234.3730		-101.0	-98.4		69.6	
KI		c	166.0065	-78.137	-78.370	-77.651	3.039	25.41	12.65
	G-H-S constraint has been relaxed; see Introduction								
		g	166.0065	-29.18	-30.0	-39.7	2.448	61.7	8.87
		a	166.0065		-73.51	-80.03		51.1	-28.8
	in 8 H_2O		166.0065		-74.848				
	in 10 H_2O		166.0065		-74.658				
	in 12 H_2O		166.0065		-74.509				
	in 13 H_2O		166.0065		-74.450				
	in 15 H_2O		166.0065		-74.342				
	in 20 H_2O		166.0065		-74.149				
	in 25 H_2O		166.0065		-74.019				
	in 30 H_2O		166.0065		-73.927				
	in 40 H_2O		166.0065		-73.803				
	in 50 H_2O		166.0065		-73.724				
	in 75 H_2O		166.0065		-73.620				
	in 85 H_2O		166.0065		-73.598				
	in 100 H_2O		166.0065		-73.565				
	in 150 H_2O		166.0065		-73.512				
	in 200 H_2O		166.0065		-73.488				
	in 300 H_2O		166.0065		-73.466				
	in 400 H_2O		166.0065		-73.457				
	in 500 H_2O		166.0065		-73.453				
	in 600 H_2O		166.0065		-73.452				
	in 700 H_2O		166.0065		-73.451				
	in 800 H_2O		166.0065		-73.451				

Table 100. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Potassium

Substance		State	Formula weight	0 K	298.15 K (25 °C)				
				ΔHf_0°	ΔHf°	ΔGf°	$H_{298}^\circ - H_0^\circ$	S°	C_p°
Formula	Description			kcal/mol	kcal/mol			cal/deg mol	
KI	in 900 H_2O		166.0065		-73.452				
	in 1,000 H_2O		166.0065		-73.453				
	in 2,000 H_2O		166.0065		-73.459				
	in 3,000 H_2O		166.0065		-73.465				
	in 5,000 H_2O		166.0065		-73.473				
	in 10,000 H_2O		166.0065		-73.481				
	in 20,000 H_2O		166.0065		-73.489				
	in 50,000 H_2O		166.0065		-73.496				
	in 100,000 H_2O		166.0065		-73.500				
	in ∞ H_2O		166.0065		-73.51				
	in 500 D_2O		166.0065		-72.538				
	in 500 NH_3		166.0065		-87.81				
	in liquid NH_3								
	in CH_3OH:U		166.0065		-78.52				
	in 200 C_2H_5OH		166.0065		-76.2				
	in 400 C_2H_5OH		166.0065		-76.4				
	in 600 C_2H_5OH		166.0065		-76.8				
	in CH_3CN:U		166.0065		-80.70				
	in $HCONH_2$:S		166.0065		-79.386				
	in formamide								
	in 190 $HCONH_2$		166.0065		-79.40				
	in formamide								
	in $HCONHCH_3$:S		166.0065		-81.593				
	in methyl formamide								
	in $HCON(CH_3)_2$:S		166.0065		-86.41				
	in dimethyl formamide								
KI_3		c	419.8152		-78.4				
		a	419.8152		-72.6	-80.0		81.7	
	in 13 H_2O		419.8152		-73.7				
	in 40 H_2O		419.8152		-73.1				
	in 100 H_2O		419.8152		-72.7				
	in 250 H_2O		419.8152		-72.6				
	in 400 H_2O		419.8152		-72.6				
	in 600 H_2O		419.8152		-72.5				
K_2I_2		g	332.0128	-100.07	-101.5	-112.1	5.11	94.1	19.6
KIO		a	182.0059		-86.0	-76.9		23.2	
KIO_3		c	214.0047	-118.54	-119.83	-100.00	5.09	36.20	25.45
		a	214.0047		-113.2	-98.3		52.8	
	in 150 H_2O		214.0047		-113.615				
	in 200 H_2O		214.0047		-113.500				
	in 250 H_2O		214.0047		-113.431				
	in 300 H_2O		214.0047		-113.381				
	in 400 H_2O		214.0047		-113.321				
	in 500 H_2O		214.0047		-113.287				
	in 600 H_2O		214.0047		-113.265				
	in 800 H_2O		214.0047		-113.237				
	in 1,000 H_2O		214.0047		-113.222				
	in 1,600 H_2O		214.0047		-113.206				

Table 100. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Potassium

Substance: Formula and Description		State	Formula weight	0 K	298.15 K (25 °C)				
				ΔHf_0° kcal/mol	ΔHf°	ΔGf°	$H_{298}^\circ - H_0^\circ$	S°	C_p°
					kcal/mol			cal/deg mol	
KIO_3	in 2,000 H_2O		214.0047		-113.195				
	in 5,000 H_2O		214.0047		-113.182				
	in 10,000 H_2O		214.0047		-113.180				
	in 50,000 H_2O		214.0047		-113.188				
	in 100,000 H_2O		214.0047		-113.191				
KIO_4		c	230.0041		-111.67	-86.38		42.	
		a	230.0041		-96.5	-81.7		77.	
K_2I_2O		a	348.0122			-155.1			
KH_4IO_6	from $H_4IO_6^-$	au			-241.8				
$K_2H_3IO_6$	from $H_3IO_6^{-2}$	au			-301.3				
KIO_2F_2		c	236.0021		-209.30				
$KICl_2$		a	236.9125			-106.2			
KI_2Cl		a	328.3638		-93.2	-95.5		77.6	
$KIBr_2$		c	325.8244			-93.5			
		a	325.8244			-97.1			
$KIBr_2 \cdot H_2O$		c	343.8398			-151.1			
$KBrI_2$		a	372.8198		-90.9	-94.0		71.7	
KClBrI		c	281.3684			-99.3			
		a	281.3684			-102.7			
K_2S		c	110.2680		-91.0	-87.0		25.0	
		a	110.2680		-112.7	-114.9		45.5	
	in 7 H_2O		110.2680		-109.2				
	in 10 H_2O		110.2680		-110.7				
	in 20 H_2O		110.2680		-111.8				
	in 50 H_2O		110.2680		-111.95				
	in 100 H_2O		110.2680		-111.90				
	in 200 H_2O		110.2680		-111.78				
	in 400 H_2O		110.2680		-111.7				
$K_2S \cdot 2H_2O$		c	146.2988		-233.1				
$K_2S \cdot 5H_2O$		c	200.3450		-447.3				
K_2S_2		c	142.3320		-103.3				
		a	142.3320		-113.4	-116.4		55.8	
	in 11,000 H_2O		142.3320		-113.1				
K_2S_3		c	174.3960		-111.7				
		a	174.3960		-114.4	-117.8		64.8	
	in 11,000 H_2O		174.3960		-114.7				
K_2S_4		c	206.4600		-112.3				
		a	206.4600		-115.1	-118.9		73.7	
	in 300 H_2O		206.4600		-113.9				
	in 11,000 H_2O		206.4600		-115.1				
$K_2S_4 \cdot 0.5H_2O$		c	215.4677		-149.9				
$K_2S_4 \cdot 2H_2O$		c	242.4908		-257.8				
K_2S_5		c	238.5240		-112.1				
		a	238.5240		-115.5	-119.7		82.6	
K_2S_6		c	270.5880		-111.9				
KSO_4^-		a	135.1636		-276.63	-246.69		36.1	
$KS_2O_8^-$		a	231.2252		-380.1	-335.4		92.	
K_2SO_3		c	158.2662		-269.0				

Table 100. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Potassium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf_0° kcal/mol	ΔHf°	ΔGf° kcal/mol	$H_{298}^\circ - H_0^\circ$	S° cal/deg mol	C_p°
K_2SO_3	a	158.2662		-272.5	-251.7		42.	
in 50 H_2O		158.2662		-272.2				
in 100 H_2O		158.2662		-271.5				
in 200 H_2O		158.2662		-271.2				
in 350 H_2O		158.2662		-271.2				
in 400 H_2O		158.2662		-271.3				
in 500 H_2O		158.2662		-271.4				
in 600 H_2O		158.2662		-271.5				
in 1,000 H_2O		158.2662		-271.9				
in ∞ H_2O		158.2662		-272.5				
K_2SO_4	c	174.2656	-341.126	-343.64	-315.83	6.079	41.96	31.42
G-H-S constraint has been relaxed; see Introduction								
	g	174.2656	-258.8	-262.	-247.	5.37	87.	26.0
	a	174.2656		-337.96	-313.37		53.8	-60.
in 50 H_2O		174.2656		-338.46				
in 60 H_2O		174.2656		-338.36				
in 80.2 H_2O		174.2656		-338.18				
in 100 H_2O		174.2656		-338.05				
in 200 H_2O		174.2656		-337.82				
in 300 H_2O		174.2656		-337.77				
in 400 H_2O		174.2656		-337.73				
in 500 H_2O		174.2656		-337.72				
in 600 H_2O		174.2656		-337.708				
in 700 H_2O		174.2656		-332.706				
in 800 H_2O		174.2656		-337.707				
in 1,000 H_2O		174.2656		-337.711				
in 1,500 H_2O		174.2656		-337.720				
in 2,000 H_2O		174.2656		-337.732				
in 3,000 H_2O		174.2656		-337.751				
in 5,000 H_2O		174.2656		-337.780				
in 8,000 H_2O		174.2656		-337.806				
in 10,000 H_2O		174.2656		-337.819				
in 20,000 H_2O		174.2656		-337.854				
in 50,000 H_2O		174.2656		-337.889				
in 100,000 H_2O		174.2656		-337.909				
in 500,000 H_2O		174.2656		-337.938				
in ∞ H_2O		174.2656		-337.96				
in 500 D_2O		174.2656		-337.170				
$K_2S_2O_3$	c	190.3302		-280.5				
	a	190.3302		-276.5	-260.3		65.	
in 1,000 H_2O		190.3302		-276.2				
$K_2S_2O_3 \cdot H_2O$	c	208.3456		-350.1				
$K_2S_2O_4$	a	206.3296		-300.7	-278.9		71.	
$K_2S_2O_5$	c	222.3290		-366.6				
in 500 H_2O		222.3290		-355.6				
$K_2S_2O_5 \cdot 0.5H_2O$	c	231.3367		-401.0				

Table 100. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Potassium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf°_0 kcal/mol	ΔHf°	ΔGf°	$H^\circ_{298}-H^\circ_0$	S°	C°_p
				kcal/mol			cal/deg mol	
$K_2S_2O_6$	c	238.3284		-419.60				
	a	238.3284		-407.0				
in 400 H_2O		238.3284		-406.95				
in 800 H_2O		238.3284		-406.7				
in 1,600 H_2O		238.3284		-406.7				
$K_2S_2O_7$	c	254.3278		-474.8	-428.2		61.	
	a	254.3278		-455.5				
in 50 H_2O		254.3278		-457.6				
$K_2S_2O_8$	c	270.3272	-453.69	-457.96	-405.69	9.53	66.6	50.93
	a	270.3272		-442.0	-401.9		107.4	
in 3,200 H_2O		270.3272		-441.4				
in 7,000 H_2O		270.3272		-441.68				
$K_2S_3O_6$	c	270.3924		-419.4				
	a	270.3924		-407.3				
in 500 H_2O		270.3924		-407.3				
$K_2S_4O_6$	c	302.4564	-422.24	-425.6	-385.62	10.465	74.01	55.16
	a	302.4564		-413.2	-384.1		110.5	-5.8
in 500 H_2O		302.4564		-412.8				
in 1,000 H_2O		302.4564		-412.85				
in 5,000 H_2O		302.4564		-412.937				
in 6,000 H_2O		302.4564		-412.959				
in 7,000 H_2O		302.4564		-412.993				
in 10,000 H_2O		302.4564		-413.007				
in 25,000 H_2O		302.4564		-413.073				
in 50,000 H_2O		302.4564		-413.111				
in 100,000 H_2O		302.4564		-413.138				
in ∞ H_2O		302.4564		-413.2				
$K_2S_5O_6$	a	334.5204		-416.1				
in 2,000 H_2O		334.5204		-416.1				
$K_2S_5O_6 \cdot 1.5H_2O$	c	361.5435		-531.2				
KHS	c	72.1740		-63.36				18.0
	a	72.1740		-64.5	-64.82		39.5	
in 5 H_2O		72.1740		-64.8				
in 10 H_2O		72.1740		-64.78				
in 20 H_2O		72.1740		-64.76				
in 50 H_2O		72.1740		-64.50				
in 100 H_2O		72.1740		-64.48				
in 200 H_2O		72.1740		-64.43				
in 400 H_2O		72.1740		-64.38				
in 500 H_2O		72.1740		-64.39				
$KHS \cdot 0.25H_2O$	c	76.6778		-80.6				
$KHSO_3$	a	120.1722		-209.99	-193.85		57.9	
in 400 H_2O		120.1722		-209.9				
$KHSO_4$	c	136.1716		-277.4	-246.5		33.0	
	a	136.1716		-272.40	-248.39		56.0	-15.
in 20 H_2O		136.1716		-273.5				
in 25 H_2O		136.1716		-273.5				
in 50 H_2O		136.1716		-273.5				
in 100 H_2O		136.1716		-273.60				

Table 100. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Potassium

Substance: Formula and Description		State	Formula weight	0 K: ΔHf°_0 kcal/mol	298.15 K (25 °C): ΔHf°	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$	S° cal/deg mol	C°_p
$KHSO_4$	in 200 H_2O		136.1716		-273.80				
	in 220 H_2O		136.1716		-273.84				
	in 400 H_2O		136.1716		-274.18				
	in 800 H_2O		136.1716		-274.56				
	in 1,000 H_2O		136.1716		-274.68				
	in 2,000 H_2O		136.1716		-275.05				
	in 5,000 H_2O		136.1716		-275.7				
	in 9,000 H_2O		136.1716		-276.0				
KSO_2F		c	122.1632		-225.3	-207.2		35.	
KSO_3F		c	138.1626		-277.0				
		a	138.1626		-268.6				
	in 600 HSO_3F		138.1626		-285.3				
$KI{\cdot}4SO_2$		c	422.2576		-400.6				
K_2Se		c	157.1640		-94.4				
		a	157.1640			-104.5			
$K_2Se{\cdot}9H_2O$		c	319.3026		-737.8				
$K_2Se{\cdot}14H_2O$		c	409.3796		-1081.3				
$K_2Se{\cdot}19H_2O$		c	499.4566		-1432.1				
K_2SeO_3		c	205.1622		-234.7				
		a	205.1622		-242.3	-223.8		52.1	
K_2SeO_4		c	221.1616		-265.30	-239.7		53.	
		a	221.1616		-263.8	-240.9		61.9	
	in 220 H_2O		221.1616		-263.5				
	in 440 H_2O		221.1616		-263.6				
KHSe		c	119.0700		-56.9				
		a	119.0700		-56.5	-57.2		43.	
	in 500 H_2O		119.0700		-56.4				
	in 1,500 H_2O		119.0700		-56.5				
$KHSeO_4$		a	183.0676		-199.3	-175.8		60.2	
	in 220 H_2O		183.0676		-201.00				
K_2TeO_3		c	253.8022		-242.0				
		a	253.8022		-250.8				
	in 1,500 H_2O		253.8022		-252.27				
	in 6,000 H_2O		253.8022		-249.8				
$K_2TeO_3{\cdot}3H_2O$		c	307.8484		-456.0				
K_2TeO_4	in 300 H_2O		269.8016		-278.7				
$K_2Te_2O_5$		c	413.4010		-316.				
$K_2Te_4O_9$		c	732.5986		-467.				
$K_2Te_4O_9{\cdot}4H_2O$		c	804.6602		-755.0				
$K_2H_4TeO_6$	in 300 H_2O		305.8324		-415.3				
K_2TeBr_6		c	685.2580		-233.6				
KN_3		a	81.1221		5.44	15.5		50.3	
KNO_2	rhombic	c	85.1075	-88.45	-88.39	-73.28	4.871	36.35	25.67
		a	85.1075		-85.3	-75.4		53.9	
	in 400 H_2O		85.1075		-85.285				
	in 1,000 H_2O		85.1075		-85.255				
	in 9,000 H_2O		85.1075		-85.280				
KNO_3		c	101.1069	-116.86	-118.22	-94.39	4.488	31.80	23.04

Table 100. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Potassium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf°_0 kcal/mol	ΔHf°	ΔGf°	$H^\circ_{298}-H^\circ_0$	S°	C°_p
				kcal/mol			cal/deg mol	
KNO_3	a	101.1069		-109.88	-94.31		59.5	-15.5
in 15 H_2O		101.1069		-111.679				
in 20 H_2O		101.1069		-111.393				
in 25 H_2O		101.1069		-111.187				
in 30 H_2O		101.1069		-111.030				
in 40 H_2O		101.1069		-110.811				
in 50 H_2O		101.1069		-110.659				
in 75 H_2O		101.1069		-110.427				
in 100 H_2O		101.1069		-110.298				
in 150 H_2O		101.1069		-110.154				
in 200 H_2O		101.1069		-110.076				
in 300 H_2O		101.1069		-109.994				
in 400 H_2O		101.1069		-109.953				
in 500 H_2O		101.1069		-109.928				
in 600 H_2O		101.1069		-109.911				
in 700 H_2O		101.1069		-109.900				
in 800 H_2O		101.1069		-109.891				
in 1,000 H_2O		101.1069		-109.879				
in 1,500 H_2O		101.1069		-109.866				
in 2,000 H_2O		101.1069		-109.861				
in 3,000 H_2O		101.1069		-109.856				
in 5,000 H_2O		101.1069		-109.855				
in 10,000 H_2O		101.1069		-109.857				
in 20,000 H_2O		101.1069		-109.861				
in 50,000 H_2O		101.1069		-109.866				
in 100,000 H_2O		101.1069		-109.870				
in CH_3OH:S		101.1069		-113.93				
in $(CH_3)_2$:SO		101.1069		-117.48				
in dimethylsulfoxide								
in 16,000 $NH_2C_2H_4NH_2$		101.1069		-117.25				
in ethylenediamine								
in 140 $HCON(CH_3)_2$		101.1069		-118.12				
in dimethyl formamide								
KNH_2	c	55.1247		-30.8				
KNH_3	c	56.1327		-17.4	-3.4		38.	
KNO_2·KOH	c	141.2169		-192.42				
KNO_3·KOH	c	157.2163		-220.37				
KPO_3	c	118.0740				3.886	25.93	21.56
	a	118.0740		-293.8				
$KP_2O_7^{3-}$	ao	213.0454		-601.38	-529.54		12.3	
K_3PO_4	c	212.2774		-466.1				
	a	212.2774		-486.3	-446.6		21.0	
in 500 H_2O		212.2774		-486.3				
$K_4P_2O_7$	a	330.3514		-784.1	-729.5		70.	
KH_2PO_4	c	136.0894	-370.60	-374.84	-338.42	4.91	32.23	27.86
from $H_2PO_4^-$	a	136.0894		-370.14	-337.87		46.1	
in 31.18 H_2O (saturated)		136.0894		-370.538				
in 40 H_2O		136.0894		-370.474				

Table 100. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Potassium

Substance: Formula and Description		State	Formula weight	0 K	298.15 K (25 °C)				
				ΔHf°_0 kcal/mol	ΔHf°	ΔGf°	$H^\circ_{298}-H^\circ_0$	S°	C°_p
					kcal/mol			cal/deg mol	
KH_2PO_4	in 50 H_2O		136.0894		-370.431				
	in 75 H_2O		136.0894		-370.340				
	in 100 H_2O		136.0894		-370.294				
	in 150 H_2O		136.0894		-370.246				
	in 200 H_2O		136.0894		-370.221				
	in 300 H_2O		136.0894		-370.195				
	in 500 H_2O		136.0894		-370.163				
	in 1,000 H_2O		136.0894		-370.157				
$KH_3P_2O_7$	from $H_3P_2O_7^-$	a	216.0694		-604.4				
K_2HPO_4		a	174.1834		-429.47	-395.74		41.0	
$K_2H_2P_2O_7$		c	254.1634		-673.0				
	from $H_2P_2O_7^{2-}$	a	254.1634		-665.2	-615.9		88.	
$K_3HP_2O_7$	from $HP_2O_7^{3-}$	a	292.2574		-724.7	-674.5		84.	
KPF_6		c	184.0662	-561.14	-561.8	-527.1	8.635	53.99	37.85
		a	184.0662		-551.2	-525.3		83.5	
KAs		c	114.0236		-24.6				
KAs_2		c	188.9452		-30.4				
K_3As		c	192.2276		-44.5				
K_5As_4		c	495.1964		-108.2				
K_3AsO_4		a	256.2252		-393.23	-358.10		34.6	
KH_2AsO_4		c	180.0372	-278.60	-282.2	-247.6	5.490	37.05	30.29
	from $H_2AsO_4^-$	a	180.0372		-277.71	-247.74		52.	
K_2HAsO_4	from $HAsO_4^{2-}$	a	218.1312		-337.26	-306.22		48.6	
KSb		c	160.8520		-19.70				
KSb_2		c	282.6020		-25.60				
K_3Sb		c	239.0560		-43.8				
K_5Sb_4		c	682.5100		-90.6				
$3KBr{\cdot}2SbBr_3$		c	1079.9870		-416.4				
K_3Bi		c	326.2860		-55.5				
KC_4		c	87.1468		-7.40				
KC_8		c	135.1916		-8.00				
KC_{10}		c	159.2140		-7.30				
KC_{24}		c	327.3700		-15.6				
KC_{36}		c	471.5052		-22.1				
K_2CO_3		c	138.2134	-273.76	-275.1	-254.2	5.417	37.17	27.35
	G-H-S constraint has been relaxed; see Introduction								
		a	138.2134		-282.48	-261.57		35.4	
	in 10 H_2O		138.2134		-282.7				
	in 50 H_2O		138.2134		-282.7				
	in 100 H_2O		138.2134		-282.4				
	in 200 H_2O		138.2134		-282.2				
	in 300 H_2O		138.2134		-282.15				
	in 500 H_2O		138.2134		-282.15				
	in 1,000 H_2O		138.2134		-282.10				
	in 1,500 H_2O		138.2134		-281.92				
	in 2,000 H_2O		138.2134		-281.73				

Table 100. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Potassium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf°_0 kcal/mol	ΔHf°	ΔGf°	$H^\circ_{298}-H^\circ_0$	S°	C°_p
				kcal/mol			cal/deg mol	
K_2CO_3 in 3,000 H_2O		138.2134		-281.48				
in 4,000 H_2O		138.2134		-281.32				
in 5,000 H_2O		138.2134		-281.17				
in 6,000 H_2O		138.2134		-281.05				
in 7,500 H_2O		138.2134		-280.89				
in 10,000 H_2O		138.2134		-280.65				
$K_2CO_3 \cdot 1.5H_2O$	c	165.2365		-384.6	-342.4		48.6	
G-H-S constraint has been relaxed; see Introduction								
$K_2C_2O_4$ oxalate	c	166.2240		-321.9				
in 30 H_2O		166.2240		-318.12				
in 35 H_2O		166.2240		-318.07				
in 40 H_2O		166.2240		-318.02				
in 50 H_2O		166.2240		-317.91				
in 70 H_2O		166.2240		-317.82				
in 100 H_2O		166.2240		-317.71				
in 200 H_2O		166.2240		-317.59				
in 400 H_2O		166.2240		-317.57				
in 500 H_2O		166.2240		-317.56				
in 800 H_2O		166.2240		-317.57				
in 1,000 H_2O		166.2240		-317.57				
in 1,500 H_2O		166.2240		-317.58				
in 2,000 H_2O		166.2240		-317.60				
in 2,500 H_2O		166.2240		-317.61				
in 3,000 H_2O		166.2240		-317.63				
in 4,000 H_2O		166.2240		-317.65				
in 5,000 H_2O		166.2240		-317.67				
in 7,500 H_2O		166.2240		-317.69				
in 10,000 H_2O		166.2240		-317.71				
in 20,000 H_2O		166.2240		-317.75				
in 25,000 H_2O		166.2240		-317.76				
in 50,000 H_2O		166.2240		-317.77				
in 100,000 H_2O		166.2240		-317.79				
in 200,000 H_2O		166.2240		-317.81				
$K_2C_2O_4 \cdot H_2O$	c	184.2394		-393.1				
$7K_2CO_3 \cdot 2CO_2 \cdot 9.5H_2O$	c	1226.6601		-2843.7				
HCOOK formate	c	84.1200		-162.46				
	a	84.1200		-162.03	-151.6		46.	-15.8
in 200 H_2O		84.1200		-161.96				
in 400 H_2O		84.1200		-161.96				
$KHCO_3$	c	100.1194		-230.2	-206.4		27.6	
G-H-S constraint has been relaxed; see Introduction								
	a	100.1194		-225.71	-207.96		46.3	
in 200 H_2O		100.1194		-225.2				
in 400 H_2O		100.1194		-225.2				
in 1,000 H_2O		100.1194		-225.3				

Table 100. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Potassium

Substance: Formula	Description	State	Formula weight	0 K: ΔHf°_0 kcal/mol	298.15 K (25 °C): ΔHf° kcal/mol	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$ kcal/mol	S° cal/deg mol	C°_p cal/deg mol
$KHCO_3$	in 2,000 H_2O		100.1194		-225.4				
CH_3OK	in 60 CH_3OH		70.1366		-108.1				
KHC_2O_4	from $HC_2O_4^-$	a	128.1300		-255.9	-234.63		60.2	
	in 500 H_2O		128.1300		-255.9				
CH_3COOK	acetate	c	98.1472		-172.8				
		a	98.1472		-176.48	-155.99		45.2	3.7
	in 4.5 H_2O		98.1472		-174.320				
	in 5 H_2O		98.1472		-174.530				
	in 5.5 H_2O		98.1472		-174.682				
	in 6 H_2O		98.1472		-174.810				
	in 7 H_2O		98.1472		-175.010				
	in 8 H_2O		98.1472		-175.160				
	in 9 H_2O		98.1472		-175.268				
	in 10 H_2O		98.1472		-175.360				
	in 12 H_2O		98.1472		-175.490				
	in 15 H_2O		98.1472		-175.610				
	in 20 H_2O		98.1472		-175.748				
	in 25 H_2O		98.1472		-175.833				
	in 30 H_2O		98.1472		-175.886				
	in 40 H_2O		98.1472		-175.964				
	in 50 H_2O		98.1472		-176.020				
	in 75 H_2O		98.1472		-176.108				
	in 100 H_2O		98.1472		-176.158				
	in 150 H_2O		98.1472		-176.215				
	in 200 H_2O		98.1472		-176.248				
	in 300 H_2O		98.1472		-176.290				
	in 400 H_2O		98.1472		-176.315				
	in 500 H_2O		98.1472		-176.332				
	in 600 H_2O		98.1472		-176.344				
	in 800 H_2O		98.1472		-176.361				
	in 1,000 H_2O		98.1472		-176.373				
	in 1,500 H_2O		98.1472		-176.393				
	in 2,000 H_2O		98.1472		-176.404				
	in 3,000 H_2O		98.1472		-176.417				
	in 5,000 H_2O		98.1472		-176.431				
	in 10,000 H_2O		98.1472		-176.445				
	in 20,000 H_2O		98.1472		-176.455				
	in 50,000 H_2O		98.1472		-176.464				
	in CH_3CO_2H:U		98.1472		-165.6				
	in acetic acid								
	in C_2H_5OH:U		98.1472		-170.58				
$CH_2OHCOOK$	glycollate	c	114.1466		-217.0				
		a	114.1466		-216.0				
	in 200 H_2O		114.1466		-215.8				
	in 1,200 H_2O		114.1466		-215.9				
$CH_2OHCOOK \cdot 0.5H_2O$	glycollate	c	123.1543		-254.4				
C_2H_5OK	ethylate	c	84.1638		-98.5				
	in 60 C_2H_5OH		84.1638		-116.2				

Table 100. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Potassium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf°_0 kcal/mol	ΔHf°	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$	S° cal/deg mol	C°_p
$KHC_2O_4 \cdot H_2C_2O_4$	c	218.1660		-466.3				
$KHC_2O_4 \cdot H_2C_2O_4 \cdot 2H_2O$	c	254.1968		-605.4				
$C_2H_5OK \cdot C_2H_5OH$	c	130.2336		-173.5				
CCl_3COOK	a	201.4822		-183.7				
in 400 H_2O		201.4822		-183.5				
$ClCH_2COOK$	a	132.5922		-180.13				
$Cl_2CHCOOK$	a	167.0372		-182.7				
$C_2H_2O_2 \cdot 2KHSO_3$ glyoxal bisulfite	c	298.3816		-530.3				
in 800 H_2O		298.3816		-517.3				
KCN	c	65.1199	-28.174	-27.0	-24.35	4.157	30.71	15.84
	g	65.1199	21.494	21.7	15.34	3.188	62.57	12.51
	a	65.1199		-24.3	-26.5		47.0	
in 200 H_2O		65.1199		-24.2				
KCNO cyanate	c	81.1193		-100.06				
	a	81.1193		-95.2	-91.0		50.0	
in 200 H_2O		81.1193		-95.19				
in 5,500 H_2O		81.1193		-95.19				
$CONH_2COOK$ oxamate	c	127.1453		-220.4				
in 1,000 H_2O		127.1453		-213.3				
CH_2NH_2COOK glycinate	a	113.1619		-172.60	-142.98		53.0	
KCNS	c	97.1839	-47.980	-47.84	-42.62	4.176	29.70	21.16
	a	97.1839		-42.05	-45.55		59.0	-4.4
in 2 H_2O		97.1839		-44.690				
in 2.5 H_2O		97.1839		-44.560				
in 3 H_2O		97.1839		-44.440				
in 4 H_2O		97.1839		-44.220				
in 4.5 H_2O		97.1839		-44.112				
in 5 H_2O		97.1839		-44.010				
in 6 H_2O		97.1839		-43.840				
in 7 H_2O		97.1839		-43.688				
in 8 H_2O		97.1839		-43.570				
in 9 H_2O		97.1839		-43.458				
in 10 H_2O		97.1839		-43.360				
in 12 H_2O		97.1839		-43.195				
in 15 H_2O		97.1839		-43.015				
in 20 H_2O		97.1839		-42.805				
in 25 H_2O		97.1839		-42.661				
in 30 H_2O		97.1839		-42.557				
in 40 H_2O		97.1839		-42.418				
in 50 H_2O		97.1839		-42.330				
in 75 H_2O		97.1839		-42.204				
in 100 H_2O		97.1839		-42.139				
in 150 H_2O		97.1839		-42.074				
in 200 H_2O		97.1839		-42.043				
in 300 H_2O		97.1839		-42.015				
in 400 H_2O		97.1839		-42.003				
in 500 H_2O		97.1839		-41.998				

Table 100. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Potassium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf°_0 kcal/mol	ΔHf°	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$	S° cal/deg mol	C°_p
KCNS in 1,000 H_2O		97.1839		-41.994				
in 1,500 H_2O		97.1839		-41.998				
in 2,000 H_2O		97.1839		-42.001				
in 3,000 H_2O		97.1839		-42.005				
in 5,000 H_2O		97.1839		-42.012				
in 10,000 H_2O		97.1839		-42.021				
in 20,000 H_2O		97.1839		-42.028				
in 50,000 H_2O		97.1839		-42.036				
in $HCONH_2$:S in formamide		97.1839		-48.54				
in $HCONHCH_3$:S in methylformamide		97.1839		-48.84				
in $HCON(CH_3)_2$:S in dimethylformamide		97.1839		-53.74				
in $CH_3CON(CH_3)_2$:S in dimethylacetamide		97.1839		-52.43				
in $(C_4H_9O)_3PO$:S in tributyl phosphate		97.1839		-49.3				
$KCNS \cdot 0.5SO_2$	c	129.2153		-89.0	-78.9		41.6	
$KCNS \cdot 2SO_2$	c	225.3095		-209.5	-185.9		81.	
K_2SiO_3	c	154.2882				5.230	34.9	28.3
$K_2Si_2O_5$	c	214.3730				6.888	45.55	38.41
K_2SiF_6	c	220.2804		-706.5	-668.9		54.0	
	a	220.2804		-691.6	-661.1		78.2	
K_2GeF_6	c	264.7844			-582.8			
$KSnCl_3$	a	264.1510		-176.7	-170.5		87.	
K_2SnCl_6	c	409.6120		-353.0	-318.6		87.6	58.80
in 400 H_2O		409.6120		-350.1				
$K_2SnCl_6 \cdot H_2O$	c	427.6274		-431.7				
K_2SnOCl_4	c	354.7054		-352.8				
$KSnBr_3$	a	397.5190		-149.9	-150.6		85.	
K_2SnBr_6	c	676.3480		-291.1	-277.3		105.9	58.80
$KPbCl_3 \cdot 1/3H_2O$	c	358.6561		-215.3	-194.3		59.	
$KCl \cdot 2PbCl_2$	c	630.7470		-279.7	-252.0		87.	
$KPbBr_3$	a	486.0190			-149.7			
$KPbI_3$	a	627.0052			-115.2			
K_2PbI_4	c	793.0116		-199.2				
	a	793.0116			-196.3			
$K_2PbI_4 \cdot 2H_2O$	c	829.0424		-339.5				
$4KI \cdot 3PbI_2$	c	2047.0220		-437.7				
$4KI \cdot 3PbI_2 \cdot 6H_2O$	c	2155.1144		-860.4				
$K_2Pb(SO_4)_2$	c	477.5172		-568.8	-514.5		75.3	
KBO_2	c	81.9118	-233.44	-234.6	-220.7	2.895	19.12	15.95
	g	81.9118		-112.				
	a	81.9118		-244.92	-229.97		15.6	
$KB_5O_8 \cdot 4H_2O$	c	293.2138				13.108	87.10	78.99
$K_2O \cdot B_2O_3$	c	163.8236	-466.88	-469.2	-441.4	5.790	38.24	31.90
$K_2B_4O_7 \cdot 4H_2O$	c	305.5054			-988.3			

Table 100. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Potassium

Substance: Formula and Description	State	Formula weight	0 K ΔHf°_0 kcal/mol	298.15 K (25 °C) ΔHf° kcal/mol	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$ kcal/mol	S° cal/deg mol	C°_p cal/deg mol
$K_2O{\cdot}3B_2O_3$	c	303.0640		-1113.5				
$K_2O{\cdot}4B_2O_3$	c	372.6842		-1428.1				
	gl	372.6842		-1410.8				
KBH_4	c	53.9450	-52.25	-54.35	-38.32	3.937	25.40	22.96
	a	53.9450		-48.81	-40.39		50.9	
$KB(OH)_4$ from $B(OH)_4^-$	a	117.9426		-381.55	-343.35		49.	
KBF_4	c	125.9066	-448.68	-449.8	-426.8	5.086	36.40	26.43
	a	125.9066		-436.7	-423.1		68.	
KBF_3OH	c	123.9156		-432.80				
	a	123.9156		-425.3	-405.8		64.	
in 400 H_2O		123.9156		-425.5				
$K_2B_3F_4O_3OH$	c	251.6362		-893.1				
in 800 H_2O		251.6362		-875.0				
$KBCl_4$	c	191.7250		-217.7				
$KAlH_4$	c	70.1155		-43.9				
K_3AlF_6	c	258.2779		-786.5				
	a	258.2779		-783.9				
$K_3AlF_6{\cdot}3.5H_2O$	c	321.3318		-1042.1				
$KAlCl_4$	c	207.8955		-285.2				
K_3AlCl_6	c	357.0055		-497.5				
$K_3Al_2Cl_9$	c	490.3460		-678.0				
$KAlBr_4$	c	385.7195		-231.6				
KAl_2Br_7	c	652.4280		-351.2				
$KBr{\cdot}AlCl_3$	c	252.3515		-272.8				
$KCl{\cdot}AlBr_3$	c	341.2635		-240.4				
$KCl{\cdot}2AlBr_3$	c	607.9720		-364.5				
$KAl(SO_4)_2$	c	258.2067		-590.4	-535.4		48.9	46.12
from Al^{3+},SO_4^{2-}	a	258.2067		-622.	-540.		-42.8	
$KAl(SO_4)_2{\cdot}3H_2O$	c	312.2529		-808.1	-711.0		75.0	
$KAl(SO_4)_2{\cdot}12H_2O$	c	474.3915		-1448.8	-1228.9		164.3	155.6
$KAl(SeO_4)_2$	c	351.9987		-444.5				
in 1,600 H_2O		351.9987		-473.9				
$KAl(SeO_4)_2{\cdot}12H_2O$	c	568.1835		-1300.5				
$K_2Al(NO_3)_5$	c	415.2100		-469.7				
$K_3Al(NO_3)_6$	c	516.3169		-605.6				
$KAlCl_4{\cdot}6NH_3$	c	310.0797		-476.7				
$KAl_2(PO_4)_2OH{\cdot}2H_2O$	c	336.0460				11.80	70.43	76.53
$K_3H_6Al_5(PO_4)_8{\cdot}18H_2O$ potassium taranakite	c	1342.3099	-4464.4	-4521.8	-4163.2	57.78	835.6	354.3
$KAlSiO_4$ kaliophilite	c	158.1671		-507.0	-479.3		31.8	28.63
$KAlSi_2O_6$ leucite	c	218.2519		-725.2	-686.3		47.8	39.23
	gl	218.2519		-730.9				
$KAlSi_3O_8$ sanidine	c	278.3367	-960.26	-946.4	-893.9	27.25	55.66	48.88
microcline	c2	278.3367	-962.26	-948.4	-894.6	27.25	51.20	48.37
	gl	278.3367		-936.3				
$KAl_3Si_3O_{10}(OH)_2$ muscovite	c	398.3133		-1430.3	-1340.5		73.2	
$KZnF_3$	c	161.4672		-329.7				
$K_2Zn(SO_4)_2$	c	335.6972		-581.8				

Table 100. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Potassium

Substance: Formula and Description	State	Formula weight	0 K ΔHf°_0 kcal/mol	298.15 K (25 °C) ΔHf° kcal/mol	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$	S° cal/deg mol	C_p° cal/deg mol
$K_2Zn(SO_4)_2 \cdot 2H_2O$	c	371.7280		-726.0				
$K_2Zn(SO_4)_2 \cdot 6H_2O$	c	443.7896		-1012.0				
$K_2Zn(SO_4)_2 \cdot 6D_2O$	c	455.8628		-1024.0				
$KCl \cdot ZnSO_4$	c	235.9866		-346.0				
$KBr \cdot ZnSO_4$	c	280.4426		-335.3				
$KI \cdot ZnSO_4$	c	327.4380		-318.4				
$K_2Zn(CN)_4$	c	247.6456		-23.9				
	a	247.6456		-38.8	-28.6		103.	
in 400 H_2O		247.6456		-38.8				
$K_2Zn(CNS)_4$	a	375.9016			-83.7			
$KCdCl_3$	c	257.8610		-201.0				
	a	257.8610		-194.4	-184.1		73.0	
in 400 H_2O		257.8610		-195.0				
$KCdCl_3 \cdot H_2O$	c	275.8764		-272.4	-241.60		60.	
$KCl \cdot 3CdCl_2 \cdot 4H_2O$	c	696.5346		-675.1	-581.1		147.	
K_2CdCl_4	c	332.4160		-201.0				
K_4CdCl_6	c	481.5260		-521.4	-479.6		93.	
$KCdBr_3$	a	391.2290			-165.1			
$KCdBr_3 \cdot H_2O$	c	409.2444		-242.1	-221.2		68.	
$KBr \cdot 3CdBr_2 \cdot 4H_2O$	c	1007.7266		-604.9	-534.2		166.	
$KCdI_3$	a	532.2152			-129.7			
$KCdI_3 \cdot H_2O$	c	550.2306		-198.4	-185.2		81.	
K_2CdI_4	a	698.2216		-202.3	-210.9		127.	
$K_2CdI_4 \cdot 2H_2O$	c	734.2524		-346.7	-321.4		125.	
$K_2Cd(SO_4)_2 \cdot 1.5H_2O$	c	409.7503		-673.05				
$K_2Cd(SO_4)_2 \cdot 2CdSO_4 \cdot 5H_2O$	c	889.7274		-1374.8				
K_3Hg	g	317.8960		14.6				
$KHgCl_3$	c	346.0510		-160.4				
	a	346.0510		-153.2	-141.6		75.	
in 450 H_2O		346.0510		-153.7				
$KHgCl_3 \cdot H_2O$	c	364.0664		-230.6				
K_2HgCl_4	c	420.6060		-266.20				
	a	420.6060		-253.0	-242.2		119.	
in 400 H_2O		420.6060		-252.3				
$K_2HgCl_4 \cdot H_2O$	c	438.6214		-336.2				
$KHgBr_3$	c	479.4190		-131.50				
	a	479.4190		-130.4	-129.7		86.	
in 4,000 H_2O		479.4190		-129.2				
$KHgBr_3 \cdot H_2O$	c	497.4344		-203.3				
K_2HgBr_4	c	598.4300		-230.3				
	a	598.4300		-223.6	-224.1		123.	
in 600 H_2O		598.4300		-221.1				
in 4,000 H_2O		598.4300		-221.4				
$KHgI_3$	c	620.4052		-105.8				
	a	620.4052		-96.8	-103.2		97.	
$KHgI_3 \cdot H_2O$	c	638.4206		-174.0				
K_2HgI_4	c	786.4116		-185.0				
	a	786.4116		-176.8	-186.0		135.	

Table 100. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Potassium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf_0° kcal/mol	ΔHf°	ΔGf° kcal/mol	$H_{298}^\circ - H_0^\circ$	S° cal/deg mol	C_p°
K_2HgI_4 in 1,000 H_2O		786.4116		-175.8				
$KHg(CN)_3$	a	317.7457		34.6	43.0		78.3	
in 500 H_2O		317.7457		34.9				
$K_2Hg(CN)_4$	c	382.8656		-7.7				
	a	382.8656		5.2	12.4		122.	
in 600 H_2O		382.8656		6.5				
$KCl \cdot Hg(CN)_2$	c	327.1808		-43.0				
$KCl \cdot Hg(CN)_2 \cdot H_2O$	c	345.1962		-113.2				
$KBr \cdot Hg(CN)_2$	c	371.6368		-35.5				
$KBr \cdot Hg(CN)_2 \cdot 1.5H_2O$	c	398.6599		-139.0				
$KI \cdot Hg(CN)_2$	c	418.6322		-21.9				
$KI \cdot Hg(CN)_2 \cdot 0.25H_2O$	c	423.1360		-39.3				
$KCuF_3$	c	159.6372				5.387	35.34	28.47
$KCuCl_3$	c	209.0010		-160.5				
K_2CuCl_3	c	248.1030		-243.0				
	a	248.1030			-225.			
K_2CuCl_4	c	283.5560		-265.5	-241.50		64.7	
in 800 H_2O		283.5560		-263.6				
$K_2CuCl_4 \cdot 2H_2O$	c	319.5868	-404.9	-408.0	-356.8	11.984	84.950	60.524
$K_2Cu(SO_4)_2$ blue	c	333.8672		-528.1				
white, prepared at 180–200C	c2	333.8672		-531.5				
fused	c3	333.8672		-529.4				
$K_2Cu(SO_4)_2 \cdot 0.5H_2O$	c	342.8749		-564.4				
$K_2Cu(SO_4)_2 \cdot 0.5D_2O$	c	343.8810		-564.8				
$K_2Cu(SO_4)_2 \cdot 2H_2O$	c	369.8980		-675.6				
$K_2Cu(SO_4)_2 \cdot 6H_2O$	c	441.9596		-961.7				
$K_2Cu(CO_3)_2$ author's form 2, β	c	261.7628		-414.3				
author's form 4, β	c2	261.7628		-416.3				
author's form 5, α	c3	261.7628		-416.9				
$K_2Cu(HCO_3)_4$	c	385.8136			-696.5			
$KCu(CN)_2$	a	154.6778		-6.1				
in $(CH_3)_2SO$:S		154.6778		-19.3				
in dimethylsulfoxide								
$K_2Cu(CN)_3$	a	219.7977			-38.9			
$K_3Cu(CN)_4$	a	284.9176			-67.7			
in $(CH_3)_2SO$:S		284.9176		-83.3				
in dimethylsulfoxide								
$K_3Cu(CNS)_4$	a	413.1736		-102.5	-116.1		227.	
$KAgCl_2$	c	217.8780		-134.6				
	a	217.8780		-118.9	-119.2		79.8	
$KAgBr_2$	c	306.7900		-117.7				
	a	306.7900			-108.9			
K_2AgBr_3	a	425.8010			-203.4			
$K_3AgBr_4 \cdot 0.5H_2O$	c	553.8197		-339.0				
$KAgI_2$	c	400.7808		-91.4				
	a	400.7808			-88.5			
K_2AgI_3	a	566.7872		-164.1	-172.2		109.5	
K_3AgI_4	c	732.7936		-249.0				

Table 100. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Potassium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf°_0 kcal/mol	ΔHf°	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$	S° cal/deg mol	C°_p
K_3AgI_4	a	732.7936			-253.2			
$K_3AgI_4 \cdot 0.5H_2O$	c	741.8013		-282.2				
$K_3Ag_2I_5 \cdot H_2O$	c	985.5834		-332.5				
$KAg(CN)_2$	c	199.0078		-4.0				
	a	199.0078		4.3	5.3		71.	
in $(CH_3)_2SO$:S		199.0078		-0.6				
in dimethylsulfoxide								
$KNiF_3$	c	154.8072				5.31	39.0	36.86
$KNiCl_3$	c	204.1710		-179.3				
$K_2Ni(CN)_4$	a	240.9856		-32.7	-22.6		101.	
	au	240.9856		-30.7				
$KCoF_3$	c	155.0304				5.67	42.2	28.8
$K(Co(NH_3)_2(NO_2)_4)$	c	316.1186		-231.8				
	a	316.1186		-217.9				
in 30,000 H_2O		316.1186		-218.60				
$K_2CO_3 \cdot CoCO_3$	c	257.1560		-448.2				
$K_2CO_3 \cdot CoCO_3 \cdot 4H_2O$	c	329.2176		-732.8				
$K_3(Co(C_2O_4)_3)$	c	440.2992		-760.2				
in 20,000 H_2O		440.2992		-752.2				
$K_3(Co(C_2O_4)_3) \cdot 3H_2O$	c	494.3454		-975.0				
$K_3Co(CN)_6$	c	332.3466					96.00	73.80
	a	332.3466					129.1	
$K(Co(NH_3)_2(NO_2)_2C_2O_4)$	c	312.1276		-367.0				
in 18,000 H_2O		312.1276		-357.3				
K_2FeO_4	a	198.0486		-232.6				
$KFeCl_3$	g	201.3080		-119.7				
$KFeCl_4$	c	236.7610		-207.5				
	g	236.7610		-165.2				
$K_3Fe(CN)_6$	c	329.2604		-59.7	-31.0		101.83	
	a	329.2604		-46.7	-28.8		138.1	
in 400 H_2O		329.2604		-46.41				
in 500 H_2O		329.2604		-46.38				
in 800 H_2O		329.2604		-46.31				
in 1,000 H_2O		329.2604		-46.28				
in 1,500 H_2O		329.2604		-46.26				
in 2,000 H_2O		329.2604		-46.25				
in 2,500 H_2O		329.2604		-46.26				
in 3,000 H_2O		329.2604		-46.26				
in 4,000 H_2O		329.2604		-46.28				
in 5,000 H_2O		329.2604		-46.30				
in 10,000 H_2O		329.2604		-46.36				
in 20,000 H_2O		329.2604		-46.43				
in 30,000 H_2O		329.2604		-46.47				
in 50,000 H_2O		329.2604		-46.51				
in 100,000 H_2O		329.2604		-46.56				
in 200,000 H_2O		329.2604		-46.60				
in 500,000 H_2O		329.2604		-46.63				
$K_4Fe(CN)_6$	c	368.3624	-141.30	-142.0	-108.3	14.871	100.1	79.40

Table 100. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Potassium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf°_0 kcal/mol	ΔHf°	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$	S° cal/deg mol	C°_p
$K_4Fe(CN)_6$	a	368.3624		-132.4	-104.71		120.7	
in 400 H_2O		368.3624		-131.77				
in 500 H_2O		368.3624		-131.70				
in 700 H_2O		368.3624		-131.59				
in 800 H_2O		368.3624		-131.56				
in 1,000 H_2O		368.3624		-131.52				
in 1,500 H_2O		368.3624		-131.47				
in 2,000 H_2O		368.3624		-131.46				
in 2,500 H_2O		368.3624		-131.47				
in 3,000 H_2O		368.3624		-131.49				
in 5,000 H_2O		368.3624		-131.55				
in 7,000 H_2O		368.3624		-131.61				
in 10,000 H_2O		368.3624		-131.68				
in 15,000 H_2O		368.3624		-131.76				
in 20,000 H_2O		368.3624		-131.82				
in 30,000 H_2O		368.3624		-131.90				
in 50,000 H_2O		368.3624		-131.99				
in 100,000 H_2O		368.3624		-132.09				
in 200,000 H_2O		368.3624		-132.17				
in 500,000 H_2O		368.3624		-132.25				
$K_4Fe(CN)_6 \cdot 3H_2O$	c	422.4086	-347.20	-350.5	-279.4	21.458	141.9	115.30
$K_3FeCO(CN)_5$	c	331.2531		-139.4				
in 2,500 H_2O		331.2531		-134.8				
$K_3FeCO(CN)_5 \cdot 3.5H_2O$	c	394.3070		-384.5				
$KFe_3AlSi_3O_{10}(OH)_2$ annite	c	511.8913		-1301.1				
$KZn_{1.5}Fe(CN)_6$	c	349.1114			16.9			
	a	349.1114			45.7			
$K_2CdFe(CN)_6$	c	402.5584			-11.2			
	a	402.5584			12.1			
$K_{12}Cd_8(Fe(CN)_6)_7$	c	2852.1048			37.			
$K_2Cu_2Fe(CN)_6$	c	417.2384			18.4			
	a	417.2384			54.8			
$K_2Ni_3(Fe(CN)_6)_2$	c	678.2428			121.			
$K_4Ni_4(Fe(CN)_6)_3$	c	1027.1112			121.			
$K_{12}Ni_8(Fe(CN)_6)_7$	c	2422.5848			113.			
$K_2Co_3(Fe(CN)_6)_2$	c	678.9124			120.			
$K_4Co_4(Fe(CN)_6)_3$	c	1028.0040			114.			
$KPdCl_3$	a	251.8610			-133.7			
K_2PdCl_4	c	326.4160		-265.2				
	a	326.4160		-252.1				
in 1,500 H_2O		326.4160		-252.0				
K_2PdCl_6	c	397.3220		-293.1				
	a	397.3220			-238.2			
$KPdBr_3$	a	385.2290			-116.5			
K_2PdBr_4	c	504.2400		-224.2				
	a	504.2400		-212.6	-211.4		108.	
in 800 H_2O		504.2400		-212.6				
K_2PdBr_6	a	664.0580			-215.5			

Table 100. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Potassium

Substance: Formula and Description	State	Formula weight	0 K: ΔHf°_0 kcal/mol	298.15 K (25 °C): ΔHf° kcal/mol	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$ kcal/mol	S° cal/deg mol	C_p° cal/deg mol
K_2PdI_4	a	692.2216			-173.4			
K_2PdI_6	a	946.0304			-176.1			
K_2PtCl_4	c	415.1060		-252.0				43.1
	a	415.1060		-239.9	-221.8		86.	
in 600 H_2O		415.1060		-240.2				
in 16,000 H_2O		415.1060		-239.9				
K_2PtCl_6	c	486.0120		-293.8	-257.8		79.8	49.14
	a	486.0120		-280.3	-250.8		101.5	
in 6,000 H_2O		486.0120		-280.3				
K_2PtBr_4	c	592.9300		-218.7				
	a	592.9300		-208.6	-198.0		78.0	
in 1,000 H_2O		592.9300		-208.6				
K_2PtBr_6	c	752.7480		-244.1				
	a	752.7480		-233.1	-214.8		88.	
in 1,500 H_2O		752.7480		-232.5				
K_2PtI_6	c	1034.7204		-182.1				
	a	1034.7204		-171.6	-161.4		89.	
	au	1034.7204		-171.7				
$K_2Pt(NO_2)_4$	c	457.3160						64.9
$K_2Pt(NO_2)Cl_3$	c	425.6585						50.4
$K_2Pt(NO_2)_2Cl_2$ cis	c	436.2110						53.3
$K_2Pt(NO_2)_3Cl$	c	446.7635						62.7
$KPt(NH_3)Cl_3$	c	357.5817		-181.0				
	a	357.5817		-171.2	-140.2		72.	
in 15,000 H_2O		357.5817		-171.2				
$KPtNH_3Cl_5$	c	428.4877						48.7
	a	428.4877			-171.1			
K_2IrCl_6	c	483.1220		-270.				
in 5,000 H_2O		483.1220		-258.				
K_3IrCl_6	c	522.2240		-360.				
in 5,000 H_2O		522.2440		-354.				
K_2OsCl_6	c	481.1220		-286.2				
K_3OsCl_6	c	520.2240		-383.				
$KMnO_4$	c	158.0376		-200.1	-176.3		41.04	28.10
	a	158.0376						-14.4
in 150 H_2O		158.0376		-190.052				
in 200 H_2O		158.0376		-189.977				
in 300 H_2O		158.0376		-189.895				
in 400 H_2O		158.0376		-189.849				
in 500 H_2O		158.0376		-189.817				
in 700 H_2O		158.0376		-189.781				
in 1,000 H_2O		158.0376		-189.750				
in 1,500 H_2O		158.0376		-189.724				
in 2,000 H_2O		158.0376		-189.713				
in 3,000 H_2O		158.0376		-189.699				
in 5,000 H_2O		158.0376		-189.691				
in 10,000 H_2O		158.0376		-189.687				
in 20,000 H_2O		158.0376		-189.687				

Table 100. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Potassium

Substance: Formula and Description	State	Formula weight	0 K: ΔHf°_0 kcal/mol	298.15 K (25 °C): ΔHf° kcal/mol	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$	S° cal/deg mol	C°_p cal/deg mol
$KMnO_4$ in 50,000 H_2O		158.0376		-189.691				
in 100,000 H_2O		158.0376		-189.693				
K_2MnO_4 in KOH + 11 H_2O:Au		197.1396		-275.9				
$K_2Mn_2O_5$ in KOH + 11 H_2O:Au		268.0770		-416.8				
$KMnF_3$	c	151.0352				5.40	41.6	27.5
$KMnCl_3$	c	200.3990		-223.5				
	a	200.3990			-215.9			
in 1,200 H_2O		200.3990		-232.7				
$K_2Mn(SO_4)_2$	c	325.2652		-599.5				
$K_2Mn(SO_4)_2 \cdot 2H_2O$	c	361.2960		-745.4				
$K_2Mn(SO_4)_2 \cdot 4H_2O$	c	397.3268		-885.6				
$K_2Mn_3(Fe(CN)_6)_2$	c	666.9268			-7.			
$K_8Mn_6(Fe(CN)_6)_5$	c	1702.2160			-126.			
$KTcO_4$	c	202.0056		-246.1		5.856	39.38	29.47
	a	202.0056		-233.3			72.1	
$KReO_4$	c	289.2996		-262.2	-237.7		40.11	29.29
	g	289.2996		-210.				
	a	289.2996		-248.5	-233.7		72.6	2.0
$(KReO_4)_2$	g	578.5992		-455.				
K_2ReCl_6	c	477.1220	-313.26	-313.2	-280.3	11.32	88.84	51.31
	a	477.1220		-302.80	-276.3		110.	
K_2ReBr_6	c	743.8580				13.31	108.74	54.24
K_2CrO_4	c	194.1976	-333.796	-335.5	-309.7	6.805	47.83	34.89
	a	194.1976		-331.24	-309.36		61.0	
in 18 H_2O		194.1976		-332.72				
in 20 H_2O		194.1976		-332.64				
in 25 H_2O		194.1976		-332.36				
in 30 H_2O		194.1976		-332.28				
in 40 H_2O		194.1976		-332.08				
in 50 H_2O		194.1976		-331.97				
in 75 H_2O		194.1976		-331.83				
in 100 H_2O		194.1976		-331.77				
in 200 H_2O		194.1976		-331.63				
in 400 H_2O		194.1976		-331.46				
in 500 H_2O		194.1976		-331.40				
in 1,000 H_2O		194.1976		-331.21				
in 2,000 H_2O		194.1976		-331.10				
$K_2Cr_2O_7$	c	294.1918		-492.7	-449.8		69.6	52.4
	a	294.1918		-476.8	-446.4		111.6	
in 30 H_2O		294.1918		-480.31				
in 40 H_2O		294.1918		-479.71				
in 50 H_2O		294.1918		-479.20				
in 75 H_2O		294.1918		-478.52				
in 100 H_2O		294.1918		-478.22				
in 150 H_2O		294.1918		-477.84				
in 200 H_2O		294.1918		-477.76				
in 300 H_2O		294.1918		-477.49				

Table 100. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Potassium

Substance: Formula and Description	State	Formula weight	0 K: ΔHf°_0 kcal/mol	298.15 K (25 °C): ΔHf°	ΔGf°	$H^\circ_{298}-H^\circ_0$	S°	C°_p (cal/deg mol)
in 400 H_2O		294.1918		-477.26				
$K_2Cr_2O_7$ in 500 H_2O		294.1918		-477.06				
in 750 H_2O		294.1918		-476.68				
in 1,000 H_2O		294.1918		-476.39				
in 1,500 H_2O		294.1918		-476.98				
in 2,000 H_2O		294.1918		-475.7				
$K_2Cr_3O_{10}$	c	394.1860		-607.				
$KHCrO_4$	g	156.1036		-215.				
from $HCrO_4^-$	a	156.1036		-270.2	-250.5		68.5	
K_3CrO_4F	c	252.2980		-470.7				
	au	252.2980		-469.8				
$KCrCl_3$	c	197.4570		-204.6				
	g	197.4570		-147.7				
K_2CrCl_4	c	272.0120		-304.6				
K_3CrCl_6	c	382.0200		-457.1				
in 44,000 H_2O		382.0200		-470.8				
$K_3Cr_2Cl_9$	c	540.3750		-591.9				
$KOCrO_2Cl$	c	174.5492		-234.3				
$KCr(SO_4)_2$	a	283.2212		-553.6				
in 800 H_2O		283.2212		-551.2				
in 2,800 H_2O		283.2212		-553.6				
$KCr(SO_4)_2 \cdot 1.5H_2O$	c	310.2443		-635.0				
$KCr(SO_4)_2 \cdot 6H_2O$	c	391.3136		-957.6				
$KCr(SO_4)_2 \cdot 12H_2O$	c	499.4060		-1380.8				
KNH_4CrO_4	c	173.1343		-307.8				
in 350 H_2O		173.1343		-302.5				
$K_3Cr(C_2O_4)_3$	c	433.3620		-771.7				
in 5,000 H_2O		433.3620		-763.3				
$K_3Cr(C_2O_4)_3 \cdot 3H_2O$	c	487.4082		-985.7				
K_2MoO_4	c	238.1416		-358.20				
	a	238.1416		-359.1	-335.3		55.5	
$K_2Mo_2O_7$	c	382.0798		-547.72				
$K_2Mo_3O_{10}$	c	526.0180		-727.0				
$K_2Mo_4O_{13}$	c	669.9562		-912.7				
$KHMoO_4$	g	200.0476		-252.				
$KMoF_6$	c	249.0324		-495.8				
K_2MoCl_6	c	386.8620		-350.4				
K_2WO_4	c	326.0516		-377.9				
	a	326.0516		-377.7				
$K_5HW_6O_{21}$ from $HW_6O_{21}^{5-}$	a	1635.6054		-1697.2				
KWF_6	c	336.9424		-532.3				
$KWCl_6$	c	435.6700		-235.4				
K_2WCl_7	c	510.2250		-338.4				
KVO_3	c	138.0422		-276.0				
	a	138.0422		-272.6	-255.0		37.	
in 500 H_2O		138.0422		-272.6				
KVO_4	c	154.0416		-267.7				
in 250 H_2O		154.0416		-264.2				

Table 100. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Potassium

Substance: Formula and Description		State	Formula weight	0 K ΔHf°_0 kcal/mol	298.15 K (25 °C) ΔHf° kcal/mol	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$ kcal/mol	S° cal/deg mol	C°_p cal/deg mol
KVO_4	in 500 H_2O		154.0416		-264.2				
	in 55,000 H_2O		154.0416		-264.5				
K_3VO_4		a	232.2456			-418.0			
KH_2VO_4	from $H_2VO_4^-$	a	156.0576		-340.9	-311.7		54.	
$KH_3V_2O_7$	from $H_3V_2O_7^-$	a	256.0058			-513.2			
$K_3HV_2O_7$	from $HV_2O_7^{3-}$	a	332.1938			-631.5			
$K_4H_2V_{10}O_{28}$	from $H_2V_{10}O_{28}^{4-}$	a	1115.8272			-2117.			
$K_5HV_{10}O_{28}$	from $HV_{10}O_{28}^{5-}$	a	1153.9212		-2380.	-2180.		176.	
$KVCl_3$		c	196.4030		-234.0				
K_3VCl_6		c	380.9660		-466.5				
$K_3V_2Cl_9$		c	538.2670		-609.2				
$KNbO_3$		c	180.0062			-298.9			
$KNbCl_6$		c	344.7260		-301.7				
$KNbOCl_4$		c	289.8194		-321.8				
KNb_2OCl_9		c	559.9904		-518.7				
K_2NbOCl_5		c	364.3744		-423.5				
K_2NbOBr_5		c	586.6544		-364.2				
$KTaCl_6$		c	432.7679		-319.6				
K_2TaCl_6		c	471.8699		-402.4				
$KTaO_2Cl_2$		c	322.9547		-335.0				
K_2TiO_3		c	174.1022		-384.8				
$KTiCl_3$		c	193.3610		-232.2				
K_2TiCl_6		c	338.8220		-421.				
K_3TiCl_6		c	377.9240		-502.6				
K_2ZrCl_6		c	382.1420		-467.				
K_2ZrBr_6		c	648.8780		-384.2				
K_2HfCl_6		c	469.4120		-470.				
$KYCl_4$		c	269.8190		-347.				
		g	269.8190		-291.				
$K_4Y_8(Fe(CN)_6)_7 \cdot 30H_2O$		c	2891.7879			-2249.			
$KErCl_4$		c	348.1740		-347.				
		g	348.1740		-274.				
$KTb(SO_4)_2$		c	390.1492						51.7
$KTb(SO_4)_2 \cdot H_2O$		c	408.1646						55.2
$KGdFe(CN)_6$		c	408.3064			-74.6			
$KEu(SO_4)_2$		c	383.1852						50.5
$KEu(SO_4)_2 \cdot H_2O$		c	401.2006						54.2
$3K_2SO_4 \cdot 2Eu_2(SO_4)_3$		c	1707.0064						201.1
$3K_2SO_4 \cdot 2Eu_2(SO_4)_3 \cdot 8H_2O$		c	1851.1296						228.0
K_2SmCl_5		c	405.8190		-464.5				
K_3SmCl_6		c	480.3740		-564.3				
$KNdCl_4$		c	325.1540		-358.				
		g	325.1540		-287.				
K_3NdCl_6		c	474.2640		-569.6				
		au	474.2640		-585.5				

Table 100. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Potassium

Substance Formula and Description	State	Formula weight	0 K ΔHf_0° kcal/mol	298.15 K (25 °C) ΔHf° kcal/mol	ΔGf° kcal/mol	$H_{298}^\circ - H_0^\circ$ kcal/mol	S° cal/deg mol	C_p° cal/deg mol
$K_3Nd_2Cl_9$	c	724.8630		-826.1				
	au	724.8630		-869.6				
$KPrCl_4$	c	321.8210		-378.				
	g	321.8210		-306.				
K_2PrCl_5	c	396.3760		-468.0				
	au	396.3760		-486.5				
K_3PrCl_6	c	470.9310		-573.2				
	au	470.9310		-586.3				
$K_3Pr_2Cl_9$	c	718.1970		-832.4				
	au	718.1970		-874.7				
$KCeCl_4$	c	321.0340		-368.				
	g	321.0340		-298.				
KCe_3Cl_{10}	c	813.9920		-867.9				
	au	813.9920		-954.2				
K_3CeCl_6	c	470.1440		-571.3				
	au	470.1440		-585.4				
$K_3Ce_2Cl_9$	c	716.6230		-829.4				
	au	716.6230		-970.6				
$KCeFe(CN)_6 \cdot 2H_2O$	c	427.2072			-190.5			
$KLaCl_4$	c	319.8240		-381.				
	g	319.8240		-313.				
KLa_3Cl_{10}	c	810.3620		-879.0				
	au	810.3620		-965.2				
K_2LaCl_5	c	394.3790		-470.5				
	au	394.3790		-488.5				
$KLaFe(CN)_6$	c	389.9664			-76.7			
K_2UO_4	c	380.2306		-459.2				
KUF_6	c	391.1214		-648.9				
$K(UO_2)_2F_5$	c	674.1496		-946.3				
$K_3UO_2F_5$	c	482.3258		-842.2				
$KUCl_5$	c	454.3960		-354.0				
$KUCl_6$	c	489.8490		-365.0				
K_2UCl_6	c	528.9510		-462.0				
UO_2KPO_4	c	404.1012			-573.9			
UO_2KAsO_4	c	448.0490			-480.9			
$KThCl_5$	g	448.4051		-329.				
$KThCl_5 \cdot 9H_2O$	c	610.5437		-1053.1				
K_2ThCl_6	c	522.9601		-501.7				
$KBeF_3$	g	105.1094		-331.0				
K_2BeF_4 γ	c	163.2098		-539.5				
β	c2	163.2098		-537.4				
β'	c3	163.2098		-537.8				
	au	163.2098		-529.5				
$(KBeF_3)_2$	g	210.2188		-698.				
K_2BeCl_4	c	229.0282		-336.7				
$KMgCl_3$	c	169.7730		-259.7				
$KMgCl_3 \cdot 2H_2O$	c	205.8038		-409.7				
$KMgCl_3 \cdot 6H_2O$	c	277.8654		-704.0				

Table 100. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Potassium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf°_0 kcal/mol	ΔHf°	ΔGf°	$H^\circ_{298}-H^\circ_0$	S°	C°_p
				kcal/mol			cal/deg mol	
carnellite								
K_2MgCl_4 fused	c	244.3280		-364.7				
aged 2 months	c2	244.3280		-365.2				
$K_2MgCl_4 \cdot 2KCl$	c	393.4380		-575.6				
$K_2Mg(SO_4)_2$ aged 3 weeks after fusion	c	294.6392		-658.4				
fused	c2	294.6392		-658.0				
$K_2Mg(SO_4)_2 \cdot 2H_2O$	c	330.6700		-801.0				
$K_2Mg(SO_4)_2 \cdot 4H_2O$	c	366.7008		-943.5				
leonite								
$K_2Mg(SO_4)_2 \cdot 6H_2O$	c	402.7316		-1085.0				
schoenite								
$K_2Mg(SO_4)_2 \cdot 6D_2O$	c	414.8048		-1099.				
$K_2SO_4 \cdot 2MgSO_4$ laugbenite	c	415.0128		-973.0				
$KCl \cdot MgSO_4 \cdot 3H_2O$	c	248.9748		-631.0				
kainite								
$K_2Mg(SeO_4)_2$	c	388.4312		-498.8				
$KMgPO_4 \cdot 6H_2O$	c	266.4778			-774.5			
$KMg_3AlSi_3O_{10}(OH)_2$	c	417.2863			-1393.9			
phlogopite								
$KMg_3AlSi_3O_{10}F_2$ fluorophlogopite	c	421.2683		-1525.8	-1444.6		80.4	
$KCaCl_3$	c	185.5410		-297.7				
	g	185.5410		-224.				
K_2CaCl_4	c	260.0960		-401.5				
$K_2SO_4 \cdot CaSO_4 \cdot H_2O$	c	328.4226		-759.4				
$K_2SO_4 \cdot 5CaSO_4 \cdot H_2O$	c	872.9890		-2108.8				
$4KNO_3 \cdot Ca(NO_3)_2$	c	568.5174		-710.4				
$K_2CaP_2O_7$	c	292.2274				9.34	60.91	52.09
$K_2O \cdot 23CaO \cdot 12SiO_2$	c	2105.0471		-6597.5				
$KCaFe(CN)_6 \cdot 5H_2O$	c	381.2134		-971.				
$KSrCl_3$	g	233.0810		-231.				
KSr_2Cl_5	c	391.6070		-502.8				
K_2SrCl_4 fused	c	307.6360		-405.8				
aged 2 months	c2	307.6360		-406.0				
$K_2SO_4 \cdot SrSO_4$ fused	c	357.9472		-688.8				
aged 2 months	c2	357.9472		-690.1				
$2K_2SO_4 \cdot SrSO_4$ fused	c	532.2128		-1031.7				
aged 2 months	c2	532.2128		-1033.3				
K_2BaCl_4 fused	c	357.3560		-412.55				
$K_2SO_4 \cdot BaSO_4$ fused	c	407.6672		-694.6				
aged 2 months	c2	407.6672		-695.0				
$2K_2SO_4 \cdot BaSO_4$ fused	c	581.9328		-1037.8				
aged 2 months	c2	581.9328		-1037.7				
$KNO_2 \cdot 2Ba(NO_2)_2$	c	543.8095		-455.6				
$2KNO_2 \cdot Ba(NO_2)_2$	c	399.5660		-367.7				
$2KNO_3 \cdot Ba(NO_3)_2$	c	463.5636		-475.72				

Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity

Table 100 **Potassium**

Substance Formula and Description	State	Formula weight	0 K ΔHf°_0 kcal/mol	298.15 K (25 °C) ΔHf° kcal/mol	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$ kcal/mol	S° cal/deg mol	C°_p cal/deg mol
$K_2CO_3 \cdot BaCO_3$ aged 2 months	c	335.5628		-563.0				
fused	c2	335.5628		-563.6				
KLiCll	c	208.4005		-176.0				
$K_2SO_4 \cdot Li_2SO_4$	c	284.2092		-689.29				
$K_2O \cdot Li_2O \cdot 4B_2O_3$	c	402.5656		-1606.3				
$K_2O \cdot Li_2O \cdot 6B_2O_3$	c	541.8060		-2235.9				
$K_2O \cdot Li_2O \cdot 8B_2O_3$	c	681.0464		-2851.9				
$K_2O \cdot 3Li_2O \cdot 8B_2O_3$	c	740.8092		-3231.1				
$K_2O \cdot 3Li_2O \cdot 12B_2O_3$	c	1019.2900		-4473.6				
$K_2O \cdot 3Li_2O \cdot 16B_2O_3$	c	1297.7708		-5710.7				
$Li_2O \cdot 3K_2O \cdot 8B_2O_3$	c	869.4532		-3210.2				
$Li_2O \cdot 3K_2O \cdot 12B_2O_3$	c	1147.9340		-4470.3				
$Li_2O \cdot 3K_2O \cdot 16B_2O_3$	c	1426.4148		-5712.7				
NaK	l	62.0918		1.5				
Na_2K	l	85.0816		2.0				
NaK_2	l	101.1938		2.5				
$KNa(OH)_2$	g	96.1066		-151.7				
$KNaF_2$	g	100.0886		-201.4				
$KNaCl_2$	c	132.9978		-200.53				
	g	132.9978		-142.9				
$KNaBr_2$	c	221.9098		-179.00				
$KNaI_2$	c	315.9006		-145.89				
KNaCll	c	224.4493		-176.08				
$Na_2SO_4 \cdot K_2SO_4$ aged 2 months	c	316.3068		-674.3				
fused	c2	316.3068		-674.1				
$2Na_2SO_4 \cdot K_2SO_4$ aged 2 months	c	458.3480		-1004.9				
fused	c2	458.3480		-1004.3				
$Na_2SO_4 \cdot 2K_2SO_4$ aged 2 months	c	490.5724		-1019.1				
fused	c2	490.5724		-1018.8				
$Na_2SO_4 \cdot 3K_2SO_4$ glaserite	c	664.8380		-1364.54				
$Na_2CO_3 \cdot K_2CO_3$ aged 2 months	c	244.2024		-549.5				
fused	c2	244.2024		-549.0				
$2Na_2CO_3 \cdot K_2CO_3$ aged 2 months	c	350.1914		-818.3				
fused	c2	350.1914		-817.5				
$3Na_2CO_3 \cdot K_2CO_3$ aged 2 months	c	456.1804		-1087.4				
fused	c2	456.1804		-1086.2				
$4Na_2CO_3 \cdot K_2CO_3$ aged 2 months	c	562.1694		-1355.4				
fused	c2	562.1694		-1354.5				
$Na_2CO_3 \cdot 2K_2CO_3$ aged 2 months	c	382.4158		-825.9				
fused	c2	382.4158		-825.4				
$Na_2CO_3 \cdot 3K_2CO_3$ aged 2 months	c	520.6292		-1096.5				
fused	c2	520.6292		-1095.4				
$Na_2CO_3 \cdot 4K_2CO_3$ aged 2 months	c	658.8426		-1371.3				
fused	c2	628.8426		1369.8				

Table 100. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Potassium

Substance			0 K	298.15 K (25 °C)				
Formula and Description	State	Formula weight	ΔHf°_0 kcal/mol	ΔHf°	ΔGf°	$H^\circ_{298}-H^\circ_0$ kcal/mol	S°	C°_p cal/deg mol
NaCNS·KCNS	c	178.2556		–88.5				
NaCNS·3KCNS	c	372.6234		–182.3				
$K_2O·Na_2O·4B_2O_3$	c	434.6632		–1609.2				
$K_2O·Na_2O·6B_2O_3$	c	573.9036		–2226.8				
$K_2O·Na_2O·8B_2O_3$	c	713.1440		–2850.8				
$K_2O·3Na_2O·8B_2O_3$	c	837.1020		–3213.0				
$K_2O·3Na_2O·12B_2O_3$	c	1115.5828		–4445.1				
$K_2O·3Na_2O·16B_2O_3$	c	1394.0636		–5692.5				
$Na_2O·3K_2O·8B_2O_3$	c	901.5508		–3231.2				
$Na_2O·3K_2O·12B_2O_3$	c	1180.0316		–4458.1				
$Na_2O·3K_2O·16B_2O_3$	c	1458.5124		–5709.0				
$Na_{0.7794}K_{0.2206}AlSiO_4$ nepheline	c	145.6092		–504.2				
nepheline	gl	145.6092		–495.2				
$KNaUCl_6$	c	512.8388		–452.3				

Table 101. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Rubidium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf°_0 kcal/mol	ΔHf°	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$	S° cal/deg mol	C°_p
Rb	cs	85.4678	0	0	0	1.790	18.35	7.424
	g	85.4678	19.639	19.330	12.690	1.481	40.626	4.968
Rb^+	g	85.4678	115.965	117.137				
Rb^{2+}	g	85.4678	745.10	747.76				
Rb^{3+}	g	85.4678	1660.0	1664.1				
Rb^+	a	85.4678		-60.03	-67.87		29.04	
Rb in 185 Hg		85.4678			-25.25			
RbO_2	c	117.4666		-66.6				
Rb_2O	c	186.9350		-81.				
	g	186.9350		-12.				
Rb_2O_2	c	202.9344		-112.8				
RbH	c	86.4758		-12.5				
RbOH	c	102.4752		-99.95				
	g	102.4752	-56.	-57.				
	a	102.4752		-115.00	-105.46		26.47	
in 75 H_2O		102.4752		-114.85				
in 100 H_2O		102.4752		-114.82				
in 147 H_2O		102.4752		-114.81				
in 200 H_2O		102.4752		-114.80				
$RbOH \cdot H_2O$	c	120.4906		-178.98				
$RbOH \cdot 2H_2O$	c	138.5060		-251.73				
$RbHO_2$ from HO_2^-	a	118.4746		-98.35	-84.0		34.7	
$(RbOH)_2$	g	204.9504		-157.				
RbF	c	104.4662		-133.3				
	g	104.4662	-78.6	-79.2	-83.4	2.292	56.64	8.53
	a	104.4662		-139.53	-134.510		25.70	
in 100 H_2O		104.4662		-139.39				
in 150 H_2O		104.4662		-139.40				
in 200 H_2O		104.4662		-139.408				
in 300 H_2O		104.4662		-139.419				
in 400 H_2O		104.4662		-139.428				
in 500 H_2O		104.4662		-139.435				
in 600 H_2O		104.4662		-139.441				
in 800 H_2O		104.4662		-139.450				
in 1,000 H_2O		104.4662		-139.456				
in 1,500 H_2O		104.4662		-139.467				
in 2,000 H_2O		104.4662		-139.473				
in 3,000 H_2O		104.4662		-139.482				
in 5,000 H_2O		104.4662		-139.491				
in 10,000 H_2O		104.4662		-139.501				
in 20,000 H_2O		104.4662		-139.509				
in 50,000 H_2O		104.4662		-139.517				
in 100,000 H_2O		104.4662		-139.520				
in $HCONH_2$:S in formamide		104.4662		-138.57				
$RbF \cdot 1.5H_2O$	c	131.4893		-242.3				
Rb_2F_2	g	208.9324	-203.09	-204.	-203.	4.60	82.2	19.1

Table 101. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Rubidium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf°_0	ΔHf°	ΔGf°	$H^\circ_{298}-H^\circ_0$	S°	C°_p
			kcal/mol	kcal/mol			cal/deg mol	
$RbHF_2$	c	124.4726	-219.52	-220.5	-204.5	3.932	28.70	18.97
from HF_2^-	a	124.4726		-215.37	-206.05		51.1	
RbCl	c	120.9208	-104.080	-104.05	-97.47	2.917	22.92	12.52
	g	120.9208	-54.22	-54.7	-59.1	2.402	59.62	8.80
	a	120.9208		-99.98	-99.24		42.54	
in 400 H_2O		120.9208		-99.911				
in 1,000 H_2O		120.9208		-99.923				
in 2,500 H_2O		120.9208		-99.93				
in 50 HCOOH		120.9208		-103.1				
in formic acid								
in CH_3OH:U		120.9208		-101.86				
in methanol								
in $C_4H_8O_2$:S		120.9208		-100.38				
in aqueous dioxane (20%)								
in $HCONH_2$:S		120.9208		-103.35				
in formamide								
in $HCONHCH_3$:S		120.9208		-103.21				
in methylformamide								
$RbCl_3$	a	191.8268			-96.7			
Rb_2Cl_2	g	241.8416	-147.17	-148.	-148.	4.94	89.2	19.4
RbClO	a	136.9202		-85.6	-76.7		39.	
$RbClO_2$	a	152.9196		-75.9	-63.8		53.2	
$RbClO_3$	c	168.9190		-96.3	-71.8		36.3	24.66
	a	168.9190		-84.88	-69.77		67.80	
$RbClO_4$	c	184.9184		-104.50	-73.54		39.2	
	a	184.9184		-90.94	-69.93		72.5	
in $C_4H_8SO_2$:U		184.9184		-102.25				
in sulfolane								
in $HCONH_2$:S		184.9184		-100.36				
in formamide								
in $HCONHCH_3$:S		184.9184		-101.70				
in methylformamide								
in $HCON(CH_3)_2$:S		184.9184		-106.35				
in dimethylformamide								
in $CH_3CON(CH_3)_2$:S		184.9184		-106.9				
in dimethylacetamide								
RbBr	c	165.3768	-92.714	-94.31	-91.25	3.124	26.28	12.63
	g	165.3768	-41.45	-43.7	-51.4	2.465	62.36	8.89
	a	165.3768		-89.08	-92.72		48.74	
in 1,000 H_2O		165.3768		-89.024				
in $HCONH_2$:S		165.3768		-93.56				
in formamide								
$RbBr_3$	c	325.1948		-100.0				
	a	325.1948		-91.20	-93.46		80.5	
$RbBr_5$	a	485.0128		-94.0	-92.7		104.7	
Rb_2Br_2	g	330.7536				5.19	95.3	19.6
RbBrO	a	181.3762		-82.5	-75.9		39.	
$RbBrO_3$	c	213.3750		-87.78	-66.47		38.5	

Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity

Table 101 **Rubidium**

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf°_0 kcal/mol	ΔHf°	ΔGf°	$H^\circ_{298}-H^\circ_0$	S°	C°_p
				kcal/mol			cal/deg mol	
$RbBrO_3$	a	213.3750		-76.06	-63.44		67.69	
$RbBrO_4$	a	229.3744		-56.9	-39.7		76.7	
$RbBrCl_2$	c	236.2828		-116.2				
$RbBr_2Cl$	c	280.7388		-112.9				
from Br_2Cl^-	a	280.7388		-100.7	-98.6		74.1	
RbI	c	212.3722	-79.603	-79.78	-78.60	3.190	28.30	12.71
	g	212.3722	-31.23	-32.1	-41.6	2.499	64.22	8.93
	a	212.3722		-73.22	-80.20		55.6	
in 2,000 H_2O		212.3722		-73.173				
in CH_3CN:U		212.3722		-81.68				
in acetonitrile								
in 1,000 $NH_2CH_2CH_2NH_2$		212.3722		-84.28				
in ethylenediamine								
in $HCONH_2$:S		212.3722		-79.55				
in formamide								
in $HCONHCH_3$:S		212.3722		-78.24				
in methylformamide								
in $HCON(CH_3)_2$:S		212.3722		-86.40				
in dimethylformamide								
in $CH_3CONHCH_3$:S2		212.3722		-80.16				
in methylacetamide								
RbI_3	c	466.1810		-82.8	-81.0		53.9	
	a	466.1810		-72.3	-80.2		86.2	
Rb_2I_2	g	424.7444				5.29	99.3	19.7
RbIO	a	228.3716		-85.7	-77.1		27.7	
$RbIO_3$	c	260.3704			-101.90			
	a	260.3704		-112.90	-98.50		57.30	
$RbIO_4$	a	276.3698		-96.2	-81.9		82.0	
RbH_4IO_6 from $H_4IO_6^-$	au	312.4006		-241.5				
$Rb_2H_3IO_6$ from $H_3IO_6^{2-}$	au	396.8604		-300.8				
$RbICl_2$	c	283.2782			-106.1			
from ICl_2^-	a	283.2782			-106.4			
$RbICl_4$	c	354.1842		-133.1				
RbI_2Cl from I_2Cl^-	a	374.7296		-92.9	-95.7		81.9	
$RbIBr_2$	c	372.1902			-96.0			
from IBr_2^-	a	372.1902			-97.3			
$RbBrI_2$ from BrI_2^-	a	419.1856		-90.6	-94.2		76.2	
RbIBrCl	c	327.7342			-102.30			
from $IBrCl^-$	a	327.7342			-102.9			
Rb_2S	c	202.9996		-86.2				
	a	202.9996		-112.2	-115.2		54.6	
in 500 H_2O		202.9996		-111.0				
Rb_2S_2	a	235.0636		-112.9	-116.7		64.9	
Rb_2S_3	a	267.1276		-113.9	-118.1		73.9	
Rb_2S_4	a	299.1916		-114.6	-119.2		82.8	
Rb_2S_5	a	331.2556		-115.0	-120.0		91.7	
Rb_2SO_3	a	250.9978		-272.0	-252.0		51.	
Rb_2SO_4	c	266.9972	-340.795	-343.12	-314.76	6.458	47.19	32.04

Table 101. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Rubidium

Substance: Formula and Description	State	Formula weight	0 K ΔHf°_0 kcal/mol	298.15 K (25 °C) ΔHf°	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$	S° cal/deg mol	C°_p
Rb_2SO_4	g	266.9972		-255.4				
	a	266.9972		-337.38	-313.71		62.9	
in 500 H_2O		266.9972		-337.161				
in 800 H_2O		266.9972		-337.156				
in 1,000 H_2O		266.9972		-337.157				
in 1,500 H_2O		266.9972		-337.164				
in 2,000 H_2O		266.9972		-337.170				
in 3,000 H_2O		266.9972		-337.183				
in 5,000 H_2O		266.9972		-337.204				
in 10,000 H_2O		266.9972		-337.242				
in 20,000 H_2O		266.9972		-337.276				
in 50,000 H_2O		266.9972		-337.310				
in 100,000 H_2O		266.9972		-337.329				
in 200,000 H_2O		266.9972		-337.343				
in 500,000 H_2O		266.9972		-337.356				
$Rb_2S_2O_3$	a	283.0618		-276.0	-260.6		74.	
$Rb_2S_2O_6$	au	331.0600		-406.5				
$Rb_2S_2O_7$	au	347.0594		-455.0				
$Rb_2S_2O_8$	a	363.0588		-441.5	-402.2		116.5	
$Rb_2S_3O_6$	au	363.1240		-406.8				
$Rb_2S_4O_6$	a	395.1880		-412.7	-384.4		119.6	
$Rb_2S_5O_6$	au	427.2520		-415.6				
RbHS	c	118.5398		-63.8				14.6
from HS^-	a	118.5398		-64.2	-64.99		44.0	
in 500 H_2O		118.5398		-64.5				
in 1,000 H_2O		118.5398		-64.5				
$RbHSO_3$ from HSO_3^-	a	166.5380		-209.70	-194.02		62.4	
$RbHSO_4$	c	182.5374		-277.0				
from HSO_4^-	a	182.5374		-272.11	-248.56		60.5	
in 400 H_2O		182.5374		-273.7				
$RbHS_2O_4$ from $HS_2O_4^-$	a	214.6014			-214.8			
$RbSO_2F$	c	168.5290		-225.7				
$RbSO_3F$	a	184.5284		-268.3				
$RbI{\cdot}3SO_2$	c	404.5606		-323.2				
Rb_2SeO_3	c	297.8938		-232.83				
	a	297.8938		-241.8	-224.1		61.	
Rb_2SeO_4	c	313.8932		-266.3				
	a	313.8932		-263.3	-241.2		71.0	
	au	313.8932		-263.3				
RbHSe	c	165.4358		-57.20				15.7
from HSe^-	a	165.4358		-56.2	-57.4		48.	
	au	165.4358		-56.0				
$RbHSeO_3$ from $HSeO_3^-$	a	213.4340		-183.01	-166.23		61.3	
$RbHSeO_4$ from $HSeO_4^-$	a	229.4334		-199.0	-176.0		64.7	
Rb_2TeO_3	c	346.5338		-239.6				
in 6,000 H_2O		346.5338		-251.8				
$Rb_2TeO_3{\cdot}H_2O$	c	364.5492		-313.5				
$Rb_2TeO_3{\cdot}3H_2O$	c	400.5800		-455.0				

Table 101. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Rubidium

Substance: Formula	Description	State	Formula weight	0 K ΔHf°_0 kcal/mol	298.15 K (25 °C) ΔHf° kcal/mol	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$ kcal/mol	S° cal/deg mol	C°_p cal/deg mol
RbH_5TeO_6	from $H_5TeO_6^-$	au	314.1042		-361.5				
$Rb_2H_4TeO_6$	from $H_4TeO_6^{2-}$	au	398.5640		-412.2				
Rb_2TeBr_6		c	777.9896		-238.6				
Rb_2PoCl_6		a	593.6536			-274.			
RbN_3		c	127.4879		-0.9				
		a	127.4879		5.73	15.3		54.8	
		au	127.4879		5.78				
$RbNO_2$		c	131.4733			-73.2			
		a	131.4733		-85.0	-75.6		58.4	
$RbNO_3$		c	147.4727		-118.32	-94.61		35.2	24.4
		a	147.4727		-109.59	-94.48		64.0	
	in 130 H_2O		147.4727		-109.95				
	in 135 H_2O		147.4727		-109.94				
	in 200 H_2O		147.4727		-109.810				
	in 400 H_2O		147.4727		-109.682				
	in 1,000 H_2O		147.4727		-109.600				
	in 3,200 H_2O		147.4727		-109.558				
	in 5,000 H_2O		147.4727		-109.568				
	in 6,000 H_2O		147.4727		-109.571				
$RbONO_2$	peroxynitrite	au2	147.4727		-70.7				
$Rb_2N_2O_2$	hyponitrite	au	230.9478		-124.2				
$RbNH_2$		c	101.4905		-27.0				
$RbHN_2O_2$	hyponitrite, from $HN_2O_2^-$	au	146.4880		-72.4				
$RbPO_3$		c	164.4398		-295.7				
		au	164.4398		-293.5				
Rb_3PO_4		a	351.3748		-485.4	-447.1		34.	
$Rb_4P_2O_7$		a	515.8146		-782.9	-730.2		88.	
RbH_2PO_2	from $H_2PO_2^-$	au	150.4564		-206.7				
RbH_2PO_3	from $H_2PO_3^-$	au	166.4558		-291.7				
RbH_2PO_4		c	182.4552		-373.39				
	from $H_2PO_4^-$	a	182.4552		-369.85	-338.04		50.6	
$RbH_3P_2O_7$	from $H_3P_2O_7^-$	a	262.4352		-604.1	-551.5		80.	
Rb_2HPO_3	from HPO_3^{2-}	au	250.9156		-351.7				
Rb_2HPO_4	from $H_2PO_4^{2-}$	a	266.9150		-428.89	-396.08		50.1	
$Rb_2H_2P_2O_7$		c	346.8950		-671.00				
	$H_2P_2O_7^{2-}$	a	346.8950		-664.7	-616.2		97.	
$Rb_3HP_2O_7$	from $HP_2O_7^{3-}$	a	431.3548		-723.8	-675.0		98.	
$RbPF_6$		c	230.4320		-562.8	-526.9		53.02	35.4
Rb_2PO_3F		a	268.9060			-416.5			
$RbHPO_3F$	from HPO_3F^-	a	184.4462			-354.3			
$RbAsO_2$		a	192.3882		-162.57	-151.53		38.7	
Rb_3AsO_4		a	395.3226		-392.36	-358.61		48.2	
RbH_2AsO_3	from $H_2AsO_3^-$	a	210.4036		-230.87	-208.22		55.4	
RbH_2AsO_4	from $H_2AsO_4^-$	a	226.4030		-277.42	-247.91		57.	
Rb_2HAsO_4	from $HAsO_4^{2-}$	a	310.8628		-336.68	-306.56		57.7	
Rb_2AsO_3F		a	312.8538			-381.33			

Table 101. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Rubidium

Substance: Formula and Description	State	Formula weight	0 K ΔHf°_0 kcal/mol	298.15 K (25 °C) ΔHf° kcal/mol	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$ kcal/mol	S° cal/deg mol	C°_p cal/deg mol
$RbHAsO_3F$ from $HAsO_3F^-$	a	228.3940			-321.47			
RbSb	c	207.2178		-23.9				
$RbSb_2$	c	328.9678		-24.5				
Rb_3Sb	c	378.1534		-41.5				
Rb_3Sb_7	c	1108.6534		-74.1				
Rb_5Sb_4	c	914.3390		-106.1				
$RbSbO_2$	a	239.2166			-149.19			
$SbCl_3 \cdot 3RbCl$	c	590.8714		-410.2				
$7RbBr \cdot 3SbBr_3$	c	2242.0686		-884.6				
$Rb_2Sb_2S_4$	a	542.6916		-172.5	-159.5		45.6	
$RbBiCl_4$	a	436.2598			-183.0			
Rb_3BiCl_6	a	678.1014			-382.12			
$RbBiBr_4$	a	614.0838			-158.1			
$RbBiI_4$	a	802.0654			-117.8			
$Rb_2NH_4BiCl_6$ from $NH_4BiCl_6^{2-}$	a	610.6723			-333.3			
RbC_8	c	181.5574		-10.6				
RbC_{10}	c	205.5798		-7.9				
RbC_{24}	c	373.7366		-9.3				
RbC_{36}	c	517.8710		-9.5				
RbC_{48}	c	662.0054		-8.9				
RbC_{60}	c	806.1398		-7.9				
RbC_{72}	c	950.2742		-6.8				
Rb_2CO_3	c	230.9450	-270.41	-271.5	-251.2	5.851	43.34	28.11
	a	230.9450		-281.90	-261.91		44.5	
in 5.76 H_2O		230.9450		-280.10				
in 200 H_2O		230.9450		-281.2				
in 2,000 H_2O		230.9450		-281.7				
$Rb_2CO_3 \cdot H_2O$	c	248.9604		-346.2				
$Rb_2CO_3 \cdot 1.5H_2O$	c	257.9681		-383.5				
$Rb_2CO_3 \cdot 3H_2O$	c	284.9912		-489.5				
$Rb_2C_2O_4$ oxalate	a	258.9556		-317.3	-296.8		69.0	
HCOORb formate	a	130.4858		-161.74	-151.8		51.	
$RbHCO_3$	c	146.4852		-230.2	-206.4		29.0	
	a	146.4852		-225.42	-208.13		50.84	
in 200 H_2O		146.4852		-224.7				
in 2,000 H_2O		146.4852		-225.1				
$RbHC_2O_4$ from $HC_2O_4^-$	a	174.4958		-255.6	-234.80		64.7	
CH_3COORb acetate	a	144.5130		-176.19	-156.16		49.7	
$C_2H_5ORb \cdot C_2H_5OH$	c	176.5994		-171.2				
$3Rb_2CO_3 \cdot 2RbHCO_3 \cdot 4.5H_2O$	c	1066.8747		-1606.6				
CCl_3COORb trichloroacetate	a	247.8480		-183.4				
$CH_2ClCOORb$ chloroacetate	a	178.9580		-179.84				
$CHCl_2COORb$ dichloroacetate	a	213.4030		-182.4				
RbCN	c	111.4857				4.159	33.67	16.20
	a	111.4857		-24.0	-26.7		51.5	
RbCNO cyanate	a	127.4851		-94.9	-91.2		54.5	
NH_2CH_2COORb glycinate	a	159.5277		-172.31	-143.15		57.58	

Table 101. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Rubidium

Substance: Formula and Description		State	Formula weight	0 K ΔHf°_0 kcal/mol	298.15 K (25 °C) ΔHf° kcal/mol	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$	S° cal/deg mol	C°_p cal/deg mol
$RbCNS$	thiocyanate	a	143.5497		-41.76	-45.72		63.5	
$RbHSi(OH)_6$	from $HSi(OH)_6^-$	a	216.6062			-482.5			
Rb_2SiF_6		c	313.0120		-695.9				
		a	313.0120		-691.1	-661.4		87.3	
Rb_2GeCl_6		c	456.2436		-350.0	-310.8		72.5	
Rb_2SnCl_6		c	502.3436		-364.0	-328.6		90.25	54.27
		au	502.3436		-352.0				
Rb_2SnBr_6		c	769.0796					106.40	54.54
$RbHPbO_2$	from $HPbO_2^-$	a	325.6647			-148.77			
$PbI_2 \cdot 2RbI \cdot 4H_2O$		c	957.8048		-488.90				
$RbBO_2$		c	128.2776	-231.0	-232.0	-218.2	3.181	22.54	17.7
		g	128.2776	-160.0	-160.7	-162.2	3.43	73.65	14.14
		a	128.2776		-244.63	-230.14		20.1	
$Rb_2B_3O_7$		a	326.1754			-758.3			
$RbBH_4$		a	100.3108		-48.52	-40.56		55.4	
$RbB(OH)_4$	from $B(OH)_4^-$	a	164.3084		-381.26	-343.52		53.5	
$RbHB_4O_7$	from $HB_4O_7^-$	a	241.7156			-709.7			
$RbBF_4$		c	172.2724		-449.3				22.7
		a	172.2724		-436.4	-423.3		72.	
$RbBF_2(OH)_2$	from $BF_2(OH)_2^-$	a	168.2904			-388.4			
$RbBF_3OH$	from BF_3OH^-	a	170.2904		-425.0	-406.0		69.	
$RbBCl_4$		c	238.0908		-220.7				
$RbB(ClO_4)_4$		c	494.0812		-185.7				
$RbAlO_2$		a	144.4481		-279.6	-264.7		24.	
$RbAl(OH)_4$	from $Al(OH)_4^-$	a	180.4789		-416.2	-378.1		57.	
Rb_3AlF_6		au	397.3753		-783.0				
$RbAl(SeO_4)_2 \cdot 12H_2O$		c	614.5493		-1303.3				
Rb_3GaO_3		a	374.1216			-352.			
RbH_2GaO_3	from $H_2GaO_3^-$	a	205.2020			-246.			
Rb_2HGaO_3	from $HGaO_3^{2-}$	a	289.6618			-300.			
$RbGaBr_4$		a	474.8238		-218.2	-199.4		37.6	
Rb_2ZnO_2		a	268.3044			-227.59			
$RbHZnO_2$	from $HZnO_2^{2-}$	a	183.8446			-177.13			
$RbZn(OH)_3$	from $Zn(OH)_3^-$	a	201.8600			-233.82			
$Rb_2Zn(OH)_4$	from $Zn(OH)_4^{2-}$	a	304.3352			-340.97			
$RbZnCl_3$		a	257.1968			-197.1			
Rb_2ZnCl_4		c	378.1176		-319.4				
		a	378.1176			-294.9			
$RbZnBr_3$		a	390.5648			-175.2			
Rb_2ZnBr_4		c	555.9416		-277.140				
$RbZnI_3$		a	531.5510			-137.6			
Rb_2ZnI_4		a	743.9232		-217.0				
$RbCl \cdot ZnSO_4$		c	282.3524		-346.4				
$Rb_2Zn(C_2O_4)_2$	from $ZN(C_2O_4O_2^{2-}$	a	412.3456		-550.8	-503.2		89.	
$Rb_2Zn(CN)_4$		a	340.3772		-38.3	-28.9		112.	

Table 101. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Rubidium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf_0° kcal/mol	ΔHf°	ΔGf° kcal/mol	$H_{298}^\circ - H_0^\circ$	S° cal/deg mol	C_p°
$Rb_2Zn(CNS)_4$	a	468.6332			-84.0			
Rb_2CdO_2	a	315.3344			-203.7			
$RbHCdO_2$ from $HCdO_2^-$	a	230.8746			-154.8			
$RbCd(OH)_3$ from $Cd(OH)_3^-$	a	248.8900			-211.5			
$Rb_2Cd(OH)_4$ from $Cd(OH)_4^{2-}$	a	351.3652			-317.0			
$RbCdCl_3$	a	304.2268		-194.1	-184.3		77.5	
$RbCdBr_3$	a	437.5948			-165.3			
$RbCdI_3$	a	578.5810			-129.9			
Rb_2CdI_4	a	790.9532		-201.8	-211.2		136.	
$RbCd(N_3)_4$	a	365.9482			158.9			
$Rb_2CdP_2O_7$ from $CdP_2O_7^{2-}$	a	457.2790			-624.8			
$Rb_2Cd(C_2O_4)_2$ from $Cd(C_2O_4)_2^{2-}$	a	459.3756			-484.3			
$RbCd(CN)_3$	a	275.9215			16.9			
$Rb_2Cd(CN)_4$	a	387.4072		-17.8	-14.4		135.	
$RbCd(CNS)_3$	a	372.1135			-22.6			
$RbHgCl_3$	a	392.4168		-152.9	-141.8		79.	
Rb_2HgCl_4	a	513.3376		-252.5	-242.5		128.	
$RbHgBr_3$	a	525.7848		-130.1	-129.9		91.	
Rb_2HgBr_4	a	691.1616		-223.1	-224.4		132.	
$RbHgI_3$	a	666.7710		-96.5	-103.4		101.	
Rb_2HgI_4	a	879.1432		-176.3	-186.3		144.	
$RbHg(CN)_3$	a	364.1115		34.9	42.8		82.8	
$Rb_2Hg(CN)_4$	a	475.5972		5.7	12.1		131.	
$RbHg(CNS)_3$	a	460.3035			10.6			
$Rb_2Hg(CNS)_4$	a	603.8532		-42.1	-37.4		167.	
Rb_2CuO_2	a	266.4744			-179.6			
$RbHCuO_2$ from $HCuO_2^-$	a	182.0146			-129.7			
$RbCuCl_2$	a	219.9138			-125.3			
Rb_2CuCl_3	a	340.8346			-226.			
$CuCl_2 \cdot 2RbCl$	c	376.2876		-266.3				
$CuCl_2 \cdot 2RbCl \cdot 4H_2O$	c	448.3492		-547.2				
$Rb_2Cu(C_2O_4)_2$ from $Cu(C_2O_4)_2^{2-}$	a	410.5156		-500.6	-455.0		93.	
$RbCu(CN)_2$	a	201.0436			-6.3			
$Rb_2Cu(CN)_3$	a	312.5293			-39.2			
$Rb_3Cu(CN)_4$	a	424.0150			-68.2			
$Rb_3Cu(CNS)_4$	a	552.2710		-101.6	-116.6		241.	
$RbAgCl_2$	a	264.2436		-118.6	-119.4		84.3	
$RbAgBr_2$	a	353.1558			-109.1			
Rb_2AgBr_3	a	518.5326			-203.7			
$RbAgI_2$	a	447.1466			-88.7			
$RbAg_4I_5$	c	1151.4698	-138.82	-136.9	-143.0	17.092	149.	68.24
Rb_2AgI_3	c	659.5188		-176.2	-175.2		85.	
	a	659.5188		-163.6	-172.5		118.6	
Rb_3AgI_4	a	871.8910			-253.7			
$RbAg(CN)_2$	a	245.3736		4.6	5.1		75.	
$RbAg(SCN)_2$	a	309.5016			-16.5			
$Rb_2Ag(SCN)_3$	a	453.0513			-63.8			

Table 101. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Rubidium

Substance: Formula and Description	State	Formula weight	0 K ΔH_0° kcal/mol	298.15 K (25 °C) $\Delta H f^\circ$ kcal/mol	$\Delta G f^\circ$ kcal/mol	$H_{298}^\circ - H_0^\circ$ kcal/mol	S° cal/deg mol	C_p° cal/deg mol
$Rb_3Ag(SCN)_4$	a	596.6010			-109.9			
$RbAuCl_2$	a	353.3408			-104.00			
$RbAuCl_4$	a	424.2468		-137.0	-124.09		92.8	
$RbAuBr_2$	a	442.2528		-90.7	-95.36		81.5	
$RbAuBr_4$	a	602.0708		-105.8	-107.9		109.3	
$RbAu(CN)_2$	a	334.4706		-2.1	0.4		70.	
$RbAu(SCN)_2$	a	398.5986			-7.7			
$RbAu(SCN)_4$	a	514.7624			66.3			
$RbNiCl_3$	c	250.5368		-183.6				
$Rb_2Ni(CN)_4$	a	333.7172		-32.2	-22.9		110.	
$RbCoCl_3$	c	250.7600		-184.4				
Rb_2CoCl_4	c	371.6808		-288.4				
Rb_3CoCl_5	c	492.6016		-394.0				
$Rb_2Co(C_2O_4)_2$ from $Co(C_2O_4)_2^{2-}$	a	405.9086		-528.6	-480.5		84.	
$Rb_3Co(CN)_6$	a	471.4440					142.7	
$RbFeCl_3$	c	247.6738		-190.8				
Rb_2FeCl_4	c	368.5946		-294.6				
$RbFe(SO_4)_2$	a	333.4300			-432.3			
$Rb_3Fe(CN)_6$	a	468.3578		-45.8	-29.3		151.7	
$Rb_4Fe(CN)_6$	a	553.8256		-131.2	-105.39		138.9	
$Rb_3FeCO(CN)_5$ from $FeCO(CN)_5^{3-}$	a	470.3505		-134.0				
$RbH_3Fe(CN)_6$ from $H_3Fe(CN)_6^-$	a	300.4462		48.9				
$Rb_2H_2Fe(CN)_6$ from $H_2Fe(CN)_6^{2-}$	a	384.9060		-11.2	21.63		110.	
$Rb_3HFe(CN)_6$ from $HFe(CN)_6^{3-}$	a	469.3658		-71.2	-43.21		129.	
$RbH_2FeCO(CN)_5$ from $H_2FeCO(CN)_5^-$	a	301.4309		-13.7				
$Rb_2HFeCO(CN)_5$ from $HFeCO(CN)_5^{2-}$	a	385.8907		-74.1				
$RbPdCl_3$	a	298.2268			-133.9			
Rb_2PdCl_4	a	419.1476		-251.6	-235.3		98.	
Rb_2PdCl_6	a	490.0536			-238.5			
$RbPdBr_3$	a	431.5948			-116.7			
Rb_2PdBr_4	a	596.9716		-212.1	-211.7		117.	
Rb_2PdBr_6	a	756.7896			-215.8			
Rb_2PdI_4	a	784.9532			-173.7			
Rb_2PdI_6	a	1038.7620			-176.4			
$Rb_2Pd(NO_2)_4$ from $Pd(NO_2)_4^{2-}$	a	461.3576			-152.0			
$Rb_2Pd(CN)_4$	a	381.4072			14.			
$Rb_2Pd(CNS)_4$	a	509.6632			-37.6			
Rb_3RhCl_6	au	572.0264		-382.9				
$RbRuO_4$	a	250.5354			-126.6			
Rb_2RuO_4	a	336.0032			-208.3			
$RbPtCl_3$	a	386.9168			-120.9			
Rb_2PtCl_4	c	507.8376		-254.4				
	a	507.8376		-239.4	-222.1		95.	
Rb_2PtCl_6	c	578.7436		-297.7	-265.2		97.	
	a	578.7436		-279.8	-251.1		111.	
$RbPtBr_3$	a	520.2848			-102.5			
Rb_2PtBr_4	a	685.6616		-208.6	-198.5		87.	

Table 101. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Rubidium

Substance: Formula and Description	State	Formula weight	0 K: ΔHf°_0 kcal/mol	298.15 K (25 °C): ΔHf°	ΔGf°	$H^\circ_{298}-H^\circ_0$	S°	C°_p (cal/deg mol)
Rb_2PtBr_6	a	845.4796		-232.6	-215.1		97.	
Rb_2PtI_6	a	1127.4520		-171.1	-161.7		98.	
$RbPtNH_3Cl_3$	c	403.9475		-181.8				
$RbPtNH_3Cl_3$ from $PtNH_3Cl_3^-$	a	403.9475		-170.9	-140.4		76.	
$RbPtNH_3Cl_5$ from $PtNH_3Cl_5^-$	a	474.8535			-171.3			
$Rb_2Pt(CN)_4$	a	470.0972			34.1			
Rb_2IrCl_6	c	575.8536		-282.				
	au	575.8536		-257.				
Rb_3IrCl_6	au	661.3214		-353.				
$RbMnO_4$	a	204.4034		-189.4	-174.8		74.7	
Rb_2MnO_4	a	289.8712		-276.	-255.4		72.	
$RbMnCl_3$	c	246.7648		-225.30				
	a	246.7648			-216.1			
$Rb_2Mn(C_2O_4)_2$ from $Mn(C_2O_4)_2^{2-}$	a	401.9136		-567.5	-519.8		86.	
$Rb_4Mn(CN)_6$	au	552.9166		-107.				
$RbReO_4$	c	335.6654		-263.6	-238.1		40.	
	a	335.6654		-248.2	-233.9		77.1	
Rb_2ReCl_6	a	569.8536		-302.	-277.		118.	
Rb_2CrO_4	c	286.9292		-338.0				
	a	286.9292		-330.66	-309.70		70.08	
$Rb_2Cr_2O_7$	a	386.9234		-476.3	-446.7		120.7	
$RbHCrO_4$ from $HCrO_4^-$	a	202.4694		-269.9	-250.7		73.0	
Rb_3CrO_4F	c	391.3954		-472.1				
Rb_3CrCl_6	c	521.1174		-461.2				
$Rb_3Cr_2Cl_9$	c	679.4724		-604.0				
Rb_2MoO_4	a	330.8732		-358.6	-335.6		64.6	
$RbMoF_6$	c	295.3982		-499.1				
Rb_2WO_4	a	418.7832		-377.2				
$Rb_5HW_6O_{21}$ from $HW_6O_{21}^{5-}$	au	1867.4344		-1695.7				
$RbWF_6$	c	383.3082		-534.9				
$RbVO_3$	a	184.4080		-272.3	-255.2		41.	
Rb_3VO_4	a	371.3430			-418.5			
RbH_2VO_4	a	202.4234		-340.6	-311.9		58.	
$RbH_3V_2O_7$	a	302.3716			-513.4			
$Rb_3HV_2O_7$	a	471.2912			-632.0			
$Rb_4H_2V_{10}O_{28}$	a	1301.2904			-2117.			
$Rb_5HV_{10}O_{28}$	a	1385.7502		-2378.	-2180.		198.	
Rb_3VCl_6	c	520.0634		-470.9				
$Rb_3V_2Cl_9$	c	677.3644		-616.6				
$Rb_2VO(C_2O_4)_2$ from $VO(C_2O_4)_2^{2-}$	a	413.9170			-551.3			
$RbNbO_3$	c	226.3720			-301.5			
	a	226.3720			-290.7			
$RbNbCl_6$	c	391.0918		-307.1				
Rb_2NbOCl_5	c	457.1060		-429.6				
$RbTaF_6$	a	380.4062			-277.1			

Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity

Table 101 **Rubidium**

Substance Formula and Description	State	Formula weight	0 K ΔHf°_0 kcal/mol	298.15 K (25 °C) ΔHf° kcal/mol	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$ kcal/mol	S° cal/deg mol	C°_p cal/deg mol
Rb_2TaF_7	a	484.8724			-415.9			
$RbTaCl_6$	c	479.1338		-326.9				
$RbTiCl_3$	c	239.7268		-250.1				
Rb_2TiCl_4	c	360.6476		-358.0				
Rb_2TiCl_6	c	431.5536		-425.0				
Rb_2TiBr_6	c	698.2896		-359.7				
Rb_3TiBr_6	c	783.7574		-425.9				
$Rb_3Ti_2Br_9$	c	1071.3844		-563.5				
$Rb_2ZrO(SO_4)_2$ from $ZrO(SO_4)_2^{2-}$	au	470.2782		-750.2				
$RbGd(Fe(CN)_6)$	c	454.6722			-75.9			
$RbCe(Fe(CN)_6)\cdot 2H_2O$	c	473.5730			-192.8			
$RbUF_6$	c	437.4872		-651.2				
$Rb(UO_2)_2F_5$	c	720.5154		-944.4				
$Rb_3UO_2F_5$	c	621.4232		-826.8				
$Rb_5(UO_2)_2F_9$	c	1138.3802		-1517.7				
$RbUCl_5$	c	500.7618		-358.2				
$RbUCl_6$	c	536.2148		-371.6				
Rb_2UCl_6	c	621.6826		-467.9				
Rb_4UCl_8	c	863.5242		-676.2				
Rb_2UBr_6	c	888.4186		-395.3				
Rb_2ThCl_6	c	615.6917		-511.9				
$Rb_2ThCl_6\cdot 9H_2O$	c	777.8303		-1154.5				
Rb_4ThCl_8	c	857.5333		-727.9				
Rb_2BeO_2	a	211.9466		-309.1	-288.7		20.	
$Rb_2Mg(SeO_4)_2$ in 6,400 H_2O		481.1628		-517.4				
$Rb_2Mg(SeO_4)_2\cdot 6H_2O$	c	589.2552		-937.6				
$Rb_2MgP_2O_7$ from $MgP_2O_7^{2-}$	a	369.1917		-771.6	-712.9		39.	
$Rb_2Mg(C_2O_4)_2$ from $Mg(C_2O_4)_2^{2-}$	a	371.2876			-572.6			
$RbMgFe(CN)_6$ from $MgFe(CN)_6^-$	a	321.7342			-6.1			
$Rb_2MgFe(CN)_6$ from $MgFe(CN)_6^{2-}$	a	407.2020			-83.5			
$RbCaCl_3$	c	231.9068		-299.5				
$RbCaFe(CN)_6$ from $CaFe(CN)_6^-$	a	337.5022			-29.8			
$Rb_2CaFe(CN)_6$ from $CaFe(CN)_6^{2-}$	a	422.9700			-107.1			
$RbSrFe(CN)_6$ from $SrFe(CN)_6^-$	a	385.0422			-31.2			
$RbNO_2\cdot 2Ba(NO_2)_2$	c	590.1753		-453.9				
$Ba(NO_2)_2\cdot 2RbNO_2$	c	492.2976		-366.3				
$RbNaBr_2$	g	268.2656		-133.				
$NaRb_2CrCl_6$	c	458.6394		-456.5				
$RbKCl_2$	c	195.4758		-208.87				
	g	195.4758		-155.9				

Table 102. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Cesium

Substance	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf_0°	ΔHf°	ΔGf°	$H_{298}^\circ - H_0^\circ$	S°	C_p°
Formula and Description			kcal/mol	kcal/mol			cal/deg mol	
Cs	cs	132.9054	0	0	0	1.843	20.37	7.69
	g	132.9054	18.542	18.180	11.748	1.481	41.942	4.968
Cs^+	g	132.9054	108.337	109.456				
Cs^{2+}	g	132.9054	686.63	689.23				
Cs^+	a	132.9054		-61.73	-69.79		31.80	-2.5
Cs in 235 Hg		132.9054			-28.24			
Cs_2	g	265.8108	26.7	25.6	17.6	2.63	67.81	9.07
Cs_2^+	g	265.8108	114.3	113.2				
CsO_2	c	164.9042		-68.4				
Cs_2O	c	281.8102	-82.142	-82.64	-73.65	4.225	35.10	18.16
	g	281.8102		-37.				
Cs_2O_2	g	297.8096		-59.				
CsH	c	133.9134		-12.950				
	g	133.9134	28.4	27.7	23.1	2.114	51.40	7.54
CsOH	c	149.9128		-99.72				
	g	149.9128	-57.9	-59.	-59.1	2.828	60.88	11.88
	a	149.9128		-116.70	-107.38		29.23	
in 75 H_2O		149.9128		-116.51				
in 100 H_2O		149.9128		-116.52				
in 170 H_2O		149.9128		-116.54				
in 250 H_2O		149.9128		-116.55				
in 300 H_2O		149.9128		-116.56				
in 500 H_2O		149.9128		-116.57				
in 900 H_2O		149.9128		-116.60				
in 1,000 H_2O		149.9128		-116.61				
in 1,500 H_2O		149.9128		-116.62				
in 2,700 H_2O		149.9128		-116.64				
in 2,733 H_2O		149.9128		-116.64				
in 3,000 H_2O		149.9128		-116.64				
in 50,000 H_2O		149.9128		-116.68				
$CsOH \cdot H_2O$	c	167.9282		-180.22				
$CsHO_2$ from HO_2^-	a	165.9122		-100.05	-85.9		37.5	
$(CsOH)_2$	g	299.8256		-78.				
CsF	c	151.9038	-132.205	-132.3	-125.6	2.802	22.18	12.21
	g	151.9038	-85.21	-85.8	-89.8	2.306	58.11	8.57
	a	151.9038		-141.23	-136.43		28.5	
in 110 H_2O		151.9038		-141.07				
in 500 H_2O		151.9038		-141.15				
in $HCONH_2$:S in formamide		151.9038		-139.90				
$CsF \cdot 1.5H_2O$	c	178.9269		-242.3				
Cs_2F_2	g	303.8076	-213.19	-214.4	-213.1	4.59	84.91	19.02
$CsHF_2$	c	171.9102	-220.04	-220.8	-205.3	4.201	32.31	20.86
from HF_2^-	a	171.9102		-217.07	-207.97		53.9	
CsCl	c	168.3584	-105.926	-105.89	-99.08	2.976	24.18	12.54
	g	168.3584	-56.89	-57.41	-61.62	2.42	61.15	8.83
	a	168.3584		-101.68	-101.16		45.30	-35.1
in 11.10 H_2O		168.3584		-102.40				

Table 102. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Cesium

Substance		State	Formula weight	0 K	298.15 K (25 °C)				
Formula	and Description			ΔHf_0° kcal/mol	ΔHf°	ΔGf°	$H_{298}^\circ - H_0^\circ$	S°	C_p° cal/deg mol
CsCl	in 12 H_2O		168.3584		−102.36				
	in 12.33 H_2O		168.3584		−102.35				
	in 13.88 H_2O		168.3584		−102.30				
	in 15 H_2O		168.3584		−102.26				
	in 15.86 H_2O		168.3584		−102.23				
	in 18.50 H_2O		168.3584		−102.17				
	in 20 H_2O		168.3584		−102.14				
	in 22.2 H_2O		168.3584		−102.10				
	in 25 H_2O		168.3584		−102.05				
	in 27.75 H_2O		168.3584		−102.02				
	in 30 H_2O		168.3584		−101.989				
	in 37 H_2O		168.3584		−101.929				
	in 40 H_2O		168.3584		−101.904				
	in 50 H_2O		168.3584		−101.847				
	in 55.51 H_2O		168.3584		−101.824				
	in 75 H_2O		168.3584		−101.766				
	in 100 H_2O		168.3584		−101.724				
	in 110 H_2O		168.3584		−101.709				
	in 150 H_2O		168.3584		−101.679				
	in 200 H_2O		168.3584		−101.658				
	in 300 H_2O		168.3584		−101.638				
	in 400 H_2O		168.3584		−101.630				
	in 500 H_2O		168.3584		−101.625				
	in 555.1 H_2O		168.3584		−101.624				
	in 700 H_2O		168.3584		−101.623				
	in 800 H_2O		168.3584		−101.623				
	in 1,000 H_2O		168.3584		−101.624				
	in 1,110 H_2O		168.3584		−101.625				
	in 1,200 H_2O		168.3584		−101.626				
	in 1,500 H_2O		168.3584		−101.628				
	in 1,600 H_2O		168.3584		−101.629				
	in 2,000 H_2O		168.3584		−101.631				
	in 2,500 H_2O		168.3584		−101.634				
	in 3,000 H_2O		168.3584		−101.637				
	in 3,300 H_2O		168.3584		−101.638				
	in 4,000 H_2O		168.3584		−101.641				
	in 5,000 H_2O		168.3584		−101.644				
	in 7,000 H_2O		168.3584		−101.648				
	in 10,000 H_2O		168.3584		−101.652				
	in 20,000 H_2O		168.3584		−101.659				
	in 50,000 H_2O		168.3584		−101.667				
	in 100,000 H_2O		168.3584		−101.670				
	in 500,000 H_2O		168.3584		−101.675				
	in CH_3OH:S		168.3584		−103.0				
	in $C_4H_8O_2$:S		168.3584		−102.18				
	in aqueous dioxane (20%)								
	in $HCONH_2$:S		168.3584		−105.0				

Table 102. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Cesium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf_0° kcal/mol	ΔHf°	ΔGf° kcal/mol	$H_{298}^\circ - H_0^\circ$	S° cal/deg mol	C_p°
CsCl								
in formamide								
in $HCONHCH_3$:S		168.3584		-105.0	-95.1		13.9	
in N-methylformamide								
in $HCON(CH_3)_2$:S		168.3584			-92.1			
in N,N-dimethylformamide								
$CsCl_3$ from Cl_3^-	a	239.2644			-98.6			
Cs_2Cl_2	g	336.7168	-155.93	-156.8	-156.3	5.01	92.5	19.5
CsClO	a	184.3578		-87.3	-78.6		42.	
$CsClO_2$	a	200.3572		-77.6	-65.7		56.0	
$CsClO_3$	c	216.3566		-98.4	-73.6		37.3	
	a	216.3566		-86.58	-71.71		70.6	
$CsClO_4$	c	232.3560	-104.136	-105.90	-75.13	5.325	41.84	25.88
	a	232.3560		-92.64	-71.85		75.3	
in $C_4H_8SO_2$:S		232.3560		-103.7				
in sulfolane								
in $HCONH_2$:S		232.3560		-101.3				
in formamide								
in $HCONHCH_3$:S		232.3560		-102.8				
in N-methylformamide								
in $HCON(CH_3)_2$:S		232.3560		-107.67				
in N,N-dimethylformamide								
in $CH_3CON(CH_3)_2$:S		232.3560		-108.0				
in N,N-dimethylacetamide								
CsBr	c	212.8144	-95.358	-96.99	-93.55	3.140	27.02	12.65
	g	212.8144	-47.69	-50.0	-57.6	2.46	63.89	8.86
	a	212.8144		-90.78	-94.64		51.5	
in 75 H_2O		212.8144		-90.86				
in 500 H_2O		212.8144		-90.76				
in 1,000 H_2O		212.8144		-90.74				
in 1,333 H_2O		212.8144		-90.73				
in 2,000 H_2O		212.8144		-90.74				
in $HCONH_2$:S		212.8144		-95.16				
in formamide								
in $HCON(CH_3)_2$:S		212.8144		-98.07	-88.6		6.6	
in N,N-dimethylformamide								
$CsBr_3$	c	372.6324		-103.4	-96.8		53.	
from Br_3^-	a	372.6324		-92.90	-95.38		83.3	
$CsBr_5$ from Br_5^-	a	532.4504		-95.7	-94.6		107.5	
Cs_2Br_2	g	425.6288	-126.10	-130.4	-136.8	5.25	98.5	19.7
CsBrO	a	228.8138		-84.2	-77.8		42.	
$CsBrO_3$	c	260.8126		-89.82	-68.11		39.1	
	a	260.8126		-77.76	-65.36		70.45	
$CsBrO_4$	a	276.8120		-58.6	-41.6		79.5	
$CsBrCl_2$	c	283.7204		-117.0				
$CsBr_2Cl$	c	328.1764		-112.8				
from Br_2Cl^-	a	328.1764		-102.4	-100.5		76.9	
CsI	c	259.8098	-82.652	-82.84	-81.40	3.232	29.41	12.62
	g	259.8098	-35.40	-36.3	-45.7	2.52	65.77	8.95
	a	259.8098		-74.92	-82.12		58.4	-36.5

Table 102. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Cesium

Substance: Formula	Description	State	Formula weight	0 K: ΔHf°_0 kcal/mol	298.15 K (25 °C): ΔHf° kcal/mol	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$ kcal/mol	S° cal/deg mol	C°_p cal/deg mol
CsI	in 110 H_2O		259.8098		-74.97				
	in 500 H_2O		259.8098		-74.905				
	in 1,000 H_2O		259.8098		-74.883				
	in 1,300 H_2O		259.8098		-74.88				
	in 2,600 H_2O		259.8098		-74.88				
	in 400 CH_3OH		259.8098		-78.3				
	in methanol								
	in 4,000 CH_3OH		259.8098		-78.3				
	in C_2H_6SO:S		259.8098		-85.68				
	in dimethylsulfoxide								
	in $NH_2C_2H_4NH_2$:S		259.8098		-85.31				
	in ethylenediamine								
	in $HCONH_2$:S		259.8098		-81.1				
	in formamide								
	in $HCON(CH_3)_2$:S		259.8098		-87.09				
	in N,N-dimethylformamide								
CsI_3		c	513.6186		-86.5	-84.8		56.2	
	from I_3^-	a	513.6186		-74.0	-82.1		89.0	
CsI_4		c	640.5230		-87.4	-85.5		69.5	
Cs_2I_2		g	519.6196	-108.13	-109.6	-119.8	5.37	102.6	19.7
Cs_2I_8		c	1281.0460		-174.9				
CsIO		a	275.8092		-87.4	-79.0		30.5	
$CsIO_3$		c	307.8080			-103.7			
		a	307.8080		-114.6	-100.4		60.1	
$CsIO_4$		c	323.8074			-91.0			
		a	323.8074		-97.9	-83.8		85.	
Cs_2I_2O		a	535.6190			-159.3			
CsH_4IO_6	from $H_4IO_6^-$	au	359.8382		-243.2				
CsI_2OH	from I_2OH^-	a	403.7216		-124.8				
$Cs_2H_3IO_6$	from $H_3IO_6^{2-}$	au	491.7356		-304.2				
$CsICl_2$		c	330.7158		-115.1				
	from ICl_2^-	a	330.7158			-108.3			
$CsICl_4$		c	401.6218		-137.3				
CsI_2Cl	from I_2Cl^-	a	422.1672		-94.6	-97.6		84.7	
$CsIBr_2$		c	419.6278			-101.00			
	from IBr_2^-	a	419.6278			-99.2			
CsI_2Br		c	466.6232		-94.9	-92.1		57.	
$CsBrI_2$	from BrI_2^-	a	466.6232		-92.3	-96.1		79.0	
CsIBrF		c	358.7172			-130.5			
CsIBrCl		c	375.1718			-106.0			
	from $IBrCl^-$	a	375.1718			-104.8			
Cs_2S		c	297.8748		-86.0				
		a	297.8748		-115.6	-119.1		60.1	
Cs_2S_2		a	329.9388		-116.3	-120.6		70.4	
Cs_2S_3		a	362.0028		-117.3	-122.0		79.4	
Cs_2S_4		a	394.0668		-118.0	-123.1		88.3	
Cs_2S_5		a	426.1308		-118.4	-123.9		97.2	

Table 102. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Cesium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf_0° kcal/mol	ΔHf°	ΔGf° kcal/mol	$H_{298}^\circ - H_0^\circ$	S° cal/deg mol	C_p°
Cs_2SO_3	c	345.8730		-271.2				
	a	345.8730		-275.4	-255.9		56.6	
	au	345.8730		-275.9				
Cs_2SO_4	c	361.8724	-342.63	-344.89	-316.36	6.63	50.65	32.24
	g	361.8724		-263.6				
	a	361.8724		-340.78	-317.55		68.4	
in 200 H_2O		361.8724		-340.740				
in 400 H_2O		361.8724		-340.670				
in 500 H_2O		361.8724		-340.652				
in 1,000 H_2O		361.8724		-340.621				
in 1,500 H_2O		361.8724		-340.615				
in 1,760 H_2O		361.8724		-340.613				
in 2,000 H_2O		361.8724		-340.611				
in 3,000 H_2O		361.8724		-340.620				
in 5,000 H_2O		361.8724		-340.630				
in 10,000 H_2O		361.8724		-340.655				
in 20,000 H_2O		361.8724		-340.682				
in 50,000 H_2O		361.8724		-340.712				
in 100,000 H_2O		361.8724		-340.730				
in 200,000 H_2O		361.8724		-340.743				
$Cs_2S_2O_3$	a	377.9370		-279.4	-264.5		80.	
$Cs_2S_2O_4$	a	393.9364		-303.6	-283.1		86.	
$Cs_2S_2O_5$	c	409.9358		-373.1				
$Cs_2S_2O_6$	au	425.9352		-409.9				
$Cs_2S_2O_7$	au	441.9346		-458.4				
$Cs_2S_2O_8$	a	457.9340		-444.9	-406.1		122.0	
$Cs_2S_3O_6$	au	457.9992		-410.2				
$Cs_2S_4O_6$	a	490.0632		-416.1	-388.5		125.1	
$Cs_2S_5O_6$	au	522.1272		-419.0				
CsHS	c	165.9774		-65.6				
from HS^-	a	165.9774		-65.9	-66.91		46.8	
	au	165.9774		-65.9				
$CsHSO_3$ from HSO_3^-	a	213.9756		-211.40	-195.94		65.2	
$CsHSO_4$	c	229.9750		-276.8				
from HSO_4^-	a	229.9750		-273.81	-250.48		63.3	
$CsHS_2O_4$ from $HS_2O_4^-$	a	262.0390			-216.7			
$CsSO_2F$	c	215.9666		-227.0				
$CsSO_3F$	a	231.9660		-270.0				
$CsI \cdot 3SO_2$	c	451.9982		-324.8				
Cs_2Se	a	344.7708			-108.7			
Cs_2SeO_3	a	392.7690		-245.2	-228.0		67.	
$Cs_2SeO_3 \cdot H_2O$	c	410.7844		-314.2				
Cs_2SeO_4	c	408.7684		-272.34				
	a	408.7684		-266.7	-245.1		76.5	
in 1,000 H_2O		408.7684		-268.2				
CsHSe	c	212.8734		-60.1				
from HSe^-	a	212.8734		-57.9	-59.3		51.	

Table 102. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Cesium

Substance: Formula and Description		State	Formula weight	0 K ΔHf_0° kcal/mol	298.15 K (25 °C) ΔHf° kcal/mol	ΔGf° kcal/mol	$H_{298}^\circ - H_0^\circ$	S° cal/deg mol	C_p° cal/deg mol
$CsHSe$		au	212.8734		-57.9				
$CsHSeO_3$	from $HSeO_3^-$	a	260.8716		-184.71	-168.15		64.1	
$CsHSeO_4$	from $HSEO_4^-$	a	276.8710		-200.7	-177.9		67.5	
Cs_2TeO_3		c	441.4090		-239.2				
	in 6,000 H_2O		441.4090		-255.4				
$Cs_2TeO_3 \cdot 5H_2O$		c	531.4860		-600.6				
CsH_5TeO_6	from $H_5TeO_6^-$	au	361.5418		-363.2				
$Cs_2H_4TeO_6$	from $H_4TeO_6^{2-}$	au	493.4392		-415.6				
Cs_2TeBr_6		c	872.8348		-251.2				
Cs_2PoCl_6		a	688.5288			-278.			
CsN_3		c	174.9255		-4.7				
		a	174.9255		4.03	13.4		57.6	
	in 2,000 H_2O		174.9255		4.0				
$CsNO_2$		a	178.9109		-86.7	-77.5		61.2	
		au	178.9109		-86.7				
$CsNO_3$		c	194.9103		-120.93	-97.18		37.1	
		g	194.9103		-89.4				
		a	194.9103		-111.29	-96.40		66.8	-23.7
	in 55.51 H_2O		194.9103		-112.121				
	in 75 H_2O		194.9103		-111.942				
	in 100 H_2O		194.9103		-111.798				
	in 150 H_2O		194.9103		-111.644				
	in 200 H_2O		194.9103		-111.556				
	in 300 H_2O		194.9103		-111.463				
	in 400 H_2O		194.9103		-111.413				
	in 500 H_2O		194.9103		-111.380				
	in 600 H_2O		194.9103		-111.360				
	in 700 H_2O		194.9103		-111.346				
	in 800 H_2O		194.9103		-111.334				
	in 900 H_2O		194.9103		-111.325				
	in 1,000 H_2O		194.9103		-111.319				
	in 1,500 H_2O		194.9103		-111.298				
	in 2,000 H_2O		194.9103		-111.288				
	in 3,000 H_2O		194.9103		-111.279				
	in 4,000 H_2O		194.9103		-111.276				
	in 5,000 H_2O		194.9103		-111.274				
	in 6,000 H_2O		194.9103		-111.273				
	in 7,000 H_2O		194.9103		-111.273				
	in 10,000 H_2O		194.9103		-111.273				
	in 20,000 H_2O		194.9103		-111.275				
	in 50,000 H_2O		194.9103		-111.278				
	in 100,000 H_2O		194.9103		-111.281				
	in 500,000 H_2O		194.9103		-111.286				
$CsONO_2$	from ONO_2^-,peroxynitrite	au2	194.9103		-72.4				
$Cs_2N_2O_2$	from $N_2O_2^{2-}$,hyponitrite	au	325.8230		-127.6				
$CsNH_2$	tetragonal	c	148.9281		-28.3				
$CsHN_2O_2$	from $HN_2O_2^-$,hyponitrite	au	193.9256		-74.1				

Table 102. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Cesium

Substance: Formula	Description	State	Formula weight	0 K ΔHf_0° kcal/mol	298.15 K (25 °C) ΔHf° kcal/mol	ΔGf° kcal/mol	$H_{298}^\circ - H_0^\circ$ kcal/mol	S° cal/deg mol	C_p° cal/deg mol
$CsPO_3$		c	211.8774		-296.7				
		au	211.8774		-295.2				
Cs_3PO_4		a	493.6876		-490.5	-452.9		42.	
$Cs_4P_2O_7$		a	705.5650		-789.7	-737.9		99.2	
CsH_2PO_2	from $H_2PO_2^-$	au	197.8940		-208.43				
CsH_2PO_3	from $H_2PO_3^-$	au	213.8934		-293.4				
CsH_2PO_4		c	229.8928		-374.0				
	from $H_2PO_4^-$	a	229.8928		-371.55				
$CsH_3P_2O_7$	from $H_3P_2O_7^-$	a	309.8728		-605.8	-553.4		83.	
Cs_2HPO_3	from HPO_3^{2-}	au	345.7908		-355.1				
Cs_2HPO_4	from HPO_4^{2-}	a	361.7902		-432.29	-399.92		55.6	
$Cs_2H_2P_2O_7$	from $H_2P_2O_7^{2-}$	a	441.7702		-668.1	-620.1			
103.									
$Cs_3HP_2O_7$	from $HP_2O_7^{3-}$	a	573.6676		-728.9	-680.8		106.4	
$CsPF_6$		c	277.8696		-568.8				
Cs_2PO_3F		a	363.7812			-420.4			
$CsHPO_3F$	from HPO_3F^-	a	231.8838			-356.2			
$CsAsO_2$		a	239.8258		-164.27	-153.45		41.5	
Cs_3AsO_4		a	537.6354		-397.46	-364.37		56.5	
CsH_2AsO_3	from $H_2AsO_3^-$	a	257.8412		-232.57	-210.14		58.2	
CsH_2AsO_4	from $H_2AsO_4^-$	a	273.8406		-279.12	-249.83		60.	
Cs_2HAsO_4	from $HAsO_4^{2-}$	a	405.7380		-340.08	-310.40		63.2	
Cs_2AsO_3F		a	407.7290			-385.17			
$CsHAsO_3F$	from $HAsO_3F^-$	a	275.8316			-323.39			
$CsSbO_2$		a	286.6542			-151.11			
$Cs_2Sb_2S_4$		a	637.5668		-175.9	-163.4		51.1	
$CsBiCl_4$		a	483.6974			-184.9			
Cs_3BiCl_6		a	820.4142			-387.88			
$CsBiBr_4$		a	661.5214			-160.0			
$CsBiI_4$		a	849.5030			-119.7			
CsC_8		c	228.9950		-14.8				
CsC_{10}		c	253.0174		-11.9				
CsC_{24}		c	421.1742		-10.9				
CsC_{36}		c	565.3086		-8.5				
CsC_{48}		c	709.4430		-5.6				
CsC_{60}		c	853.5774		-2.5				
CsC_{72}		c	997.7118		0.8				
Cs_2CO_3		c	325.8202	-271.498	-272.4	-252.0	6.149	48.87	29.60
	G-H-S constraint has been relaxed; see Introduction								
		a	325.8202		-285.30	-265.75		50.0	
$Cs_2CO_3 \cdot 3H_2O$		c	379.8664		-489.5				
$Cs_2C_2O_4$	oxalate	c	353.8308				7.45	56.92	
		a	353.8308		-320.7	-300.7		74.5	
	in 800 H_2O		353.8308		-334.2				
$CsHC_2$	cesium acetylide	c	157.9358		18.81				
$HCOOCs$	from $HCOO^-$,formate	a	177.9234		-163.44	-153.69		54.	

Table 102. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Cesium

Substance	State	Formula weight	0 K	298.15 K (25 °C)				
Formula and Description			ΔHf°_0 kcal/mol	ΔHf°	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$	S° cal/deg mol	C°_p
$CsHCO_3$	c	193.9228		-230.9				
from HCO_3^-	a	193.9228		-227.12	-210.05		53.6	
$CsHC_2O_4$ from $HC_2O_4^-$	a	221.9334		-257.3	-236.72		67.5	
CH_3COOCs acetate	a	191.9506		-177.89	-158.08		52.5	
$C_2H_5OCs \cdot C_2H_5OH$	c	224.0370		-173.8				
$5Cs_2CO_3 \cdot 2CsHCO_3 \cdot 10H_2O$	c	2197.1006		-2548.9				
$5Cs_2CO_3 \cdot 2CsHCO_3 \cdot 17.5H_2O$	c	2332.2161		-3095.9				
CCl_3COOCs trichloroacetate	au	295.2856		-185.1				
$CH_2ClCOOCs$ chloroacetate	au	226.3956		-181.54				
$CHCl_2COOCs$ dichloroacetate	au	260.8406		-184.1				
CsCN	c	158.9233				4.330	33.40	15.70
	a	158.9233		-25.7	-28.6		54.3	
CsCNO	a	174.9227		-96.6	-93.1		57.3	
NH_2CH_2COOCs glycinate	a	206.9653		-174.01	-145.07		60.3	
CsCNS thiocyanate	a	190.9873		-43.46	-47.64		66.3	
$NH_2C_2H_4SO_3Cs$ from $NH_2C_2H_4SO_3^-$	a	257.0447		-233.65	-191.55		79.6	
Cs_2SiF_6	a	407.8872		-694.5	-665.3		92.8	
Cs_2GeCl_6	c	551.1188		-357.60				
Cs_2SnCl_6	c	597.2188		-382.0				
	au	597.2188		-355.4				
$CsHPbO_2$ from $HPbO_2^-$	a	373.1122			-150.69			
$CsBO_2$	c	175.7152	-231.63	-232.4	-218.7	3.434	24.94	19.26
	g	175.7152	-167.35	-168.1	-169.4	3.46	75.12	14.20
	a	175.7152		-246.33	-232.06		22.9	
$Cs_2B_4O_7$	a	421.0506			-762.2			
$CsBH_4$	a	147.7484		-50.22	-42.48		58.2	
$CsB(OH)_4$ from $B(OH)_4^-$	a	211.7460		-382.96	-345.44		56.3	
$CsHB_4O_7$ from $HB_4O_7^-$	a	289.1532			-711.6			
$CsBF_4$	c	219.7100		-451.2				
	a	219.7100		-438.1	-425.2		75.	
$CsBF_2(OH)_2$ from $BF_2(OH)_2^-$	a	215.7280			-390.3			
$CsBF_3OH$ from BF_3OH^-	a	217.7190		-426.7	-407.9		72.	
$CsBCl_4$	c	285.5284		-225.1	-197.6		36.1	
$CsB(ClO_4)_4$	c	541.5188		-188.9				
$CsAlO_2$	a	191.8857		-281.3	-266.6		27.	
$CsAlH_4$	c	163.9189		-42.0				
$CsAl(OH)_4$ from $Al(OH)_4^-$	a	227.9165		-417.9	-380.0		60.	
Cs_3AlF_6	au	539.6881		-788.1				
$CsAl(SO_4)_2$	a	352.0101		-623.4	-541.7		-35.5	
$CsAl(SO_4)_2 \cdot 12H_2O$	c	568.1949	-1431.25	-1456.7	-1235.2	24.62	163.98	146.9
Cs_3GaO_3	a	516.4344			-357.			
CsH_2GaO_3 from $H_2GaO_3^-$	a	252.6396			-247.8			
Cs_2HGaO_3 from $HGaO_3^{2-}$	a	384.5370			-304.			
$CsGaBr_4$	a	522.2414		-219.9	-201.3		40.4	
Cs_2ZnO_2	a	363.1796			-231.43			
$CsHZnO_2$ from $HZnO_2^-$	a	231.2822			-179.05			

Table 102. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Cesium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf_0° kcal/mol	ΔHf°	ΔGf° kcal/mol	$H_{298}^\circ - H_0^\circ$	S° cal/deg mol	C_p°
$CsZn(OH)_3$ from $Zn(OH)_3^-$	a	249.2976			-235.74			
$Cs_2Zn(OH)_4$ from $Zn(OH)_4^{2-}$	a	399.2104			-344.81			
$CsZnCl_3$	a	304.6344			-199.0			
Cs_2ZnCl_4	c	472.9928		-327.20				
	a	472.9928			-298.8			
$CsZnBr_3$	a	438.0024			-177.1			
Cs_2ZnBr_4	c	650.8168		-267.49				
$CsZnI_3$	a	578.9886			-139.5			
Cs_2ZnI_4	c	838.7984		-220.57				
	a	838.7984			-220.9			
$CsCl \cdot ZnSO_4$	c	329.7900		-349.0				
$Cs_2Zn(C_2O_4)_2$ from $Zn(C_2O_4)_2^{2-}$	a	507.2208		-554.2	-507.1		95.	
$Cs_2Zn(CN)_4$	a	435.2524		-41.7	-32.8		118.	
$Cs_2Zn(CNS)_4$	a	563.5084			-87.9			
Cs_2CdO_2	a	410.2096			-207.6			
$CsHCdO_2$ from $HCdO_2^-$	a	278.3122			-156.7			
$CsCd(OH)_3$ from $Cd(OH)_3^-$	a	296.3276			-213.4			
$Cs_2Cd(OH)_4$ from $Cd(OH)_4^{2-}$	a	446.2404			-320.9			
$CsCdCl_3$	a	351.6644		-195.8	-186.2		80.3	
$CsCdBr_3$	a	485.0324			-167.2			
$CsCdI_3$	a	626.0186			-131.8			
Cs_2CdI_4	a	885.8284		-205.2	-215.1		142.	
$CsCd(N_3)_3$	a	371.5657			157.0			
$Cs_2Cd(N_3)_4$	a	546.2912			169.9			
$Cs_2Cd(C_2O_4)_2$ from $Cd(C_2O_4)_2^{2-}$	a	554.2508			-488.2			
$CsCd(CN)_3$	a	323.3591			15.0			
$Cs_2Cd(CN)_4$	a	482.2824		-21.2	-18.3		141.	
$CsCd(CNS)_3$	a	419.5511			-24.5			
$CsHgCl_3$	a	439.8544		-154.6	-143.7		82.	
Cs_2HgCl_4	a	608.2128		-255.9	-246.4		134.	
$CsHgBr_3$	a	573.2224		-131.8	-131.8		94.	
Cs_2HgBr_4	a	786.0368		-226.5	-228.3		138.	
$CsHgI_3$	a	714.2086		-98.2	-105.3		104.	
Cs_2HgI_4	a	974.0184		-179.7	-190.2		150.	
$CsHg(CN)_3$	a	411.5491		33.2	40.9		85.6	
$Cs_2Hg(CN)_4$	a	570.4724		2.3	8.2		137.	
$CsHg(CNS)_3$	a	507.7411			8.7			
$Cs_2Hg(CNS)_4$	a	698.7284		-45.5	-41.3		173.	
Cs_2CuO_2	a	361.3496			-183.5			
$CsHCuO_2$	a	229.4522			-131.6			
$CsCuCl_2$	a	267.3514			-127.2			
$CsCuCl_3$	c	302.8044	-167.29	-167.0	-149.9	6.617	51.00	30.55
Cs_2CuCl_3	a	435.7098			-230.			
Cs_2CuCl_4	c	471.1628		-271.7				
$Cs_2CuCl_4 \cdot 2H_2O$	c	507.1936		-412.8				
Cs_3CuCl_5	c	639.5712		-378.7				

Table 102. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Cesium

Substance Formula and Description	State	Formula weight	0 K ΔHf_0° kcal/mol	298.15 K (25 °C) ΔHf° kcal/mol	ΔGf° kcal/mol	$H_{298}^\circ - H_0^\circ$	S° cal/deg mol	C_p°
$Cs_2Cu(C_2O_4)_2$ from $Cu(C_2O_4)_2^{2-}$	a	505.3908		-504.0	-458.9		99.	
$CsCu(CN)_2$	a	248.4812			-8.2			
$Cs_2Cu(CN)_3$	a	407.4045			-43.1			
$Cs_3Cu(CN)_4$	a	566.3278			-74.0			
$Cs_3Cu(CNS)_4$	a	694.5838		-106.7	-122.4		249.	
$CsAgCl_2$	a	311.6814		-120.3	-121.3		87.1	
$CsAgBr_2$	a	400.5934			-111.0			
Cs_2AgBr_3	a	613.4078			-207.6			
$CsAgI_2$	a	494.5842			-90.6			
Cs_2AgI_3	a	754.3940		-167.0	-176.4		124.1	
Cs_3AgI_4	a	1014.2038			-259.5			
$CsAg(CN)_2$	a	292.8112		2.9	3.2		78.	
$CsAg(SCN)_2$	a	356.9392			-18.4			
$Cs_2Ag(SCN)_3$	a	547.9265			-67.7			
$Cs_3Ag(SCN)_4$	a	738.9138			-115.7			
$CsAuCl_2$	a	400.7784			-105.92			
$CsAuCl_4$	a	471.6844		-138.7	-126.01		95.6	
$CsAuBr_2$	a	489.6904		-92.4	-97.28		84.3	
$CsAuBr_4$	a	649.5084		-107.5	-109.8		112.1	
$CsAu(CN)_2$	a	381.9082		-3.8	-1.5		73.	
$CsAu(SCN)_2$	a	446.0362			-9.6			
$CsAu(SCN)_4$	a	562.2000			64.4			
$CsNiCl_3$	c	297.9744		-187.9				
Cs_3NiCl_5	c	634.6912		-392.0				
$Cs_2Ni(CN)_4$	a	428.5924		-35.6	-26.8		116.	
$CsCoCl_3$	c	298.1976		-190.2				
Cs_2CoCl_4	c	466.5560		-296.9				
Cs_3CoCl_5	c	634.9144		-403.3				
$Cs_2Co(C_2O_4)_2$ from $Co(C_2O_4)_2^{2-}$	a	500.7840		-532.0	-484.4		90.	
$Cs_3Co(CN)_6$	a	613.7568					151.0	
$CsFeCl_3$	c	295.1114		-197.0				
Cs_2FeCl_4	c	463.4698		-301.0				
Cs_3FeCl_5	c	631.8282		-407.2				
$CsFe(SO_4)_2$	a	380.8756			-434.2			
$Cs_3Fe(CN)_6$	a	610.6706		-50.9	-35.1		160.0	
$Cs_4Fe(CN)_6$	a	743.5760		-138.0	-113.07		149.9	
$Cs_3FeCO(CN)_5$ from $FeCO(CN)_5^{3-}$	a	612.6633		-139.1				
$CsH_3Fe(CN)_6$ from $H_3Fe(CN)_6^-$	a	347.8838		47.2				
$Cs_2H_2Fe(CN)_6$ from $H_2Fe(CN)_6^{2-}$	a	479.7812		-14.6	17.79		116.	
$Cs_3HFe(CN)_6$ from $HFe(CN)_6^{3-}$	a	611.6786		-76.3	-48.97		137.	
$CsH_2FeCO(CN)_5$ from $H_2FeCO(CN)_5^-$	a	348.8685		-15.4				
$Cs_2HFeCO(CN)_5$ from $HFeCO(CN)_5^{2-}$	a	480.7659		-77.5				
$CsPdCl_3$	a	345.6644			-135.8			

Table 102 Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Cesium

Substance: Formula and Description	State	Formula weight	0 K ΔHf_0° kcal/mol	298.15 K (25 °C) ΔHf° kcal/mol	ΔGf° kcal/mol	$H_{298}^\circ - H_0^\circ$ kcal/mol	S° cal/deg mol	C_p° cal/deg mol
Cs_2PdCl_4	a	514.0228		-255.0	-239.2		104.	
Cs_2PdCl_6	a	584.9288			-242.4			
$CsPdBr_3$	a	479.0324			-118.6			
Cs_2PdBr_4	a	691.8468		-215.5	-215.6		123.	
Cs_2PdBr_6	a	851.6648			-219.7			
Cs_2PdI_4	a	879.8284			-177.6			
Cs_2PdI_6	a	1133.6372			-180.3			
$Cs_2Pd(NO_2)_4$ from $Pd(NO_2)_4^{2-}$	a	556.2328			-155.9			
$Cs_2Pd(CN)_4$	a	476.2824			10.4			
$Cs_2Pd(CNS)_4$	a	604.5384			-41.5			
Cs_3RhCl_6	au	714.3392		-388.0				
$CsRuO_4$	a	297.9730			-128.5			
Cs_2RuO_4	a	430.8784			-212.2			
$CsPtCl_3$	a	434.3544			-122.8			
Cs_2PtCl_4	c	602.7128		-257.7				
	a	602.7128		-242.7	-226.0		101.	
Cs_2PtCl_6	a	673.6188		-283.2	-255.0		116.1	
$CsPtBr_3$	a	567.7224			-104.4			
Cs_2PtBr_4	a	780.5368		-211.5	-202.4		93.	
Cs_2PtBr_6	a	940.3548		-236.0	-219.0		103.	
Cs_2PtI_6	a	1222.3272		-174.5	-165.6		104.	
$CsPtNH_3Cl_3$	c	451.3851		-183.8				
from $PtNH_3Cl_3^-$	a	451.3851		-172.6	-142.3		79.	
$CsPtNH_3Cl_5$ from $PtNH_3Cl_5^-$	a	522.2911			-173.2			
$Cs_2Pt(CN)_4$	a	564.9724			30.2			
Cs_2IrCl_6	a	670.7288		-260.				
Cs_3IrCl_6	a	803.6342		-361.				
$CsMnO_4$	a	251.8410		-191.1	-176.7		77.5	
$CsMnCl_3$	c	294.2024		-230.65				
	a	294.2024			-218.0			
Cs_2MnCl_4	c	462.5608		-338.02				
Cs_3MnCl_5	c	630.9192		-442.51				
$Cs_2Mn(C_2O_4)_2$ from $Mn(C_2O_4)_2^{2-}$	a	496.7888		-570.9	-523.7		92.	
$Cs_4Mn(CN)_6$	a	742.6670		-114.				
$CsReO_4$	c	383.1030		-263.8	-240.4		49.0	
	a	383.1030		-249.9	-235.8		79.9	
Cs_2ReCl_6	c	664.7288		-323.				
	a	664.7288		-305.7	-280.5		125.0	
Cs_2CrO_4	c	381.8044		-341.57				
	a	381.8044		-334.06	-313.54		75.60	
in 800 H_2O		381.8044		-334.17				
$Cs_2Cr_2O_7$	c	481.7986	-497.023	-499.24	-456.09	10.671	78.89	55.34
	a	481.7986		-479.7	-450.6		126.2	
$CsHCrO_4$ from $HCrO_4^-$	a	249.9070		-271.6	-252.6		75.8	
Cs_3CrCl_6	c	663.4302		-469.0				
	au	663.4302		-475.3				

Table 102. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Cesium

Substance: Formula and Description	State	Formula weight	0 K	298.15 K (25 °C)				
			ΔHf°_0 kcal/mol	ΔHf°	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$	S° cal/deg mol	C°_p
$Cs_3Cr_2Cl_9$	c	821.7852		-618.4				
Cs_2MoO_4	c	425.7484		-362.0				
	a	425.7484		-362.0	-339.5		70.1	
$Cs_2Mo_2O_7$	c	569.6866		-550.40				
$CsMoF_6$	c	342.8358		-502.7				
Cs_2WO_4	a	513.6584		-380.6				
$Cs_5HW_6O_{21}$ from $HW_6O_{21}^{5-}$	au	2104.6224		-1704.2				
$CsWF_6$	c	430.7458		-539.0				
$CsVO_3$	a	231.8456		-274.0	-257.1		44.	
Cs_3VO_4	a	513.6558			-424.3			
$Cs_4V_2O_7$	a	745.5014			-690.			
CsH_2VO_4 from $H_2VO_4^-$	a	249.8610		-342.3	-313.8		61.	
$CsH_3V_2O_7$ from $H_3V_2O_7^-$	a	349.8092			-515.3			
Cs_2HVO_4 from HVO_4^{2-}	a	381.7584		-400.5	-372.6		68.	
$Cs_3HV_2O_7$ from $HV_2O_7^{3-}$	a	613.6040			-637.8			
$Cs_4H_2V_{10}O_{28}$ from $H_2V_{10}O_{28}^{4-}$	a	1491.0408			-2125.			
$Cs_5HV_{10}O_{28}$ from $HV_{10}O_{28}^{5-}$	a	1622.9382		-2387.	-2190.		212.	
Cs_3VCl_6	c	662.3762		-477.2				
$Cs_3V_2Cl_9$	c	819.6772		-632.1				
$Cs_2VO(C_2O_4)_2$ from $(VO(C_2O_4)_2)^{2-}$	a	508.7922			-555.2			
$CsNbO_3$	c	273.8096			-303.7			
	a	273.8096			-292.6			
$CsNbCl_6$	c	438.5294		-319.7				
$CsNb_2OCl_9$	c	653.7938		-533.0				
Cs_2NbOCl_5	c	551.9812		-438.5				
$CsTaF_6$	a	427.8438			-279.0			
Cs_2TaF_7	a	579.7476			-419.8			
$CsTaCl_6$	c	526.5714		-339.3				
$CsTiCl_3$	c	287.1644		-250.4				
Cs_2TiCl_4	c	455.5228		-361.4				
Cs_2TiCl_6	c	526.4288		-432.5				
$CsTiBr_3$	c	420.5324		-209.7				
Cs_2TiBr_6	c	793.1648		-369.0				
Cs_3TiBr_6	c	926.0702		-436.5				
$Cs_3Ti_2Br_9$	c	1213.6972		-582.7				
Cs_2ZrCl_6	c	569.7488		-461.				
Cs_2ZrBr_6	c	836.4548		-403.4				
$Cs_2ZrO(SO_4)_2$ from $ZrO(SO_4)_2^{2-}$	au	565.1534		-753.6				
Cs_2HfCl_6	c	657.0188		-471.				
$CsY(Fe(CN)_6)\cdot 2H_2O$	c	469.7956			-200.4			
$CsLuCl_4$	g	449.6874		-268.				
$CsGd(Fe(CN)_6)$	c	502.1098			-76.			
$CsCe(Fe(CN)_6)\cdot 2H_2O$	c	521.0106			-193.1			
Cs_2UO_4	c	567.8374	-459.01	-461.0	-431.7	7.365	52.50	36.51
$Cs_2U_2O_7$	c	853.8646		-770.0				

Table 102. Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity
Cesium

Substance Formula and Description	State	Formula weight	0 K ΔHf°_0 kcal/mol	298.15 K (25 °C) ΔHf° kcal/mol	ΔGf° kcal/mol	$H^\circ_{298}-H^\circ_0$ kcal/mol	S° cal/deg mol	C°_p cal/deg mol
$CsUF_6$	c	484.9248		-654.8				
$Cs(UO_2)_2F_5$	c	767.9530		-947.4				
$Cs_3UO_2F_5$	c	763.7360		-825.7				
$Cs_5(UO_2)_2F_9$	c	1375.5682		-1517.5				
$CsUCl_5$	c	548.1994		-363.1				
$CsUCl_6$	c	583.6524		-376.5				
CsU_2Cl_9	c	928.0404		-606.3				
Cs_2UCl_6	c	716.5578		-481.6				
Cs_2UBr_6	c	983.2638		-408.8				
Cs_2PaCl_6	c	709.5647		-484.8				
Cs_2ThCl_6	c	710.5669		-513.8				
$Cs_2ThCl_6 \cdot 8H_2O$	c	854.6901		-1086.6				
Cs_4ThCl_8	c	1047.2837		-724.8				
Cs_2BeO_2	a	306.8218		-312.5	-292.6		26.	
$Cs_2MgP_2O_7$ from $MgP_2O_7^{2-}$	a	464.0662		-775.0	-716.8		45.	
$Cs_2Mg(C_2O_4)_2$ from $Mg(C_2O_4)_2^{2-}$	a	466.1628			-576.5			
$CsMgFe(CN)_6$ from $MgFe(CN)_6^-$	a	369.1618			-8.0			
$Cs_2MgFe(CN)_6$ from $MgFe(CN)_6^{2-}$	a	502.0772			-87.4			
$CsCaCl_3$	c	279.3444		-304.8				
$CsCaFe(CN)_6$ from $CaFe(CN)_6^-$	a	384.9398			-31.7			
$Cs_2CaFe(CN)_6$ from $CaFe(CN)_6^{2-}$	a	517.8452			-111.0			
$CsSrFe(CN)_6$ from $SrFe(CN)_6^-$	a	432.4798			-33.1			
$CsNO_2 \cdot 2Ba(NO_2)_2$	c	637.6129		-426.7				
$Ba(NO_2)_2 \cdot 2CsNO_2$	c	587.1728		-337.2				
LiCsCll	c	302.2038		-180.4				
$CsNaCl_2$	g	226.8012		-152.				
$CsNaBr_2$	g	315.7132		-115.				
CsNaCll	c	318.2526		-180.9				
$NaCs_2CrCl_6$	c	553.5146		-464.0				
	au	553.5146		-471.0				
Cs_2NaYCl_6	c	590.4236		-574.8				
$Cs_2NaLuCl_6$	c	676.4886		-562.3				
$Cs_2NaErCl_6$	c	668.7786		-572.0				
$Cs_2NaDyCl_6$	c	664.0186		-570.0				
$Cs_2NaGdCl_6$	c	658.7686		-567.9				
$Cs_2NaNdCl_6$	c	645.7586		-570.0				
$Cs_2NaCeCl_6$	c	641.6386		-569.3				
$Cs_2NaLaCl_6$	c	640.4286		-569.7				
$CsKCl_2$	g	242.9134		-124.				
$CsKBr_2$	g	331.8254		-122.				
CsKCll	c	334.3658		-186.5				

Enthalpy and Gibbs Energy of Formation; Entropy and Heat Capacity

Table 103 **Francium**

Substance			0 K	298.15 K (25 °C)				
Formula and Description	State	Formula weight	ΔHf_0° kcal/mol	ΔHf°	ΔGf° kcal/mol	$H_{298}^\circ - H_0^\circ$	S° cal/deg mol	C_p°
Fr	cs	223.0000	0	0	0		22.8	
FrF	c	241.9984				2.80	26.0	12.6
FrCl	c	258.4530				3.10	27.0	12.80
FrBr	c	302.9040				3.30	31.0	12.90
FrI	c	349.9045				3.40	33.0	12.90

APPENDIX

Revised Values for Technical Notes 270-3, 270-4, 270-5, 270-6, and 270-7

These revised values include additions and updates as well as errata. The same conventions are used as in the Technical Notes. FW refers to the Formula Weight. ΔHf°_0 and ΔHf°, ΔGf° and $H^\circ_{298}-H^\circ_0$ at 298.15 K (25°C) are in kcal/mol. S° and C°_p are in cal/deg mol.

TN	Page		
3	12	$^1H(g)$	ΔGf° = 48.581
3	22	HF(liq)	ΔHf° = -71.65
			S° = 18.02 + x
			x denotes undetermined residual entropy
3	24	$Cl_3^-(aq)$, std. state, m = 1	ΔGf° = -28.8
3	25	$ClO_2(aq)$, std. state, m = 1	ΔGf° = 28.7
			S° = 39.4
		$ClO_3^-(aq)$, std. state, m = 1	ΔHf° = -24.85
			ΔGf° = -1.92
			S° = 38.8
3	26	HCl(aq) in 150 H_2O	ΔHf° = -39.710
3	28	$HClO_3(aq)$, std. state, m = 1	ΔHf° = -24.85
			ΔGf° = -1.92
			S° = 38.8
3	32	$BrO_3^-(aq)$, std. state, m = 1	ΔHf° = -16.03
			ΔGf° = 4.43
			S° = 38.65
		Add $BrO_4^-(aq)$, std. state, m = 1	ΔHf° = 3.1
			ΔGf° = 28.2
			S° = 47.7
		HBr(g)	ΔHf°_0 = -6.826
3	34	$HBrO_3(aq)$, std. state, m = 1	ΔHf° = -16.03
			ΔGf° = 4.43
			S° = 38.65
		$HBrO_3(aq)$ in 400 H_2O	ΔHf° = -15.98
3	37	$IO_4^-(aq)$	add "std. state, m = 1"
			ΔHf° = -36.2
			ΔGf° = -14.0
			S° = 53.
3	40	$H_3IO_6^{2-}(aq)$	ΔHf° = -180.7

Revised Values (cont'd.)

TN	Page		
3	40	$H_4IO_6^-$(aq)	$\Delta Hf°$ = -181.5
		H_5IO_6(aq)	$\Delta Hf°$ = -181.1
3	41	I_2Cl^-(aq), std. state, m = 1	$\Delta Hf°$ = -32.9
			$\Delta Gf°$ = -27.8
			$S°$ = 52.9
3	43	S(g)	$\Delta Gf°$ = 56.951
			$S°$ = 40.084
3	47	$S_2O_3^{2-}$(aq)	add "std. state, m = 1"
			$\Delta Gf°$ = -124.9
			$S°$ = 16.
		$S_2O_8^{2-}$(aq), std. state, m = 1	$\Delta Hf°$ = -321.4
			$\Delta Gf°$ = -266.5
			$S°$ = 58.4
		$S_4O_6^{2-}$(aq)	add "std. state, m = 1"
			$\Delta Hf°$ = -292.6
			$\Delta Gf°$ = -248.7
			$S°$ = 61.5
			$C_p°$ = -16.2
3	47	H_2S(aq), std. state, m = 1	add "undissoc."
3	48	H_2S^+(g)	$\Delta Hf_0°$ = 237.0
		H_2S_2(liq)	$\Delta Hf°$ = -4.33
		H_2S_2(g)	$\Delta Hf°$ = 3.71
		H_2S_3(liq)	$\Delta Hf°$ = -3.57
		H_2S_3(g)	$\Delta Hf°$ = 7.29
		H_2S_4(liq)	$\Delta Hf°$ = -2.99
		H_2S_4(g)	$\Delta Hf°$ = 10.57
		H_2S_5(liq)	$\Delta Hf°$ = -2.49
		H_2S_5(g)	$\Delta Hf°$ = 13.84
		H_2S_6(liq)	$\Delta Hf°$ = -1.99

Revised Values (cont'd.)

TN	Page		
3	51	H_2SO_4(aq) in 1,500 H_2O	$\Delta Hf°$ = -213.557
		2,000 H_2O	$\Delta Hf°$ = -213.785
		3,000 H_2O	$\Delta Hf°$ = -214.135
		4,000 H_2O	$\Delta Hf°$ = -214.415
		5,000 H_2O	$\Delta Hf°$ = -214.620
		7,000 H_2O	$\Delta Hf°$ = -214.945
		10,000 H_2O	$\Delta Hf°$ = -215.285
		15,000 H_2O	$\Delta Hf°$ = -215.665
		20,000 H_2O	$\Delta Hf°$ = -215.900
3	53	$H_2S_2O_4$(aq), std. state, m = 1	add "undissoc."
3	54	$H_2S_2O_8$(aq), std. state, m = 1	$\Delta Hf°$ = -321.4
			$\Delta Gf°$ = -266.5
			$S°$ = 58.4
		SO_3F^-(aq)	add "std. state, m = 1"
			$\Delta Hf°$ = -208.3
		HSO_3F(liq)	$\Delta Hf°$ = -190.0
		Add HSO_3F(aq), std. state, m = 1	$\Delta Hf°$ = -208.3
		HSO_3F(aq)	$\Delta Hf°$ = -207.2
3	56	Se(g)	$H°_{298}-H°_0$ = 1.4815
			$S°$ = 42.21
			$C°_p$ = 4.976
		H_2Se(aq), std. state, m = 1	add "undissoc."
3	57	H_2SeO_4 in 7.85 H_2O	add "(aq)"
		500 H_2O	
		1,200 H_2O	
3	58	TeO_3^{2-}(aq), std. state, m = 1	$\Delta Hf°$ = -130.2
		H_2TeO_3(aq), std. state, m = 1	$\Delta Gf°$ = -113.8
		Add H_2TeO_4(aq) in 100 H_2O	$\Delta Hf°$ = -170.
3	60	PoS(c)	$\Delta Gf°$ = -1.
3	61	N(g)	$\Delta Gf°$ = 108.886
			$S°$ = 36.613
		NO_2^-(aq), std. state, m = 1	$\Delta Gf°$ = -7.7
			$S°$ = 29.4

TN	Page		
3	62	Add $N^2H_3(g)$	FW = 20.0490 ΔHf° = -14.05 ΔGf° = -6.27 S° = 48.72
3	64	$NH_4N_3(aq)$, std. state, m = 1	ΔGf° = 64.2 S° = 52.9
		$HNO_2(aq)$, undissoc.; std. state, m=1	ΔGf° = -12.1 S° = 32.4
3	67	$NH_4NO_2(aq)$, std. state, m = 1	ΔGf° = -26.7 S° = 56.5
3	73	$NH_4Cl_3(aq)$, std. state, m = 1	ΔGf° = -47.8
3	74	$NH_4ClO_3(aq)$, std. state, m = 1	ΔHf° = -56.52 ΔGf° = -20.89 S° = 65.9
3	77	$NH_4BrO_3(aq)$, std. state, m = 1	ΔHf° = -47.70 ΔGf° = -14.54 S° = 65.75
3	79	$NH_4IO_4(aq)$	ΔHf° = -67.9
		$NH_4H_4IO_6(aq)$	ΔHf° = -213.2
		$(NH_4)_2H_3IO_6(aq)$	ΔHf° = -244.0
		$NH_4I_2Cl(aq)$, std. state, m = 1	ΔHf° = -64.6 ΔGf° = -46.8 S° = 80.0
		$NH_4HS(aq)$, std. state, m = 1	add $(NH_4^+ + HS^-)$
3	80	$NH_4HSO_3(aq)$, std. state, m = 1	add $(NH_4^+ + HSO_3^-)$
		$NH_4HSO_4(aq)$, std. state, m = 1	add $(NH_4^+ + HSO_4^-)$
		$NH_4HS_2O_4(aq)$, std. state, m = 1	add $(NH_4^+ + HS_2O_4^-)$
3	81	$(NH_4)_2SO_4(aq)$, std. state, m = 1	ΔGf° = -215.91 S° = 59.0
3	82	$(NH_4)_2S_2O_8(c)$	ΔHf° = -393.9
		(aq), std. state, m = 1	ΔHf° = -384.8 ΔGf° = -304.4 S° = 112.6
		$NH_4SO_3F(aq)$	add std. state, m = 1 ΔHf° = -240.0

Revised Values (cont'd.)

TN	Page		
3	82	NH_4HSe(aq), std. state, m = 1	add (NH_4^+ + HSe^-)
3	83	NH_4HSeO_3(aq), std. state, m = 1	add (NH_4^+ + $HSeO_3^-$)
			S° = 59.4
		NH_4HSeO_4(aq), std. state, m = 1	add (NH_4^+ + $HSeO_4^-$)
		$(NH_4)_2SeO_3$(aq), std. state, m = 1	S° = 57.
		$(NH_4)_2TeO_3$(aq)	ΔHf° = -193.5
3	85	PO(g)	ΔHf°_0 = -6.7
			ΔHf° = -6.8
			ΔGf° = -12.4
			S° = 53.22
			$H^\circ_{298}-H^\circ_0$ = 2.245
			C°_p = 7.59
		Add PO_2(g)	ΔHf°_0 = -66.1
			ΔHf° = -66.9
			ΔGf° = -67.3
			S° = 60.23
			$H^\circ_{298}-H^\circ_0$ = 2.51
			C°_p = 9.45
		PH_3(aq), std. state, m = 1	ΔHf° = -2.27
			ΔGf° = 6.05
			S° = 28.7
		PH_4^+(aq), std. state, m = 1	ΔGf° = 22.0
3	86	$H_2PO_4^-$(aq), std. state, m = 1	ΔGf° = -270.17
		Add H_3PO_4(aq) in 0.5 H_2O	ΔHf° = -303.96
		0.628 H_2O	ΔHf° = -304.16
		0.75 H_2O	ΔHf° = -304.35
3	89	$H_3PO_4 \cdot 0.5H_2O$(c)	ΔHf°_0 = -336.889
			C°_p = 30.12
		PH_4OH(aq), std. state, m = 1	add "undissoc."
			ΔHf° = -70.59
			ΔGf° = -50.64
			S° = 45.4
		$H_4P_2O_7$(aq) in 500 H_2O	should read "in 150 H_2O"
3	91	PN(g)	ΔHf°_0 = 26.5
			ΔHf° = 26.26
			ΔGf° = 20.97

TN	Page		
3	92	$NH_4H_2PO_4$(aq), std. state, m = 1	add (NH_4^+ + $H_2PO_4^-$)
3	93	$(NH_4)_2HPO_3$(aq)	ΔHf° = -294.9
		$(NH_4)_2HPO_4$(aq), std. state, m = 1	add ($2NH_4^+$ + HPO_4^{2-})
3	94	$NH_4H_3P_2O_7$(aq), std. state, m = 1	add (NH_4^+ + $H_3P_2O_7^-$)
		$(NH_4)_2H_2P_2O_7$(aq), std. state, m=1	add ($2NH_4^+$ + $H_2P_2O_7^{2-}$)
		$(NH_4)_3HP_2O_7$(aq), std. state, m=1	add ($3NH_4^+$ + $HP_2O_7^{3-}$)
		NH_4HPO_3F(aq), std. state, m = 1	add (NH_4^+ + HPO_3F^-)
3	95	AsO_2^-(aq), std. state, m = 1	S° = 9.7
3	96	AsF_3(liq)	ΔHf° = -196.3 ΔGf° = -185.04
		AsF_3(g)	ΔHf°_0 = -186.82 ΔHf° = -187.80 ΔGf° = -184.22
3	97	$AsCl_3$(liq)	ΔGf° = -62.0 S° = 51.7
		$AsCl_3$(g)	ΔHf°_0 = -62.12 ΔHf° = -62.5 ΔGf° = -59.5
		$NH_4H_2AsO_3$(aq), std. state, m = 1	add (NH_4^+ + $H_2AsO_3^-$)
		$NH_4H_2AsO_4$(aq), std. state, m = 1	add (NH_4^+ + $H_2AsO_4^-$)
3	98	$(NH_4)_2HAsO_4$(aq), std. state, m = 1	add ($2NH_4^+$ + $HAsO_4^{2-}$) ΔHf° = -279.96 ΔGf° = -208.76
3	99	Sb_4(g)	ΔGf° = 37.0
3	103	$Bi_6O_6^{6+}$(aq), std. state, m = 1	ΔGf° = -221.8
3	109	H_2CO_3(aq), std. state, m = 1	add "undissoc."
3	118	COFCl(g)	FW = 82.4620
		CBr_3(g)	FW = 251.7382
		CBr_3^+(g)	FW = 251.7382
3	122	$CSCl_2$(g)	FW = 114.9812

Revised Values (cont'd.)

TN	Page		
3	125	$CO(NH_2)_2$(c), urea	$\Delta Hf°$ = -79.71 $\Delta Gf°$ = -47.19
3	132	$C_2H_3O_3^-$(aq), glycollate ion, std. state, m = 1	$\Delta Hf°$ = -155.9 FW = 75.0444
3	162	$HO_3CH_2CH_2NH_3NO_3$(c), nitroxyethyl-ammonium nitrate	should be $NO_3CH_2CH_2NH_3NO_3$(c)
3	165	$CH_2(COOH)NH_3Cl$(aq), std. state, m=1	add $(CH_2COOH)NH_3^+ + Cl^-$)
3	171	SiO_2(c,α,quartz)	$\Delta Hf°_0$ = -216.534
		SiO_2(c,α,cristobalite)	$\Delta Hf°_0$ = -216.198 $\Delta Gf°$ = -204.46
3	172	SiO_2(c,α,tridymite)	$\Delta Hf°_0$ = -216.120
		SiH_4(g)	$\Delta Hf°_0$ = 10.5
3	175	$NH_4HSi(OH)_6$(aq), std. state, m = 1	add $(NH_4^+ + HSi(OH)_6^-)$
3	176	$(CH_3)_4Si$(g)	$\Delta Gf°$ = -23.918
		$SiF_4 \cdot 2N(CH_3)$(c)	should be $SiF_4 \cdot 2N(CH_3)_3$(c)
3	177	GeO(c,brown)	$\Delta Hf°$ = -62.6
		GeH_4(g)	$\Delta Hf°_0$ = 24.29
		GeH_4^+(g)	$\Delta Hf°_0$ = 266. $\Delta Hf°$ = 264.9
3	178	GeCl(g)	$\Delta Hf°_0$ = 37. $\Delta Hf°$ = 37.09 $\Delta Gf°$ = 29.7 $S°$ = 59.
3	181	Sn^{2+} in aq HCl	add "std. state, m = 1"
		Sn^{4+} in aq HCl	add "std. state, m = 1"
3	182	SnO(OH)F(aq), std. state, m = 1	add "undissoc." FW = 170.695
		SnOHCl(aq), std. state, m = 1	add "undissoc."
3	183	$SnBr_2$ in aq HBr, std. state, m = 1	add "undissoc."
		SnOHBr(aq), std. state, m = 1	add "undissoc."
3	184	$Sn(SO_4)_2$(aq), std. state, m = 1	add "undissoc."

Revised Values (cont'd.)

TN	Page		
3	185	$(NH_4)_2SnBr_6$(c)	FW = 634.221
3	187	PbO(c) yellow	ΔHf°_0 = -51.466 $H^\circ_{298}-H^\circ_0$ = 2.207
3	188	$PbClO_3^+$(aq), std. state, m = 1	ΔGf° = -7.32
		$Pb(ClO_3)_2$(aq), undissoc.; std. state, m = 1	ΔGf° = -8.84
3	189	PbOHCl(c)	ΔGf° = -93.5
		$3Pb(OH)_2 \cdot PbCl_2$(c)	ΔGf° = -402.2
		$PbBrO_3^+$(aq), std. state, m = 1	ΔGf° = -3.91
		$Pb(BrO)_3)_2$(c)	ΔGf° = -3.92
		$Pb(BrO_3)_2$(aq), std. state, m = 1	ΔHf° = -32.54 ΔGf° = +3.03 S° = 79.8
3	191	Add $PbTeO_3 \cdot 0.667H_2O$(amorp)	FW = 394.804 ΔHf° = -185.5
3	193	$PbSO_4 \cdot 4NH_3$(c)	FW = 371.374
		PbC_2O_4(aq)	add "std. state, m = 1" ΔHf° = -197.6 ΔGf° = -166.9
3	196	B(amorp)	S° = 1.56 + x x denotes undetermined residual entropy
3	198	$H_2B_4O_7$(aq), std. state, m = 1	add "undissoc."
3	200	Add BCl_3(c)	ΔHf°_0 = -105.40
		BCl_3(liq)	omit ΔHf°_0
3	201	$(NH_3)_2 \cdot B_2H_6$(c)	FW = 61.7314
		$NH_3 \cdot B_3H_7$(c)	FW = 56.5197
3	202	$NH_4B_5O_8 \cdot 4H_2O$(c)	FW = 272.1505
3	208	Al_2O_3(c)	the third and fourth lines should read:
		ρ(c)	ΔHf° = -391.
		κ(c)	ΔHf° = -397. (delete value for ΔGf°)
		AlH_3(c)	FW = 30.0055
		AlF_2^+(aq), std. state, m = 1	FW = 64.9783

Revised Values (cont'd.)

TN	Page		
3	215	$AlPO_4$(c,berlinite)	$\Delta Gf°$ = -386.7
3	216	$Al_6Si_2O_{13}$(c) mullite	$\Delta Hf°$ =-1632.8 $\Delta Gf°$ =-1541.2 $S°$ = 61.
		$2AlI_3 \cdot PbI_2$(c)	should be $2AlI_3 \cdot 3PbI_2$(c)
3	218	$HGaO_2^{2-}$(aq), std. state, m = 1	change to $HGaO_3^{2-}$ FW = 118.726
3	222	$2GaCl_3 \cdot C_2H_5Cl$	FW = 416.673
3	223	InO(g)	$\Delta Hf°_0$ = 93.
3	224	InS(g)	$\Delta Hf°$ = 57. (delete value of $H°_{298}-H°_0$)
		In_2S(g)	$\Delta Gf°$ = 2.9
3	228	TlCl(aq), undissoc.; std. state, m = 1	$\Delta Hf°$ = -40.10
3	229	$TlCl_3$(aq), std. state, m = 1	add (Tl^{3+} + $3Cl^-$)
		$TlClO_3$(aq), std. state, m = 1	$\Delta Hf°$ = -23.57 $\Delta Gf°$ = -9.66
		$TlClO_3$(aq), undissoc.; std. state, m = 1	$\Delta Gf°$ = -10.34
		$TlBr_3$(aq), std. state, m = 1	add (Tl^{3+} + $3Br^-$)
3	230	$TlBrO_3$(c)	$\Delta Hf°$ = -28.6 $\Delta Gf°$ = -8.7 $S°$ = 40.2
		$TlBrO_3$(aq), std. state, m = 1	$\Delta Hf°$ = -14.75 $\Delta Gf°$ = -3.31 $S°$ = 68.6
3	231	Tl_2Se(c)	FW = 487.70
		$Te(SeO_3)_3$(c)	should be $Tl_2(SeO_3)_3$(c)
		$TlOCH_3$(c)	$\Delta Hf°$ = -49.1
3	233	$ZnO \cdot 2ZnO_2 \cdot 2H_2O$(c)	$\Delta Hf°$ = -368.6
		$ZnO \cdot 2ZnO_2 \cdot 3H_2O$(c)	$\Delta Hf°$ = -438.6
		$ZnOH^+$(aq), std. state, m = 1	FW = 82.377

TN	Page		
3	234	$ZnF_2(c)$	ΔHf°_0 = -182.07 ΔGf° = -170.5 $H^\circ_{298}-H^\circ_0$ = 2.827
3	237	$ZnI_2(aq)$, std. state, m = 1	S° = 26.4
		$ZnSO_4(c)$	ΔGf° = -208.3 S° = 26.4 C°_p = 23.7
3	239	$ZnSe(c)$	ΔHf° = -39. ΔGf° = -39.
3	242	$Zn(NO_3)_2 \cdot 6H_2O(c)$	FW = 297.472
3	244	$ZnAs_2(c)$	ΔHf° = -10.0
		$Zn_3As_2(c)$	ΔHf° = -7.7
3	248	$CdO_2^{2-}(aq)$, std. state, m = 1	FW = 144.399
		$HCdO_2^-(aq)$, std. state, m = 1	FW = 145.407
		$CdF_2(aq)$, std. state, m = 1	ΔHf° = -177.14
3	251	$CdI^+(aq)$, std. state, m = 1	FW = 239.304
3	255	$CdNO_2^+(aq)$, std. state, m = 1	ΔGf° = -29.5
4	3	HgI(g)	ΔHf°_0 = 32.9 ΔHf° = 31.64 ΔGf° = 21.14
4	10	$HgCN^+(aq)$, std. state, m = 1	ΔGf° = 55.9
		$Hg(CN)_2(aq)$, undissoc.; std. state, m=1	S° = 39.5
		$Hg(CN)_3^-(aq)$, std. state, m = 1	S° = 53.8
		$Hg(CN)_4^{2-}(aq)$, std. state, m = 1	S° = 73.
		$Hg(CH_3NH_2)_2^{2+}(aq)$, std. state, m = 1	S° = 64.
4	14	$CuCl_2(c)$	C°_p = 17.18
4	15	$CuCl_2(aq)$ in C_2H_5OH	delete (aq)
		$Cu(ClO_3)_2(aq)$ in 1,000 H_2O	ΔHf° = -33.4
4	16	$Cu_2(OH)_3Cl$	should be $CuCl_2 \cdot 3Cu(OH)_2$ FW = 427.110
		$3Cu(OH)_2 \cdot Cu(BrO_3)_2(c)$	ΔGf° = -244.2

Revised Values (cont'd.)

TN	Page		
4	30	$AgF_2(c)$	$\Delta Hf°$ = -86.
4	31	$AgClO_3(c)$	$\Delta Hf°$ = -7.24
			$\Delta Gf°$ = 15.4
			$S°$ = 34
		$AgClO_3(aq)$, std. state, m = 1	$\Delta Hf°$ = 0.38
			$\Delta Gf°$ = 16.51
		$AgBrO_3(c)$	$\Delta Hf°$ = -2.5
			$\Delta Gf°$ = +17.04
			$S°$ = 36.3
		$AgBrO_3(aq)$, std. state, m = 1	$\Delta Hf°$ = 9.20
			$\Delta Gf°$ = 22.86
			$S°$ = 56.02
4	33	$AgNO_2(aq)$, std. state, m = 1	$\Delta Gf°$ = 10.7
			$S°$ = 46.8
4	41	$Au(SCN)_6^{3-}(aq)$, std. state, m = 1	FW = 545.458
4	49	$NiCl_2 \cdot NH_3(c)$	FW = 146.646
		$NiCl_2 \cdot 2NH_3(c)$	FW = 180.708
4	57	$CoBr_2(aq)$ in 1,000 H_2O	$\Delta Hf°$ = -71.6
4	59	$[Co(NH_3)_6]^{3+}(aq)$, std. state, m = 1	$\Delta Gf°$ = -37.6
			$S°$ = 35.
		$[Co(NH_3)_6]N_3^{2+}(aq)$, std. state, m = 1	$\Delta Gf°$ = 42.9
			$S°$ = 60.
4	60	$[Co(NH_3)_4(H_2O)_2]^{3+}(aq)$	$\Delta Hf°$ = -244.2
4	61	$[Co(NH_3)_5NO_2]^{2+}(aq)$, std. state, m=1	$\Delta Gf°$ = -40.1
			$S°$ = 39.
		$[Co(NH_3)_5NO_2](NO_3)_2(c)$	$\Delta Gf°$ = -98.8
			$S°$ = 79.
		(aq), std. state, m = 1	$\Delta Gf°$ = -93.3
			$S°$ = 109.
4	62	$[Co(NH_3)_6](NO_3)_3(c)$	$\Delta Gf°$ = -125.5
			$S°$ = 107.
		(aq), std. state, m = 1	$\Delta Gf°$ = -117.4
			$S°$ = 140.

Revised Values (cont'd.)

TN	Page		
4	63	$[Co(NH_3)_4Cl_2]^+$(aq) cis	$\Delta Hf°$ = -160.5
		trans	$\Delta Hf°$ = -162.3
		$[Co(NH_3)_4Cl_2]Cl$(c) cis	$\Delta Hf°$ = -209.1
		trans	$\Delta Hf°$ = -209.7
		(aq) cis	$\Delta Hf°$ = -200.5
		trans	$\Delta Hf°$ = -202.3
		$[Co(NH_3)_6]Cl_3$(aq), std. state, m = 1	$\Delta Gf°$ = -131.7
			S° = 75.
		$[Co(NH_3)_4(H_2O)_2]Cl_3$(c)	$\Delta Hf°$ = -366.9
		(aq) in 10,000 H_2O	$\Delta Hf°$ = -364.1
4	64	$[Co(NH_3)_6](ClO_4)_3$(c)	$\Delta Gf°$ = -53.0
			S° = 147.
		(aq), std. state, m=1	$\Delta Gf°$ = -43.8
			S° = 166.
4	65	$[Co(NH_3)_6]Br_3$(aq), std. state, m = 1	$\Delta Gf°$ = -112.2
			S° = 94.
4	66	$[Co(NH_3)_6]I_3$(aq), std. state, m = 1	$\Delta Gf°$ = -74.6
			S° = 113.
4	67	$[Co(NH_3)_6]SO_4^+$(aq), std. state, m = 1	$\Delta Gf°$ = -220.2
			S° = 57.
		$[Co(NH_3)_4(NO_2)_2]SO_4$(c)	FW = 315.1200
4	68	$[Co(C_2O_4)_3]^{3-}$(aq)	FW = 322.9992
		$Co(HCO_2)$	should be $Co(HCO_2)_2$
4	70	$[Co(NH_3)_4C_2O_4]^+$(aq)	$\Delta Hf°$ = -298.0
4	88	$FeAl_3$(c)	$\Delta Hf°$ = -26.6
4	90	Pd^{2+}(aq), std. state, m = 1	$\Delta Hf°$ = 35.6
			S° = -44.
		$Pd(OH)_2$(c) precipitated	$\Delta Hf°$ = -94.4
		$Pd(OH)_4$(c) precipitated	$\Delta Hf°$ = -171.1
		$PdCl^+$(aq), std. state, m = 1	$\Delta Hf°$ -9.
			S° = -28.
		$PdCl_2$(c)	$\Delta Hf°$ = -47.5
			omit $\Delta Gf°$ and S°

Revised Values (cont'd.)

TN	Page		
4	90	$PdCl_4^{2-}$(aq), std. state, m = 1; in 1N HCl	ΔHf° = -131.5 S° = 40.
		$PdCl_6^{2-}$(aq), std. state, m = 1; in 1N HCl	omit ΔHf° and S°
		H_2PdCl_4(aq)	ΔHf° = -131.9
4	91	$PdBr_4^{2-}$(aq), std. state, m = 1	ΔHf° = -92.0 S° = 59.
		PdI_2(c)	ΔHf° = -15.1 ΔGf° = -17.1 S° = 43.
		$Pd(NO_2)_4^{2-}$(aq), std. state, m = 1	ΔGf° = -16.3
4	92	$PdCl_2 \cdot 2NH_3$(c)	ΔHf° = -110.
		$PdCl_2 \cdot 4NH_3$(c)	ΔHf° = -164.
		$PdCl_3(C_2H_4)^-$(aq), std. state, m = 1	ΔHf° = -88.5 ΔGf° = -50.3 S° = 42.
		$Pd(CN^+$ (aq)	should be $PdCN^+$ (aq)
		$Pd(CN)_2$(c)	ΔHf° = 49.1
		$PdI_2(CNS)^-$(aq), std. state, m = 1	ΔGf° = 5.7
4	96	Pt^{2+}(aq), std. state, m = 1	ΔGf° = 60.9
		PtCl(c)	ΔHf° = -13.5
		$PtCl_2$(c)	ΔHf° = -29.5
		$PtCl_2$(aq), std. state, m = 1	delete ΔGf°
		$PtCl_2$(aq), undissoc.; std. state, m=1	ΔGf° = -17.5
		$PtCl_3$(c)	ΔHf° = -43.5
4	97	$PtCl_3^-$(aq), std. state, m = 1	ΔGf° = -53.0
		$PtCl_4$(c)	ΔHf° = -55.4
		(aq)	ΔHf° = -75.1
		$PtCl_4 \cdot 5H_2O$(c)	ΔHf° = -418.9
		$PtCl_4^{2-}$(aq), std. state, m = 1	ΔHf° = -119.3 ΔGf° = -86.4 S° = 37.

Revised Values (cont'd.)

TN	Page		
4	97	$PtCl_6^{2-}$(aq), std. state, m = 1	ΔHf° = -159.7
			ΔGf° = -115.4
			S° = 52.5
		$HPtCl_5 \cdot 2H_2O$(c)	ΔHf° = -242.0
		H_2PtCl_6(aq), std. state, m = 1	ΔHf° = -159.7
			ΔGf° = -115.4
			S° = 52.5
		H_2PtCl_6(aq) in 600 H_2O	ΔHf° = -161.6
		$H_2PtCl_6 \cdot 6H_2O$(c)	ΔHf° = -566.7
		$[PtCl_2(OH)_2]^{2-}$(aq), std. state, m = 1	ΔGf° = -112.5
		$[PtCl_2(H_2O)(OH)]^-$(aq), std. state, m=1	ΔGf° = -123.8
		$[PtCl_2(H_2O)_2]$(aq), undissoc.; std. state, m = 1	ΔGf° = -130.9
		$[PtCl_3(OH)]^{2-}$(aq), std. state, m = 1	ΔGf° = -100.0
		$[PtCl_3(H_2O)]^-$(aq), std. state, m = 1	ΔGf° = -109.6
4	98	PtBr(c)	ΔHf° = -9.2
		$PtBr_2$(c)	ΔHf° = -19.6
		$PtBr_3$(c)	ΔHf° = -28.9
		$PtBr_3^-$(aq), std. state, m = 1	ΔGf° = -34.6
		$PtBr_4$(c)	ΔHf° = -37.4
		$PtBr_4$(aq) in 7,000 H_2O	ΔHf° = -47.3
		$PtBr_4^{2-}$(aq)	add "std. state, m = 1"
			ΔHf° = -88.0
			ΔGf° = -62.8
			S° = 29.
		$PtBr_6^{2-}$(aq)	add "std. state, m = 1"
			ΔHf° = -112.5
			ΔGf° = -79.4
			S° = 29.
		H_2PtBr_6(aq)	ΔHf° = -112.5
		$H_2PtBr_6 \cdot 9H_2O$(c)	ΔHf° = -730.1

Revised Values (cont'd.)

TN	Page		
4	98	PtI_6^{2-}(aq)	add "std. state, m = 1"
			$\Delta Hf°$ = -51.0
			$\Delta Gf°$ = -26.0
			S° = 40.
		H_2PtI_6(aq)	delete $\Delta Hf°$
		PtS(c)	$\Delta Hf°_0$ = -19.020
			$H°_{298}-H°_0$ = 1.946
4	99	$PtTe_2$(c)	$H°_{298}-H°_0$ = 3.984
			S° = 28.92
			$C°_p$ = 18.03
		$Pt(NH_3)_3^{2+}$(aq), std. state, m = 1	$\Delta Gf°$ = 2.1
		$Pt(NH_3)_4^{2+}$(aq), std. state, m = 1	$\Delta Hf°$ = -86.5
			$\Delta Gf°$ = -12.7
			S° = 10.
		$[Pt(NH_3(OH)_2]$ cis, undissoc.; std. state, m = 1	should read $Pt(NH_3)_2(OH)_2]$
			$\Delta Gf°$ = -79.9
		$[Pt(NH_3)_2(OH)H_2O]^+$(aq), cis, std. state, m = 1	$\Delta Gf°$ = -89.9
		$[Pt(NH_3)_2(H_2O)_2]^{2+}$(aq), cis, std. state, m = 1	$\Delta Gf°$ = -97.4
		$[Pt(NH_3)_4(OH)_2]$(aq)	add in 400 H_2O
			$\Delta Hf°$ = -197.1
		$[Pt(NH_3)_4(NO_3)_2]$(c)	$\Delta Hf°$ = -200.0
		$[Pt(NH_3)Cl_3]^-$(aq), std. state, m = 1	$\Delta Hf°$ = -110.9
			$\Delta Gf°$ = -72.5
			S° = 47.
		$[Pt(NH_3)Cl_5]^-$(aq), std. state, m = 1	$\Delta Gf°$ = -103.4
		$[Pt(NH_3)_2Cl_2$(c) cis	$\Delta Hf°$ = -111.7
		trans	$\Delta Hf°$ = -114.8
4	100	$[Pt(NH_3)_2Cl_2]$(aq) cis, undissoc.; std. state, m = 1	$\Delta Gf°$ = -54.7
		trans, undissoc.; std. state, m = 1	$\Delta Gf°$ = -53.3
		$NH_4[Pt(NH_3)Cl_3]$(c)	$\Delta Hf°$ = -149.4
		(aq) in 13,500 H_2O	$\Delta Hf°$ = -142.6

TN	Page		
4	100	$[Pt(NH_3)_2Cl_4](aq)$ cis, undissoc.; std. state, m = 1	ΔGf° = -86.0
		(aq) trans, undissoc.; std. state, m = 1	ΔGf° = -84.6
		$(NH_4)_2PtCl_4(aq)$	add "std. state, m = 1"
			ΔHf° = -182.6
		Add (aq) in 600 H_2O	ΔHf° = -184.0
		$[Pr(NH_3)_3Cl]^+(aq)$, std. state, m = 1	ΔHf° = -94.7
			ΔGf° = -34.2
			S° = 27.
		$[Pt(NH_3)_3Cl]Cl(c)$	ΔHf° = -144.3
		Add (aq) in 13,000 H_2O	ΔHf° = -134.7
		$[Pt(NH_3)_3Cl_3]^+(aq)$, std. state, m = 1	ΔGf° = -67.6
		$[Pt(NH_3)_4Cl_2](c)$	ΔHf° = -173.4
		(aq)	ΔHf° = -166.4
		$[Pt(NH_3)_4Cl_2]\cdot H_2O(c)$	ΔHf° = -243.0
		$[Pt(NH_3)_4Cl_2]^{2+}(aq)$, std. state, m=1	ΔGf° = -48.0
		$PtCl_2\cdot 5NH_3(c)$	ΔHf° = -194.7
4	101	$[Pt(NH_3)_3Cl][Pt(NH_3)Cl_3](c)$	ΔHf° = -229.4
		$[Pt(NH_3)_4][Pt(NH_3)Cl_3]_2(c)$	ΔHf° = -337.6
		$[Pt(NH_3)_3Cl]_2[PtCl_4](c)$	ΔHf° = -341.6
		$[Pt(NH_3)Cl_2(H_2O)](aq)$ cis, undissoc.; std. state, m=1	ΔHf° = -137.2
			ΔGf° = -93.7
			S° = 48.
		(aq) trans, undissoc.; std. state, m=1	ΔGf° = -95.2
		$[Pt(NH_3)Cl(H_2O)_2]^+(aq)$, std. state, m = 1	add cis
			ΔGf° = -113.2
		$[Pt(NH_3)_2Cl(H_2O)]^+(aq)$ cis, std. state, m = 1	ΔGf° = -76.7
		(aq) trans, std. state, m = 1	ΔGf° = -74.4
		$[Pt(NH_3)_3Cl]ClO_4(c)$	ΔHf° = -138.0
		$[Pt(NH_3)_4Br_2]^{2+}(aq)$, std. state, m=1	ΔGf° = -35.7

TN	Page		
4	101	$[Pt(NH_3)_2I_2](aq)$ cis, undissoc.; std. state, m = 1	$\Delta Gf°$ = -21.8
		(aq) trans, undissoc.: std. state, m = 1	$\Delta Gf°$ = -21.1
		$Pt(NH_3)_4I_2(c)$	$\Delta Hf°$ = -127.8
		$[Pt(NH_3)_4I_2]^{2+}(aq)$, std. state, m = 1	$\Delta Gf°$ = -17.5
4	102	$[Pt(NH_3)_4]SO_4(aq)$	add in 800 H_2O
			$\Delta Hf°$ = -303.4
		$Pt(CN_4)^{2-}(aq)$, std. state, m = 1	change to $Pt(CN)_4^{2-}$
			$\Delta Gf°$ = 169.8
		$[Pt(CH_3NH_2)_2Cl]^{+}(aq)$ cis, std. state, m = 1	$\Delta Gf°$ = 1.1
		(aq) trans, std. state, m = 1	$\Delta Gf°$ = 2.5
		$[Pt(CH_3NH_2)_2Cl_2](aq)$ cis, undissoc.; std. state, m = 1	$\Delta Gf°$ = -33.6
		(aq) trans. undissoc.; std. state, m = 1	$\Delta Gf°$ = -33.9
		$[Pt(CH_3NH_2)_2I_2](aq)$ cis, undissoc.; std. state, m = 1	$\Delta Gf°$ = -1.2
		(aq) trans, undissoc.; std. state, m = 1	$\Delta Gf°$ = -0.6
		$Ag_2PtCl_6(c)$	$\Delta Hf°$ = -125.1
		$Ag_2PtBr_6(c)$	$\Delta Hf°$ = -96.1
4	103	$IrCl_6^{2-}(aq)$	$\Delta Hf°$ = -137.
		$IrCl_6^{3-}(aq)$	$\Delta Hf°$ = -176.
4	104	$H_2OsO_5^{-}(aq)$ undissoc.	should be H_2OsO_5
4	106	MnO(g)	$\Delta Hf°$ = 29.69
4	107	MnCl(g)	$\Delta Hf°_0$ = 10.11
4	108	$MnI_2 \cdot 4H_2O(c)$	$\Delta Hf°$ = -343.9
4	109	$MnSO_4(aq)$, std. state, m = 1	$S°$ = -12.8
			$C_p°$ = -58.
4	110	$MnN_6(c)$	should be $Mn(N_3)_2(c)$
4	113	$MnC_2O_4(c)$	$\Delta Hf°$ = -245.9
		$MnC_2O_4 \cdot 2H_2O(c)$	$\Delta Hf°$ = -389.2
			$S°$ = 48.
		$MnC_2O_4 \cdot 3H_2O(c)$	$\Delta Hf°$ = -459.1

TN	Page		
4	113	$MnHCO_3^-(aq)$	should be $MnHCO_3^+(aq)$
		$Mn(C_2H_3O_2)_2 \cdot 4H_2O(c)$	FW = 245.089
4	128	$PbI_2 \cdot 2CrI_3(c)$	FW = 1326.417
		$PbI_2 \cdot 2CrI_3 \cdot 3H_2O(c)$	FW = 1380.465
5	1	V(g)	$\Delta Gf°$ = 180.32
		$V_2O_3(c)$	$\Delta Hf°$ = -291.3
5	2	$V_3O_5(c)$	$\Delta Hf°$ = -462. $\Delta Gf°$ = -431.
		$V_4O_7(c)$	$\Delta Hf°$ = -631. $\Delta Gf°$ = -587.
		$HV_{10}O_{28}^{5-}(aq)$, std. state, m = 1	$\Delta Gf°$ =-1841. S° = 53.
		$H_2V_{10}O_{28}^{4-}(aq)$, std. state, m = 1	$\Delta Gf°$ =-1846.
5	3	VOCl(c)	$\Delta Hf°$ = -145. $\Delta Gf°$ = -133. S° = 18.
		$VO_2Cl(c)$	$\Delta Gf°$ = -167.8 S° = 23.
		$VOCl_2(c)$	$\Delta Hf°$ = -168. $\Delta Gf°$ = -152. S° = 31.
5	4	$VOSO_4(aq)$, undissoc.; std. state, m=1	$\Delta Gf°$ = -288.0
		$(VO)_3(PO_4)_2(aq)$, std. state	change state to c $\Delta Gf°$ = -774.2
5	5	$AgVO_3(c)$	$\Delta Gf°$ = -177.5
		$Ag_2HVO_4(c)$	$\Delta Gf°$ = -214.8
		$Ag_2HVO_4 \cdot AgOH(c)$	$\Delta Gf°$ = -248.0
		$Mn(VO_3)_2(c)$	FW = 252.8184
5	6	$NbO_3^-(aq)$	FW = 140.9042
5	7	$Nb(OH)_4^+(aq)$	FW = 160.9356
		$Nb(OH)_5(aq)$	FW = 177.9428

Revised Values (cont'd.)

TN	Page		
5	7	$NbF_5(g)$	$\Delta Gf° = -400.0$
5	8	$NbBrO_3(c)$	change to $NbOBr_3(c)$
			FW = 348.6174
		NbC(c)	$\Delta Hf°_0 = -33.12$
			$H°_{298}-H°_0 = 1.422$
5	10	Add $TaO_2^+(aq)$, std. state, m = 1	FW = 212.9468
			$\Delta Gf° = -201.4$
		$Ta_2H(c)$	FW = 362.9040
		$TaF_5(aq)$, undissoc.; std. state, m=1	$\Delta Gf° = -270.5$
		$TaF_6^-(aq)$, std. state, m = 1	$\Delta Gf° = -342.2$
		$TaF_7^{2-}(aq)$, std. state, m = 1	$\Delta Gf° = -413.4$
5	12	TiO(c)	S° = 12.
5	14	$TiCl_4(aq)$ in 3N $HClO_2$	should be in 3N $HClO_4$
5	22	$HfO_2(c)$	$\Delta Gf° = -260.1$
5	26	$ScCl_3 \cdot 6H_2O(c)$	$\Delta Hf° = -666.6$
5	29	$YH_2(c)$	$\Delta Hf°_0 = -51.95$
			$\Delta Hf° = -54.0$
			$\Delta Gf° = -44.3$
			S° = 9.18
		$Y^2H_2(c)$	$\Delta Hf°_0 = -52.73$
			$\Delta Hf° = -54.5$
			$\Delta Gf° = -44.1$
		Add $YH_{2.6}(c)$	FW = 91.5258
			$\Delta Hf° = -60.4$
		$YH_3(c)$	$\Delta Hf°_0 = -61.15$
			$\Delta Hf° = -64.0$
			$\Delta Gf° = -49.9$
		$Y^2H_3(c)$	$\Delta Hf°_0 = -62.13$
			$\Delta Hf° = -64.6$
			$\Delta Gf° = -49.5$
			$C°_p = 13.72$

TN	Page		
6	2	BeH_2(c)	FW = 11.0282
6	8	Add $PuBe_{13}$(c)	FW = 356.21 $\Delta Hf°$ = -36.
		UBe_{13}(c)	FW = 355.188 $\Delta Hf°_0$ = -39.18 $\Delta Gf°$ = -39. $H°_{298}-H°_0$ = 7.76 $S°$ = 43.1 $C°_p$ = 57.86
6	10	$Mg(OH)_2$(aq), std. state, m = 1	$S°$ = -38.1
6	27	$MgFe(CN)_6^-$(aq), un-ionized; std. state, m = 1	$\Delta Gf°$ = 61.8
		$MgFe(CN)_6^{2-}$(aq), un-ionized; std state, m = 1	$\Delta Gf°$ = 52.2
6	29	Add $MgUO_4$(c)	FW = 326.339 $\Delta Hf°$ = -443.9 $\Delta Gf°$ = -418.2 $S°$ = 31.5 $C°_p$ = 30.6
		Add MgU_3O_{10}(c)	FW = 898.393 $S°$ = 80.9 $C°_p$ = 73.0
6	32	$CaCl_2$(aq) in 40 H_2O	$\Delta Hf°$ = -208.53
		400 H_2O	$\Delta Hf°$ = -209.126
6	38	$Ca(ClO_4)_2$(aq) in 7 H_2O	omit $\Delta Hf°$
		8 H_2O	$\Delta Hf°$ = -188.36
		10 H_2O	$\Delta Hf°$ = -189.16
		20 H_2O	$\Delta Hf°$ = -190.82
		25 H_2O	$\Delta Hf°$ = -191.03
		30 H_2O	$\Delta Hf°$ = -191.12
		40 H_2O	$\Delta Hf°$ = -191.19
		50 H_2O	$\Delta Hf°$ = -191.20
		75 H_2O	$\Delta Hf°$ = -191.20
		100 H_2O	$\Delta Hf°$ = -191.19
		200 H_2O	$\Delta Hf°$ = -191.17
		300 H_2O	$\Delta Hf°$ = -191.18
		500 H_2O	$\Delta Hf°$ = -191.20
		10,000 H_2O	$\Delta Hf°$ = -191.41
6	36	$Ca(BrO_3)_2$(c)	$\Delta Hf°$ = -163.9

Revised Values (cont'd.)

TN	Page		
6	36	$Ca(BrO_3)_2$(aq) in 1,000 H_2O	$\Delta Hf°$ = -162.5
6	37	$CaSO_3$(c)	$C_p°$ = 21.92
6	44	$CaHPO_4 \cdot 2H_2O$(c)	$\Delta Hf_0°$ = -568.032
		$Ca(H_2PO_4)_2 \cdot H_2O$(c)	$\Delta Hf_0°$ = -805.547
6	55	$CaZrO_3$(c)	FW = 179.298
6	56	Add $CaUO_4$(c)	FW = 342.107 $\Delta Hf°$ = -478.4
6	58	SrF(g)	$\Delta Gf°$ = -75.1
6	64	$Sr(BrO_3)_2 \cdot H_2O$(c)	$\Delta Hf°$ = -237.5 $\Delta Gf°$ = -182.4
6	65	SrS(c)	$\Delta Hf°$ = -112.9 $\Delta Gf°$ = -111.8
6	77	Sr_2TiO_4(c)	$\Delta Gf°$ = -519.2
		Add $SrUO_4$(c)	FW = 389.647
		α, rhombohedral	$\Delta Hf°$ = -474.5
		β, rhombohedral	$\Delta Hf°$ = -474.8
		Add Sr_2UO_5(c)	FW = 493.266 $\Delta Hf°$ = -627.6
		Add $Sr_2U_3O_{11}$(c)	FW = 1065.320 $\Delta Hf°$ = -1251.2
		Add Sr_3UO_6(c)	FW = 596.885 $\Delta Hf°$ = -776.3
6	82	$Ba(ClO_3)_2$(c)	$\Delta Hf°$ = -184.4
		$Ba(ClO_3)_2$(aq) in 400 H_2O	$\Delta Hf°$ = -178.3
		$Ba(ClO_3)_2 \cdot H_2O$(c)	$\Delta Hf°$ = -257.6
6	85	$Ba(BrO_3)_2$(c)	$\Delta Hf°$ = -171.65 $\Delta Gf°$ = -130.1 $S°$ = 59.
		Add $Ba(BrO_3)_2$(aq), std. state, m=1	$\Delta Hf°$ = -160.56 $\Delta Gf°$ = -125.16 $S°$ = 79.6

Revised Values (cont'd.)

TN	Page		
6	85	$Ba(BrO_3)_2$(aq) in 20,000 H_2O	$\Delta Hf°$ = -161.23
		50,000 H_2O	$\Delta Hf°$ = -160.67
		100,000 H_2O	$\Delta Hf°$ = -160.51
		$Ba(BrO_3)_2 \cdot H_2O$(c)	$\Delta Hf°_0$ = -236.99
			$\Delta Hf°$ = -243.84
			$\Delta Gf°$ = -188.6
			$H°_{298}-H°_0$ = 9.94
			$S°$ = 68.9
			$C°_p$ = 53.5
6	87	BaS_2O_8(aq) in 800 H_2O	$\Delta Hf°$ = -455.1
		$BaS_2O_8 \cdot 4H_2O$(c)	$\Delta Hf°$ = -739.8
6	101	$BaMoO_4$(c)	$C°_p$ = 29.4
6	102	Add $BaUO_4$(c)	FW = 439.367
			$\Delta Hf°$ = -477.3
			$C°_p$ = 31.9
7	2	$Lu(BrO_3)_3$(aq) in 24.0 H_2O(sat'd)	$\Delta Hf°$ = -208.1
		in 5,500 H_2O	$\Delta Hf°$ = -206.50
		$Lu(BrO_3)_3 \cdot 9H_2O$(c)	$\Delta Hf°$ = -833.8
		$Yb(BrO_3)_3$(aq) in 25.9 H_2O(sat'd)	$\Delta Hf°$ = -209.8
		in 5,500 H_2O	$\Delta Hf°$ = -208.7
		$Yb(BrO_3)_3 \cdot 9H_2O$(c)	$\Delta Hf°$ = -836.3
7	13	Er(g)	$\Delta Gf°$ = 67.1
7	14	$Er(BrO_3)_3$(aq) in 27.2 H_2O(sat'd)	$\Delta Hf°$ = -217.5
		in 5,500 H_2O	$\Delta Hf°$ = -216.1
		$Er(BrO_3)_3 \cdot 9H_2O$(c)	$\Delta Hf°$ = -844.9
7	15	$Er(C_2O_4)_2^-$(aq), std. state, m = 1	delete compound
7	19	$Ho(BrO_3)_3$(aq) in 5,500 H_2O	$\Delta Hf°$ = -216.0
		$Ho(BrO_3)_3 \cdot 9H_2O$(c)	$\Delta Hf°$ = -845.6
7	21	Dy(c)	$H°_{298}-H°_0$ = 2.116
			$S°$ = 17.87
			$C°_p$ = 6.73

Revised Values (cont'd.)

TN	Page		
7	23	$Dy(BrO_3)_3$(aq) in 36.0 H_2O(sat'd)	$\Delta Hf° = -215.6$
		in 5,500 H_2O	$\Delta Hf° = -214.50$
		$Dy(BrO_3)_3 \cdot 9H_2O$(c)	$\Delta Hf° = -844.1$
7	28	$Tb(BrO_3)_3$(aq) in 39.1 H_2O(sat'd)	$\Delta Hf° = -214.1$
		in 5,500 H_2O	$\Delta Hf° = -210.72$
		$Tb(BrO_3)_3 \cdot 9H_2O$(c)	$\Delta Hf° = -841.4$
7	29	$GdF_3 \cdot \frac{1}{2}H_2O$(c)	change to $GdF_3 \cdot H_2O$(c) FW = 232.261 $\Delta Hf° = -467.$
7	31	$Gd(BrO_3)_3$(aq) in 44.3 H_2O	$\Delta Hf° = -214.8$
		in 5,500 H_2O	$\Delta Hf° = -211.54$
		$Gd(BrO_3)_3 \cdot 9H_2O$(c)	$\Delta Hf° = -842.9$
7	33	Eu^{2+}(aq), std. state, m = 1	$\Delta Hf° = -126.$ $S° = -2.$
		EuO(g)	$\Delta Hf°_0 = -31.$ delete $\Delta Hf°$
7	34	$EuF_3 \cdot \frac{1}{2}H_2O$(c)	change to $EuF_3 \cdot H_2O$(c) FW = 226.971 $\Delta Hf° = -447.8$
		$EuCl_2$(c)	$\Delta Hf° = -197.$
		(aq), std. state, m = 1	$\Delta Hf° = -206.$
7	35	$Eu(BrO_3)_3$(aq) in 45.9 H_2O	$\Delta Hf° = -193.5$
		in 5,500 H_2O	$\Delta Hf° = -192.16$
		$Eu(BrO_3)_3 \cdot 9H_2O$(c)	$\Delta Hf° = -823.4$
7	37	Sm_4O_5(c)	delete compound
		SmF_3(c)	$\Delta Hf° = -425.$
		$SmF_3 \cdot \frac{1}{2}H_2O$(c)	change to $SmF_3 \cdot H_2O$(c) FW = 225.361 $\Delta Hf° = -470.3$
7	40	$Sm(BrO_3)_3$(aq) in 5,500 H_2O	$\Delta Hf° = -212.8$
		$Sm(BrO_3)_3 \cdot 9H_2O$(c)	$\Delta Hf° = -844.2$

Revised Values (cont'd.)

TN	Page		
7	43	$NdF_3 \cdot \frac{1}{2}H_2O(c)$	change to $NdF_3 \cdot H_2O(c)$ FW = 219.251 $\Delta Hf°$ = -471.5
7	45	$Nd(BrO_3)_3(aq)$ in 5,500 H_2O	$\Delta Hf°$ = -214.0
		$Nd(BrO_3)_3 \cdot 9H_2O(c)$	$\Delta Hf°$ = -844.8
7	49	$PrF_3 \cdot \frac{1}{2}H_2O(c)$	change to $PrF_3 \cdot H_2O(c)$ FW = 215.918 $\Delta Hf°$ = -474.
7	51	$Pr(BrO_3)_3(aq)$ in 29.1 H_2O(sat'd)	$\Delta Hf°$ = -217.7
		in 5,500 H_2O	$\Delta Hf°$ = -215.99
		$Pr(BrO_3)_3 \cdot 9H_2O(c)$	$\Delta Hf°$ = -846.6
7	52	$Pr(C_2H_3O_2)_3(aq)$, std. state, m = 1	add undissoc. $\Delta Gf°$ = -431.7
7	53	$CeO_2(c)$	$\Delta Hf°_0$ = -258.80
		$CeH_2(c)$	$\Delta Gf°$ = -39.
7	54	$CeF_3 \cdot \frac{1}{2}H_2O(c)$	change to $CeF_3 \cdot H_2O(c)$ FW = 215.131 $\Delta Hf°$ = -472.4
7	56	$Ce_2(SO_4)_3 \cdot 8H_2O(c)$	change $\Delta Hf°$ to $\Delta Gf°$
7	57	$CeN(c)$	$\Delta Hf°$ = -79.
7	59	$CeAu(g)$	$\Delta Hf°_0$ = +110. $\Delta Hf°$ = +109.2 $\Delta Gf°$ = +97.4
7	60	$La_2(g)$	$\Delta Hf°$ = 147.0 $\Delta Hf°$ = 135.4
7	61	$LaF_3 \cdot \frac{1}{2}H_2O(c)$	change to $LaF_3 \cdot H_2O(c)$ FW = 213.921 $\Delta Hf°$ = -475.0
7	63	$La(BrO_3)_3(aq)$ in 5,500 H_2O	$\Delta Hf°$ = -216.5
		$La(BrO_3)_3 \cdot 9H_2O(c)$	$\Delta Hf°$ = -846.0
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12. KEY WORDS (Six to twelve entries; alphabetical order; capitalize only proper names; and separate key words by semicolons)

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