

# The Thermochemical Measurements on Rubidium Compounds: A Comparison of Measured Values with Those Predicted from the NBS Tables of Chemical and Thermodynamic Properties

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# The Thermochemical Measurements on Rubidium Compounds: A Comparison of Measured Values with Those Predicted from the NBS Tables of Chemical and Thermodynamic Properties

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This report presents the assessed thermochemical measurements on rubidium compounds upon which the property values,  $\Delta_fH^\circ$ ,  $\Delta_fG^\circ$ ,  $S^\circ$ ,  $C_p^\circ$ , and  $H^\circ(T)-H^\circ(0)$  at 298.15 K and  $\Delta_fH^\circ(0\text{ K})$  recommended in the "NBS Tables of Chemical Thermodynamic Properties" are based. Included in this set of thermochemical measurements, or thermochemical reaction catalog, is a comparison of the observed values for the processes in question with those predicted (calculated) from the recommended property values in the aforementioned tables. The evaluator's initially assigned uncertainties on the experimental measurements and final estimated reliabilities on the recommended process values are given. This paper illustrates the evaluation procedure used in preparing the full set of recommended data in the "NBS Tables of Chemical Thermodynamic Properties".

Key words: data evaluation; documentation; enthalpy; entropy; Gibbs energy; NBS Thermochemical Tables; rubidium compounds; reaction catalog; thermochemical measurements.

## Contents

1. Introduction .....	7	7. References in the Text .....	10
2. The Types of Measurements Listed in the Catalog .....	8	8. Glossary of Symbols and Terminology in the Tables .....	10
3. Conventions and Energy Units .....	8	8.1. Physical State and Solution Designations .....	10
4. The General Arrangement of Compounds and Reactions .....	8	8.2. Column Headings in Table 2 .....	11
5. Contents and Descriptions of the Tables .....	8	9. Tables .....	12
5.1. Table 1. Index to the Compounds and Their Reactions .....	8	10. Reference Codes and References for the Tables .....	56
5.2. Table 2. The Catalog of Thermochemical Measurements at 298.15 K .....	9		
5.2.a. Contents .....	9		
5.2.b. Assigned Uncertainties .....	9		
5.2.c. Estimated Reliability .....	10		
5.3. Table 3. Revisions and Additions to the NBS Tables for rubidium compounds in SI units .....	10		
5.4. Table 4. Auxiliary Data Used in the Calculations Interpolated from the NBS Tables ..	10		
6. Acknowledgements .....	10		

## 1. Introduction

This report on the thermochemical measurements of rubidium compounds is intended to document the selections of the thermochemical property values,  $\Delta_fH^\circ$ ,  $\Delta_fG^\circ$ ,  $S^\circ$ ,  $C_p^\circ$ , and  $H^\circ(T)-H^\circ(0)$  at 298.15 K and  $\Delta_fH^\circ(0\text{ K})$  in SI units, recommended in the "NBS Tables of Chemical Thermodynamic Properties"<sup>1</sup> and the earlier Technical Note

<sup>a)</sup> Deceased.

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## List of Tables

1. Index to the Compounds and Their Reactions .....	12
2. The Catalog of Thermochemical Measurements at 298.15 K .....	19
3. Revisions and additions to the NBS Tables for Rubidium Compounds in SI units .....	55
4. Auxiliary Data Used in Calculations Interpolated from the NBS Tables .....	55

270 Series, "Selected Values of Chemical Thermodynamic Properties"<sup>2</sup> in kcal/mol at one atmosphere pressure; this report covers the available literature through 1978.

The documentation is provided as a "computer readable" reaction catalog of all known thermochemical measurements, reduced to 298.15 K, that were considered in the evaluation. An introductory guide (Table 1) provides an index to the reaction catalog (Table 2) showing which reactions are definitive for the properties of each substance. Table 2 also contains a comparison of each of the listed measurement values with those predicted (calculated) from the recommended property values.<sup>1,2</sup> An initial or preliminary uncertainty assigned by the evaluator is given for each measurement. In addition,

the final estimated reliability for the predicted value is given. A reference citation and commentary on the measurement where appropriate complete the entry for each measurement.

Also included are some additional or revised property values for three rubidium compounds (Table 3), and auxiliary data (Table 4) used in the calculations that are not explicitly contained in the NBS Tables.<sup>1,2</sup>

The tables and discussion in this paper illustrate the type of information considered and the evaluation process used in the selection of the recommended values for the full data base presented in the NBS Tables.

In addition, these Tables serve several other purposes. The users of the catalog can judge whether or not the analysis for any compound is based on a comprehensive set of the existing useful measurements and how well defined the values of the properties of each compound are and how well defined the values of the processes involving it are. It also shows the interrelationships among the compounds and essentially provides a "road map" or guide to the "key network". Hopefully, it should also encourage measurements in those areas that are not well defined, i.e., where reliable data are insufficient or lacking to define well the properties of a compound, or to confirm the value for a process. In addition, as has been described by Garvin *et al.*,<sup>3,4</sup> this catalog will serve as the basis for future evaluations, when sufficient newer information becomes available and/or when different auxiliary data are used. An example of this latter approach is the publication by Wagman *et al.*<sup>5</sup> in which the 1977 CODATA selections<sup>6</sup> are used.

Users of this reaction catalog are invited to comment on the reactions and the interpretations, correct errors, and bring new measurements to our attention.

## 2. The Types of Measurements Listed in the Catalog

The reaction catalog (Table 2) contains the set of enthalpy, Gibbs energy, and entropy changes at 298.15 K as well as entropies at 298.15 K from low temperature  $C_p$  measurements or statistical calculations which were obtained or derived in assessing the thermochemistry of rubidium compounds.

Many of the enthalpy measurements are from calorimetric determinations, i.e., combustion, decomposition, solution reactions. For the Gibbs energy changes, many are from equilibrium constants, emf measurements, and solubility together with activity coefficient work. A more complete list of measurement types can be found in Garvin *et al.*<sup>3,4</sup>

They have been obtained from the original articles. The original data were corrected where possible for differences in energy units, molar masses, temperature, etc., and to standard state conditions, using consistent values for all auxiliary quantities. Where necessary, reinterpretation of the chemistry was made.

## 3. Conventions and Energy Units

A full discussion of the conventions, energy units, molar masses, methods of evaluation, and definitions used in this report are to be found in the "NBS Tables of Chemical Thermodynamic Properties."<sup>1</sup> All auxiliary thermodynamic property values used are taken from this publication or interpolated from the values contained in it. Those that are interpolated are listed in Table 4 and may be considered to be part of the NBS Tables.

The catalog of thermochemical measurements on rubidium compounds (Table 2) was originally assembled using values in thermochemical calories and at one atmosphere standard state pressure.<sup>2</sup> These values were converted to SI units as described<sup>1</sup>; the same number of decimal places are retained as in the caloric catalog; however, the residual, given in the column labeled RESID (OBS-CALC), (See Section 5.2.a. for the definition) has been calculated from all values in calories and then converted to kJ at 1 bar and is unrounded (maximum of three decimals). As such, it may differ (insignificantly) from that calculated from the catalog entry in kJ and the selected property values in the NBS Tables.<sup>1</sup>

## 4. The General Arrangement of Compounds and Reactions

The compounds listed in Table 1, the Index to the compounds and their reactions are arranged (in general) in the standard order of arrangement by the principle of latest position.<sup>1,2</sup> The reactions in the reaction catalog itself, Table 2, are also listed in the standard order of arrangement, also using the rules given for compounds within an element, for the rubidium compound with the highest finding number. All reactions are numbered sequentially.

## 5. Contents and Descriptions of the Tables

### 5.1. Table 1. Index to the Compounds and Their Reactions

The contents are:

1. Formula for each compound for which a property value,  $\Delta_f H^\circ$ ,  $\Delta_f G^\circ$ , or  $S^\circ$  has been selected from the measurements in the reaction catalog. The parenthetical expression at the right-hand end of a chemical formula shows the physical state of, or the medium containing the compound.
2. Molar mass for each compound.
3. A list of the reaction numbers referring to their reactions in the catalog of measurements which contain the compound and were important in the selection of the property value of that compound. Reactions not considered (for information only), and reactions which can not be solved because the

necessary property values are unknown are not listed in this table under the rubidium compounds they contain. However, these reactions are given in Table 2, are labeled appropriately, and can be found by inspection. See Secs. 4 and 5.2 for further information. A side chain reaction, that is, a reaction that uniquely defines a property of a compound, is listed only under the rubidium compound for which it is used to define the property. This reaction will not be listed under the other rubidium compound(s) it contains. An example of sequential side chains is the following:

Reaction No. 8 is listed under compound  $\text{Rb}^{+2}(\text{g})$  although reaction No. 9 contains the compound. Reaction 9 is listed under  $\text{Rb}^{+3}(\text{g})$ . In sequence,  $\text{Rb}^{+3}(\text{g})$ ,  $\text{Rb}^{+2}(\text{g})$ ,  $\text{Rb}^+(\text{g})$  trace back to  $\text{Rb}(\text{g})$ .

## 5.2. Table 2. The Catalog of the Thermochemical Measurements at 298.15 K

### 5.2.a. Contents

Table 2 contains the following:

1. An index number for each reaction, referred to in Table 1.
2. A statement of the chemical process, with the products to the right of the equals sign. The formula of a substance is given in place of a reaction when the absolute entropy of that substance is the property cited.
3. The identification of the property ( $\Delta H$ ,  $\Delta G$ ,  $\Delta S$ , or  $S$ ).
4. The process value and its uncertainty as initially assigned by the evaluator. The energy units are kJ/mol for  $\Delta H$  and  $\Delta G$  and J/(mol K) for  $S$  and  $\Delta S$  for the number of significant digits believed to be appropriate. See Sec. 5.2.b for discussion of assigned uncertainties.
5. The residual or difference between the measured value for the process and that derived from the recommended property values, shown as RESID(OBS-CALC). This residual indicates more than a comparison; it shows the evaluator's judgement in selecting and weighting the data. A small residual indicates high weight, in general, for the datum.
6. The predicted or estimated reliability of the recommended or calculated value for the process given as EST.REL. See Sec. 5.2.c. for a discussion of this.
7. A brief reference code consisting of the year of publication and the first three letters of the first two authors' names. Complete references in chronological order are given in Sec. 10. Those codes designated "NBS" specify calculations at NBS performed in the course of the evaluation and are not listed in the references.
8. Commentary on the measurement. These may indicate corrections applied, original temperature measured, original experimental conditions, etc.
9. Special Statements. In addition, some reactions may carry one of the following messages.

### a. CONSTRAINT - SOLVED EXACTLY

This message occurs with reactions with values the evaluator felt should be held constant, i.e., not subject to adjustment or modification in the evaluative procedure. In general, these are usually smoothed enthalpy of dilution values, third law well defined entropies, or pre-evaluated (in a separate evaluation) processes.

### b. FOR INFORMATION ONLY

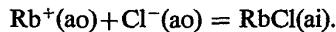
This accompanies reactions with values the evaluator, after initial consideration, has rejected and given no weight in the evaluation. An explanation for its rejection may be given.

### c. NO SOLUTION FOR VARIABLE OR DATA MISSING.

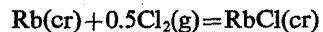
For a few reactions, the needed property values for two of the substances are not known so that the RESID cannot be calculated.

10. Thermodynamic Conventions. In addition to the experimental processes and the statistics on them, thermodynamic constraint relationships are given. There are two types.

The first is the sum of the ions, for which  $\Delta H^\circ$ ,  $\Delta G^\circ$ , and  $\Delta S^\circ$  all equal zero. An example is:



The second is the HGS relationship,  $\Delta H - \Delta G - T\Delta S = 0$ , which must be satisfied for each reaction and compound. An important type is the formation reaction which occurs as, e.g.,



with an abbreviated designation HGS=0.

### 5.2.b. Assigned Uncertainties

As part of the assessment and evaluation of each reaction or process an *initial* uncertainty is assigned. This preliminary uncertainty is the evaluator's prior assessment of the quality of that particular reaction measurement, taking into account the experimental technique used, the details given, the number of measurements, the standard deviation, the magnitude of the corrections to 298.15 K, the inherent error in the methods used, the reliability of previous work of the investigators, etc.

This preliminary uncertainty may or may not agree with the experimentalist's appraisal which it supersedes, or be the traditional 2δ. In the next step of the evaluation procedure, the rationalization of the property values of a substance from the various measurement paths and from replicate measurements of the same path, however, this initial judgement of uncertainty on a particular measurement may prove to be unrealistic. The user is cautioned not to rely on this initial uncertainty as an accurate measure of the reliability of that experimental process value or of the recommended value, but to use the estimated reliability on the predicted or calculated process value for an estimate of the reliability of the recommended value for the process. A separate discussion follows.

### 5.2.c. Estimated Reliability

The estimated reliability is the evaluator's *final* judgement as to quality of the *predicted* process value calculated from the recommended property values,  $\Delta_fH^\circ$ ,  $\Delta_fG^\circ$ , and  $S^\circ$  for each substance in the reaction; it is not computer generated. It is based on the following: the evaluator's *initial*, assigned, uncertainty on the experimental process value, the residual, i.e., the OBS-CALC, the number of replicate measurements and the above cited uncertainties and residuals on the replicate reactions, as well as these factors on all reactions involving each particular compound of interest in the reaction at hand. The predicted or estimated reliability on the calculated process value may be derived indirectly, from the estimated reliability of two or more other reactions that may be well defined and can be combined to obtain the reaction in question. It should be pointed out here, that the implied uncertainties on the selected property values<sup>1,2</sup> are not used or needed for most reactions listed here. The calculation of the uncertainty or estimated reliability on the predicted process value by the usual rule of calculating the uncertainty of a process (as the square root of the sum of the squares of all the uncertainties in the properties of the substances in the process) will result in a predicted reliability for the process value that is too large, since the uncertainty on a property value incorporates the uncertainties on the process values from which all the property values are derived.

In summary, the estimated reliability at present is the evaluator's best judgement of the reliability of the predicted process value. This estimate is expressed in one of three different ways, as a numerical value in kJ/mol, or as categories "a" and "b". Category "a" means the numerical value given for the uncertainty on the observed value initially assigned by the evaluator is recommended as the estimated reliability of the calculated or recommended process value. Category "b" is used only for replicate measurements of a specific process by different investigators; the estimated reliability is given either as "a" or as a numerical value for only one, usually the first, of a series of replicate measurements. If category "b" is used for the first of the series a replicate in close proximity to this reaction will contain the appropriate estimated reliability.

There are some reactions where no estimated reliability is given; these reactions have no solution at present, but in addition, are isolated measurements with no replicates which would confirm the measurement value. For these measurements, the user is advised to be conservative in his acceptance and use of the process value and to use at least twice the initial assigned uncertainty on the observed value for an estimate of its reliability.

### 5.3. Table 3. Revisions and Additions to the NBS Tables

This table contains revisions and additions to the NBS Tables<sup>1,2</sup> for three rubidium compounds that have been made since their publication.

### 5.4. Table 4. Auxiliary Data Used in the Calculations Interpolated from the NBS Tables

Values for all non rubidium species used as auxiliary data in the calculation of the property values of rubidium compounds and in the calculation of the predicted process values are also obtained directly from the NBS Tables<sup>1,2</sup> or interpolated from them. Those not contained in them are given in Table 4 and may be considered to be part of the NBS Tables.<sup>1,2</sup>

## 6. Acknowledgements

The continuing support of the Office of Standard Reference Data is gratefully acknowledged.

We thank C. R. Jackson and D. Cockrell for their editorial assistance.

## 7. References in the Text

- <sup>1</sup>D. D. Wagman, W. H. Evans, V. B. Parker, R. H. Schumm, I. Halow, S. M. Bailey, K. L. Churney, and R. L. Nuttall, "The NBS Tables of Chemical Thermodynamic Properties", J. Phys. Chem. Ref. Data **11**, Suppl. 2 (1982).
- <sup>2</sup>D. D. Wagman, W. H. Evans, V. B. Parker, R. H. Schumm, and R. L. Nuttall, "Selected Values of Chemical Thermodynamic Properties", Nat. Bur. Stand. (U. S.) Tech. Note 270-8 (1981).
- <sup>3</sup>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", Nat. Bur. Stand. (U. S.) NBSIR 76-1147, 37 pp. (1976).
- <sup>4</sup>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", Proc. 5th Int'l CODATA Conf., Pergamon Press, pp. 567-575 (1977).
- <sup>5</sup>D. D. Wagman, R. H. Schumm, and V. B. Parker, "A Computer Assisted Evaluation of the Thermochemical Data of the Compounds of Thorium", Nat. Bur. Stand. (U. S.) NBSIR 77-1300, 93 pp. (1977).
- <sup>6</sup>J. D. Cox, Chairman, CODATA Task Group on Key Values for Thermodynamics, "CODATA Recommended Key Values for Thermodynamics 1977", CODATA Bull. No. 28 (1978).

## 8. Glossary of Symbols and Terminology in the Tables

All symbols and terminology used in these tables are contained and described in the "NBS Tables of Chemical Thermodynamic Properties" (Ref. 1, Sec. 7). For convenience, however, some of the more uncommon physical state and solution designations are given here, as well as some summary definitions of the column headings.

### 8.1. Physical State and Solution Designations

- |    |  |
|----|--|
| aq | aqueous solution, concentration not specified.   |
| ai | aqueous standard state of a completely ionized electrolyte (the sum of the values for the ions).                                       |
| ao | aqueous standard state of the species as written, i.e., undissociated.   |
| :x | standard state, mole fraction = 1, non-aqueous and mixed solutions (suffix in description of the state, as in $I_2(\text{CCl}_4:x)$ ). |

:s standard state, molality = 1, non-aqueous and mixed solutions, as in  $I_2(\text{CCl}_4\text{:s})$ .  
 D partial molar property (prefix in the description of the state as in "HCl(D:100H<sub>2</sub>O)").  
 :u non-aqueous, mixed or multicomponent aqueous solutions, concentration not specified.  
 cr2,g2, This designation is used to distinguish various crystalline forms and isomers.  
 etc.

INIT. UNC.

RESID(OBS-CALC)

EST. REL.

REF.

Initial uncertainty, originally assigned by the evaluator.

The residual or difference between the observed value for the process and that calculated from the recommended property values (Ref. 1, Sec. 7).

The estimated reliability of the value predicted from the recommended property values (Ref. 1, Sec. 7). This is the evaluator's final judgement.

The reference code. The complete reference is given in Sec. 10.

**8.2. Column Headings in Table 2**

PROP. MEAS.	The thermodynamic property, $\Delta H$ , $\Delta G$ , $\Delta S$ , and $S$ ascribed to the measured or stated reaction.
OBSVD. VALUE	The observed or stated numeric value for the property of that particular reaction.

## 9. Tables

Table 1. Index to the Compounds and Their Reactions

COMPOUND	MOLAR MASS g/mol	REACTION NOS.
Rb(cr)	85.4678	1
Rb(g)	85.4678	3 31 32 477
		477 477 2
Rb+(g)	85.4678	7
Rb+2(g)	85.4678	8
Rb+3(g)	85.4678	9
Rb+(ao)	85.4678	228 234 422 425 428 429 431 432 434 435 437 438 443 444 452 453 455 460 463 466 423 424 426 427 430 433 436 439 442 445 446 448 449 450 451 454 457 459 462 464 465 467 468 478 478 478 199 200 354 355 440 441 447 458 461 469 470
Rb(185Hg)	85.4678	13 14
RbO2(cr)	117.4666	28
Rb2O(cr)	186.9350	27
Rb2O(g)	186.9350	29
Rb2O2(cr)	202.9344	23
RbH(cr)	86.4758	33
RbOH(cr)	102.4752	34
RbOH(g)	102.4752	31 32
RbOH(ai)	102.4752	20 22 207 422 423 424
RbOH(75H2O)	102.4752	16
RbOH(100H2O)	102.4752	17
RbOH(147H2O)	102.4752	17a 256
RbOH(200H2O)	102.4752	18
RbOH:H2O(cr)	120.4906	35
RbOH:2H2O(cr)	138.5060	36
(RbOH)2(g)	204.9504	37
RbF(cr)	104.4662	38 39 40 41 42 44 45 65 260
RbF(g)	104.4662	38 39 40 41 42 44 67 68 479 479 479 43
RbF(ai)	104.4662	62 369 371 425 426 427

Table 1. Index to the Compounds and Their Reactions - Continued

COMPOUND	MOLAR MASS g/mol	REACTION NOS.
RbF(100H <sub>2</sub> O)	104.4662	45 62 64 70
RbF(150H <sub>2</sub> O)	104.4662	61
RbF(200H <sub>2</sub> O)	104.4662	60
RbF(300H <sub>2</sub> O)	104.4662	59
RbF(400H <sub>2</sub> O)	104.4662	58
RbF(500H <sub>2</sub> O)	104.4662	57
RbF(600H <sub>2</sub> O)	104.4662	56
RbF(800H <sub>2</sub> O)	104.4662	55
RbF(1000H <sub>2</sub> O)	104.4662	54
RbF(1500H <sub>2</sub> O)	104.4662	53
RbF(2000H <sub>2</sub> O)	104.4662	52
RbF(3000H <sub>2</sub> O)	104.4662	51
RbF(5000H <sub>2</sub> O)	104.4662	5
RbF(10000H <sub>2</sub> O)	104.4662	49
RbF(20000H <sub>2</sub> O)	104.4662	48
RbF(50000H <sub>2</sub> O)	104.4662	47
RbF(100000H <sub>2</sub> O)	104.4662	46
RbF:1.5H <sub>2</sub> O(cr)	131.4893	64 65
RbF(HCONH <sub>2</sub> :s)	104.4662	63
Rb <sub>2</sub> F <sub>2</sub> (g)	208.9324	67 68 480 480 480 66
RbHF <sub>2</sub> (cr)	124.4726	481 481 481 69 70
RbCl(cr)	120.9208	71 73 75 79 80 81 84 85 86 88 90 94 95 96 100 101 102 103 104 105 106 107 116 316 340 365 367 378 387 388 389 419 420 482 482 482 301 302 304
RbCl(g)	120.9208	73 75 79 80 81 84 85 86 88 90 113 115 483 483 483 72
RbCl(ai)	120.9208	13 14 94 95 98 99 100 101 102 103 104 105 106 107 339 346 379 428 429 430
RbCl(400H <sub>2</sub> O)	120.9208	97
RbCl(1000H <sub>2</sub> O)	120.9208	96 98 347
RbCl(2500H <sub>2</sub> O)	120.9208	99 315
RbCl(50HCOOH)	120.9208	108
RbCl(HCONH <sub>2</sub> :s)	120.9208	109
RbCl(HCONHCH <sub>3</sub> :s)	120.9208	110
RbCl(C <sub>4</sub> H <sub>8</sub> O <sub>2</sub> :s)	120.9208	112
RbCl(CH <sub>3</sub> OH:u)	120.9208	111

Table 1. Index to the Compounds and Their Reactions - Continued

COMPOUND	MOLAR MASS g/mol	REACTION NOS.
Rb <sub>2</sub> Cl <sub>2</sub> (g)	241.8416	113 115 116 484 484 484 114
RbClO <sub>3</sub> (cr)	168.9190	117 118 119 485 485 485
RbClO <sub>3</sub> (ai)	168.9190	118 119 431 432 433
RbClO <sub>4</sub> (cr)	184.9184	120 121 122 123 124 486 486 486
RbClO <sub>4</sub> (ai)	184.9184	120 121 122 123 124 434 435 436
RbClO <sub>4</sub> (HCONH <sub>2</sub> :s)	184.9184	128
RbClO <sub>4</sub> (HCONHCH <sub>3</sub> :s)	184.9184	127
RbClO <sub>4</sub> (HCON(CH <sub>3</sub> ) <sub>2</sub> :s)	184.9184	126
RbClO <sub>4</sub> (CH <sub>3</sub> CON(CH <sub>3</sub> ) <sub>2</sub> :s)	184.9184	129
RbClO <sub>4</sub> (C <sub>4</sub> H <sub>8</sub> SO <sub>2</sub> :u)	184.9184	125
RbBr(cr)	165.3768	130 133 134 135 136 139 140 141 142 143 144 145 147 148 194 195 487 487 487
RbBr(g)	165.3768	133 134 135 136 488 488 488 131
RbBr(ai)	165.3768	139 140 141 142 143 144 145 437 438 439
RbBr(1000H <sub>2</sub> O)	165.3768	138
RbBr(HCONH <sub>2</sub> :s)	165.3768	146
RbBr <sub>3</sub> (cr)	325.1948	147 148
Rb <sub>2</sub> Br <sub>2</sub> (g)	330.7536	132
RbBrO <sub>3</sub> (cr)	213.3750	490 490 490 151 152
RbBrO <sub>3</sub> (ai)	213.3750	442 151 152 440 441
RbBrCl <sub>2</sub> (cr)	236.2828	154
RbBr <sub>2</sub> Cl(cr)	280.7388	156
RbI(cr)	212.3722	157 160 161 162 163 164 166 167 168 169 171 175 176 177 180 181 182 184 225 226 227 335 493 493 493 336
RbI(g)	212.3722	160 161 162 163 164 166 494 494 494 158
RbI(ai)	212.3722	167 168 169 170 443 444 445
RbI(2000H <sub>2</sub> O)	212.3722	170 171
RbI(1000NH <sub>2</sub> CH <sub>2</sub> CH <sub>2</sub> NH <sub>2</sub> )	212.3722	178
RbI(CH <sub>3</sub> CONHCH <sub>3</sub> :s <sub>2</sub> )	212.3722	174
RbI(HCONH <sub>2</sub> :s)	212.3722	179
RbI(HCONHCH <sub>3</sub> :s)	212.3722	173
RbI(HCON(CH <sub>3</sub> ) <sub>2</sub> :s)	212.3722	175 176 177

Table 1. Index to the Compounds and Their Reactions - Continued

COMPOUND	MOLAR MASS g/mol	REACTION NOS.
RbI(CH <sub>3</sub> CN:u)	212.3722	172
RbI <sub>3</sub> (cr)	466.1810	180 181 182 184 495 495 495
Rb <sub>2</sub> I <sub>2</sub> (g)	424.7444	159
RbIO <sub>3</sub> (cr)	260.3704	187
RbIO <sub>3</sub> (ai)	260.3704	446 448 447
RbICl <sub>2</sub> (cr)	283.2782	188
RbICl <sub>4</sub> (cr)	354.1842	189
RbIBr <sub>2</sub> (cr)	372.1902	194 195
RbIBrCl(cr)	327.7342	196
Rb <sub>2</sub> S(cr)	202.9996	198
Rb <sub>2</sub> S(ai)	202.9996	449 450 451
Rb <sub>2</sub> S(500H <sub>2</sub> O)	202.9996	197
RbS <sub>208</sub> -(ao)	277.5910	499 499 499 199 200
Rb <sub>2</sub> SO <sub>4</sub> (cr)	266.9972	203 205 206 208 500 500 500
Rb <sub>2</sub> SO <sub>4</sub> (g)	266.9972	204
Rb <sub>2</sub> SO <sub>4</sub> (ai)	266.9972	205 206 208 209 452 453 454
Rb <sub>2</sub> SO <sub>4</sub> (500H <sub>2</sub> O)	266.9972	207 209
Rb <sub>2</sub> SO <sub>4</sub> (800H <sub>2</sub> O)	266.9972	210
Rb <sub>2</sub> SO <sub>4</sub> (1000H <sub>2</sub> O)	266.9972	211
Rb <sub>2</sub> SO <sub>4</sub> (1500H <sub>2</sub> O)	266.9972	212
Rb <sub>2</sub> SO <sub>4</sub> (2000H <sub>2</sub> O)	266.9972	213
Rb <sub>2</sub> SO <sub>4</sub> (3000H <sub>2</sub> O)	266.9972	214
Rb <sub>2</sub> SO <sub>4</sub> (5000H <sub>2</sub> O)	266.9972	215
Rb <sub>2</sub> SO <sub>4</sub> (10000H <sub>2</sub> O)	266.9972	216
Rb <sub>2</sub> SO <sub>4</sub> (20000H <sub>2</sub> O)	266.9972	217
Rb <sub>2</sub> SO <sub>4</sub> (50000H <sub>2</sub> O)	266.9972	218
Rb <sub>2</sub> SO <sub>4</sub> (100000H <sub>2</sub> O)	266.9972	219
Rb <sub>2</sub> SO <sub>4</sub> (200000H <sub>2</sub> O)	266.9972	220
Rb <sub>2</sub> SO <sub>4</sub> (500000H <sub>2</sub> O)	266.9972	221
RbHS(cr)	118.5398	202
RbHS(500H <sub>2</sub> O)	118.5398	201
RbHSO <sub>4</sub> (cr)	182.5374	223
RbHSO <sub>4</sub> (400H <sub>2</sub> O)	182.5374	222
RbSO <sub>2</sub> F(cr)	168.5290	224
RbI:3S02(cr)	404.5606	225 226 227
Rb <sub>2</sub> SeO <sub>3</sub> (cr)	297.8938	228 229
Rb <sub>2</sub> SeO <sub>4</sub> (cr)	313.8932	230
Rb <sub>2</sub> SeO <sub>4</sub> (aq)	313.8932	231
RbHSe(cr)	165.4358	232
RbHSe(ai)	165.4358	234
RbHSe(aq)	165.4358	233
Rb <sub>2</sub> TeO <sub>3</sub> (cr)	346.5338	235
Rb <sub>2</sub> TeO <sub>3</sub> (6000H <sub>2</sub> O)	346.5338	236
Rb <sub>2</sub> TeO <sub>3</sub> :H <sub>2</sub> O(cr)	364.5492	237
Rb <sub>2</sub> TeO <sub>3</sub> :3H <sub>2</sub> O(cr)	400.5800	238
Rb <sub>2</sub> TeBr <sub>6</sub> (cr)	777.9596	239
RbN <sub>3</sub> (cr)	127.4879	240
RbN <sub>3</sub> (ai)	127.4879	456
RbN <sub>3</sub> (aq)	127.4879	241

Table 1. Index to the Compounds and Their Reactions - Continued

COMPOUND	MOLAR MASS g/mol	REACTION NOS.
RbNO <sub>2</sub> (cr)	131.4733	242
RbNO <sub>2</sub> (ai)	131.4733	457 459 458
RbNO <sub>3</sub> (cr)	147.4727	252 253 502 502
		502 251
RbNO <sub>3</sub> (ai)	147.4727	247 249 252 253
		460 462 251 461
RbNO <sub>3</sub> (130H <sub>2</sub> O)	147.4727	245
RbNO <sub>3</sub> (135H <sub>2</sub> O)	147.4727	244
RbNO <sub>3</sub> (200H <sub>2</sub> O)	147.4727	246
RbNO <sub>3</sub> (400H <sub>2</sub> O)	147.4727	229 247
RbNO <sub>3</sub> (1000H <sub>2</sub> O)	147.4727	248
RbNO <sub>3</sub> (3200H <sub>2</sub> O)	147.4727	249 409 410
RbNO <sub>3</sub> (5000H <sub>2</sub> O)	147.4727	250
RbNO <sub>3</sub> (6000H <sub>2</sub> O)	147.4727	192
RbPO <sub>3</sub> (cr)	164.4398	258
RbH <sub>2</sub> PO <sub>4</sub> (cr)	182.4552	255 256
Rb <sub>2</sub> H <sub>2</sub> P <sub>2</sub> O <sub>7</sub> (cr)	346.8950	257
RbPF <sub>6</sub> (cr)	230.4320	503 503 503 259
		260
RbSb(cr)	207.2178	263
RbSb <sub>2</sub> (cr)	328.9678	262
Rb <sub>3</sub> Sb(cr)	378.1534	265
Rb <sub>3</sub> Sb <sub>7</sub> (cr)	1108.6534	261
Rb <sub>5</sub> Sb <sub>4</sub> (cr)	914.3390	264
SbCl <sub>3</sub> :3RbCl(cr)	590.8714	266
7RbBr:3SbBr <sub>3</sub> (cr)	2242.0686	267
RbC <sub>8</sub> (cr)	181.5574	268
RbC <sub>10</sub> (cr)	205.5798	269
RbC <sub>24</sub> (cr)	373.7366	270
RbC <sub>36</sub> (cr)	517.8710	271
RbC <sub>48</sub> (cr)	662.0054	272
RbC <sub>60</sub> (cr)	806.1398	273
RbC <sub>72</sub> (cr)	950.2742	274
Rb <sub>2</sub> C <sub>03</sub> (cr)	230.9450	279 292 293 504
		504 504 275
Rb <sub>2</sub> C <sub>03</sub> (ai)	230.9450	277 463 464 465
Rb <sub>2</sub> C <sub>03</sub> (5.76H <sub>2</sub> O)	230.9450	278
Rb <sub>2</sub> C <sub>03</sub> (200H <sub>2</sub> O)	230.9450	279 280
Rb <sub>2</sub> C <sub>03</sub> (2000H <sub>2</sub> O)	230.9450	277 280
Rb <sub>2</sub> C <sub>03</sub> :H <sub>2</sub> O(cr)	248.9604	282
Rb <sub>2</sub> C <sub>03</sub> :1.5H <sub>2</sub> O(cr)	257.9681	283
Rb <sub>2</sub> C <sub>03</sub> :3H <sub>2</sub> O(cr)	284.9912	285
RbHCO <sub>3</sub> (cr)	146.4852	291 292 505 505
		505 293
RbHCO <sub>3</sub> (ai)	146.4852	291 466 467 468
RbHCO <sub>3</sub> (200H <sub>2</sub> O)	146.4852	288
RbHCO <sub>3</sub> (2000H <sub>2</sub> O)	146.4852	287
C <sub>2</sub> H <sub>5</sub> ORb:C <sub>2</sub> H <sub>5</sub> OH(cr)	176.5994	289
3Rb <sub>2</sub> C <sub>03</sub> :2RbHCO <sub>3</sub> :4.5H <sub>2</sub> O(cr)	1066.8747	290
RbCN(cr)	111.4857	298
Rb <sub>2</sub> SiF <sub>6</sub> (cr)	313.0120	300
Rb <sub>2</sub> GeCl <sub>6</sub> (cr)	456.2436	506 506 506 301
		302

Table 1. Index to the Compounds and Their Reactions - Continued

COMPOUND	MOLAR MASS g/mol	REACTION NOS.
Rb <sub>2</sub> SnCl <sub>6</sub> (cr)	502.3436	507 507 507 303 304
Rb <sub>2</sub> SnBr <sub>6</sub> (cr)	769.0796	306
PbI <sub>2</sub> :2RbI(cr)	885.7432	308
PbI <sub>2</sub> :2RbI:4H <sub>2</sub> O(cr)	957.8048	309
RbBO <sub>2</sub> (cr)	128.2776	508 508 508 310 311 312
RbBO <sub>2</sub> (g)	128.2776	509 509 509 311 313
RbBF <sub>4</sub> (cr)	172.2724	314
RbBCl <sub>4</sub> (cr)	238.0908	315 316
RbB(ClO <sub>4</sub> ) <sub>4</sub> (cr)	494.0812	317
RbAl(SeO <sub>4</sub> ) <sub>2</sub> :12H <sub>2</sub> O(cr)	614.5493	318
Rb <sub>2</sub> ZnCl <sub>4</sub> (cr)	378.1176	319
Rb <sub>2</sub> ZnBr <sub>4</sub> (cr)	555.9416	320
RbCl:ZnSO <sub>4</sub> (cr)	282.3524	323
CuCl <sub>2</sub> :2RbCl(cr)	376.2876	326
CuCl <sub>2</sub> :2RbCl:4H <sub>2</sub> O(cr)	448.3492	328
RbAg <sub>4</sub> I <sub>5</sub> (cr)	1151.4698	334 335 518 518 518 337 338 336 519 519 519 337 338
Rb <sub>2</sub> AgI <sub>3</sub> (cr)	659.5188	339 340 345 346 347
RbNiCl <sub>3</sub> (cr)	250.5368	348
RbCoCl <sub>3</sub> (cr)	250.7600	351
Rb <sub>2</sub> CoCl <sub>4</sub> (cr)	371.6808	352
Rb <sub>3</sub> CoCl <sub>5</sub> (cr)	492.6016	353
RbFeCl <sub>3</sub> (cr)	247.6738	526 526 526 354 355
Rb <sub>2</sub> FeCl <sub>4</sub> (cr)	368.5946	356
Rb <sub>2</sub> PtCl <sub>4</sub> (cr)	507.8376	357
Rb <sub>2</sub> PtCl <sub>6</sub> (cr)	578.7436	358
RbPtNH <sub>3</sub> Cl <sub>3</sub> (cr)	403.9475	529 529 529 361 362
Rb <sub>2</sub> IrCl <sub>6</sub> (cr)	575.8736	362 469 470
RbMnCl <sub>3</sub> (cr)	246.7648	364
RbReO <sub>4</sub> (cr)	335.6654	363
RbReO <sub>4</sub> (ai)	335.6654	365 367
Rb <sub>2</sub> CrO <sub>4</sub> (cr)	286.9292	366
Rb <sub>3</sub> CrO <sub>4</sub> F(cr)	391.3954	367
Rb <sub>3</sub> CrCl <sub>6</sub> (cr)	521.1174	368
Rb <sub>3</sub> Cr <sub>2</sub> C <sub>19</sub> (cr)	679.4724	369
RbMoF <sub>6</sub> (cr)	295.3982	370
RbWF <sub>6</sub> (cr)	383.3082	372
Rb <sub>3</sub> VC <sub>16</sub> (cr)	520.0634	373
Rb <sub>3</sub> V <sub>2</sub> C <sub>19</sub> (cr)	677.3644	374
RbNbO <sub>3</sub> (cr)	226.3720	473
RbNbO <sub>3</sub> (ai)	226.3720	376
RbNbCl <sub>6</sub> (cr)	391.0918	378 379
Rb <sub>2</sub> NbOC <sub>15</sub> (cr)	457.1060	386
RbTaCl <sub>6</sub> (cr)	479.1338	384
RbTiCl <sub>3</sub> (cr)	239.7268	385
Rb <sub>2</sub> TiCl <sub>4</sub> (cr)	360.6476	

Table 1. Index to the Compounds and Their Reactions - Continued

COMPOUND	MOLAR MASS g/mol	REACTION NOS.
Rb <sub>2</sub> TiCl <sub>6</sub> (cr)	431.5536	387 388 389
Rb <sub>2</sub> TiBr <sub>6</sub> (cr)	698.2896	390
Rb <sub>3</sub> TiBr <sub>6</sub> (cr)	783.7574	391
Rb <sub>3</sub> Ti <sub>2</sub> Br <sub>9</sub> (cr)	1071.3844	392
RbGd(Fe(CN) <sub>6</sub> )(cr)	454.6722	393
RbCe(Fe(CN) <sub>6</sub> ):2H <sub>2</sub> O(cr)	473.5730	394
RbUF <sub>6</sub> (cr)	437.4872	395
Rb(UO <sub>2</sub> ) <sub>2</sub> F <sub>5</sub> (cr)	720.5154	396
Rb <sub>3</sub> UO <sub>2</sub> F <sub>5</sub> (cr)	621.4232	397
Rb <sub>5</sub> (UO <sub>2</sub> ) <sub>2</sub> F <sub>9</sub> (cr)	1138.3802	398
RbUC <sub>15</sub> (cr)	500.7618	399
RbUC <sub>16</sub> (cr)	536.2148	400
Rb <sub>2</sub> UC <sub>16</sub> (cr)	621.6826	401
Rb <sub>4</sub> UC <sub>18</sub> (cr)	863.5242	402
Rb <sub>2</sub> UBr <sub>6</sub> (cr)	888.4186	403
Rb <sub>2</sub> ThCl <sub>6</sub> (cr)	615.6917	404
Rb <sub>2</sub> ThCl <sub>6</sub> :9H <sub>2</sub> O(cr)	777.8303	405
Rb <sub>4</sub> ThCl <sub>8</sub> (cr)	857.5333	406
Rb <sub>2</sub> Mg(SeO <sub>4</sub> ) <sub>2</sub> (6400H <sub>2</sub> O)	481.1628	411
Rb <sub>2</sub> Mg(SeO <sub>4</sub> ) <sub>2</sub> :6H <sub>2</sub> O(cr)	589.2552	409 410
RbCaCl <sub>3</sub> (cr)	231.9068	412
RbNO <sub>2</sub> :2Ba(NO <sub>2</sub> ) <sub>2</sub> (cr)	590.1753	416
Ba(NO <sub>2</sub> ) <sub>2</sub> :2RbNO <sub>2</sub> (cr)	492.2976	415
RbNaBr <sub>2</sub> (g)	268.2756	417
NaRb <sub>2</sub> CrCl <sub>6</sub> (cr)	458.6394	418
RbKC <sub>12</sub> (cr)	195.4758	419 420
RbKC <sub>12</sub> (g)	195.4758	421

# THERMOCHEMICAL MEASUREMENTS ON RUBIDIUM COMPOUNDS

19

Table 2. The Catalog of Thermochemical Measurements at 298.15 K

NO.	REACTION OR SUBSTANCE	PROP. MEAS.	OBSVD.	INIT.	RESID.	EST.	REF.
			VALUE	UNC.	OBS-CALC	REL.	
kJ/mol or J/(mol K)							
1	Rb(cr)		S= 76.78	0.29	.000	a	73HUL/DES
$H-H(0\text{ K}) = 1.790 \pm 0.005 \text{ KCAL/MOL}$ , $C_p = 7.424 \pm 0.005 \text{ CAL/(MOL K)}$							
<u>CONSTRAINT - SOLVED EXACTLY.</u>							
2	Rb(g)		S= 170.089	0.021	.000	a	73HUL/DES
At 0.1 MPa.							
$H-H(0\text{ K}) = 1.481 \pm 0.002 \text{ KCAL/MOL}$ , $C_p = 4.968 \pm 0.004 \text{ CAL/(MOL K)}$							
<u>CONSTRAINT - SOLVED EXACTLY.</u>							
3	Rb(cr) = Rb(g)		$\Delta H =$ 80.877	0.209	.000	a	73HUL/DES
<u>CONSTRAINT - SOLVED EXACTLY.</u>							
4	Rb(cr) = Rb(g)		$\Delta H =$ 80.977	0.335	.100	b	65BUC/FAU
VAPOR PRESSURE DATA 307-363 K. INCLUDED IN 73HUL/DES							
<u>LISTED FOR INFORMATION ONLY.</u>							
5	Rb(cr) = Rb(g)		$\Delta H =$ 82.994	0.544	2.117	b	24SCO
VAPOR PRESSURE DATA 354-400 K INCLUDED IN 73HUL/DES							
<u>LISTED FOR INFORMATION ONLY.</u>							
6	Rb(cr) = Rb(g)		$\Delta H =$ 80.902	0.335	.025	b	26KIL
VAPOR PRESSURE 312-377 K. INCLUDED IN 73HUL/DES							
<u>LISTED FOR INFORMATION ONLY.</u>							
7	Rb(g) = Rb+(g)		$\Delta H =$ 409.224	0.000	.000 0.002	70MOO	
IONIZATION POTENTIAL FROM OPTICAL SPECTRA							
<u>CONSTRAINT - SOLVED EXACTLY.</u>							
8	Rb+(g) = Rb+2(g)		$\Delta H =$ 2638.81	0.25	-.013	a	72REA/EPS
IONIZATION POTENTIAL FROM OPTICAL SPECTRA							
9	Rb+2(g) = Rb+3(g)		$\Delta H =$ 3834.2	83.7	.962	a	70MOO
IONIZATION POTENTIAL FROM OPTICAL SPECTRA							
10	Rb(cr) + H+(ac) = Rb+(ac) + 0.5 H2(g)		$\Delta G =$ -282.194	0.033	1.791 0.20	15LEW/ARG	
At 0.1 MPa.							
CELL Rb(Hg)/RbOH(0.1M)/NCE, AND Rb/Rb(Hg) FROM 56FRI/SCH							
USING ESTIMATED GAMMA 0.1M RbOH = 0.785							
<u>LISTED FOR INFORMATION ONLY.</u>							
11	Rb(cr) = Rb(185Hg)		$\Delta G =$ -103.72	0.42	1.925 0.40	15LEW/ARG	
<u>LISTED FOR INFORMATION ONLY.</u>							
12	Rb(cr) = Rb(185Hg)		$\Delta G =$ -103.89	0.42	1.757 0.40	75JOR/TOB	
<u>LISTED FOR INFORMATION ONLY.</u>							

Table 2. The Catalog of Thermochemical Measurements at 298.15 K - Continued

NO.	REACTION OR SUBSTANCE	PROP. MEAS.	OBSV.D. VALUE	INIT. UNC.	RESID. OBS-CALC	EST. REL.	REF.
13	Rb(185Hg) + AgCl(cr) = Ag(cr) + RbCl(ai)	$\Delta G$ =	-199.723	0.209	.046	a	74LON/MUD
14	Rb(185Hg) + AgCl(cr) = Ag(cr) + RbCl(ai) CONVERTED FROM Rb(427Hg) USING 56FRI/SCH	$\Delta G$ =	-199.941	0.209	-.172	a	64LEB/ALE
15	Rb(185Hg) + OH-(ao) + H+(ao) = RbOH(ai) + 0.5 H2(g) AT 0.1 MPa.	$\Delta G$ =	-172.192	0.209	6.130	0.20	15LEW/ARG
	<u>LISTED FOR INFORMATION ONLY.</u>						
16	RbOH(75H2O) = RbOH(200H2O) ESTIMATED, BASED ON 72VOR/MON <u>CONSTRAINT - SOLVED EXACTLY.</u>	$\Delta H$ =	0.21	0.04	.000	a	75NBS
17	RbOH(100H2O) = RbOH(200H2O) ESTIMATED <u>CONSTRAINT - SOLVED EXACTLY.</u>	$\Delta H$ =	0.08	0.04	.000	a	75NBS
17a	RbOH(147H2O) = RbOH(200H2O) ESTIMATED, BASED ON 72VOR/MON <u>CONSTRAINT - SOLVED EXACTLY.</u>	$\Delta H$ =	0.04	0.04	.000	a	75NBS
18	RbOH(200H2O) = RbOH(ai) ESTIMATED <u>CONSTRAINT - SOLVED EXACTLY.</u>	$\Delta H$ =	-0.04	0.21	.000	a	75NDS
19	Rb(cr) + H2O(l) = RbOH(ai) + 0.5 H2(g) CORR. TO INFINITE DILN. AND 25°C <u>LISTED FOR INFORMATION ONLY.</u>	$\Delta H$ =	-199.2	2.1	-3.828	0.15	08REN
20	Rb(cr) + H2O(l) = RbOH(ai) + 0.5 H2(g) CORR. TO INFINITE DILN. USING VOROB'EV DATA.	$\Delta H$ =	-195.322	0.105	.008	b	67GUN
21	Rb(cr) + H2O(l) = RbOH(ai) + 0.5 H2(g) <u>LISTED FOR INFORMATION ONLY.</u>	$\Delta H$ =	-190.92	0.59	4.414	b	65VOR/IBR
22	Rb(cr) + H2O(l) = RbOH(ai) + 0.5 H2(g)	$\Delta H$ =	-195.06	0.42	.272	b	72VOR/MON
23	2 RbO2(cr) = Rb2O2(cr) + O2(g) DECOMPOSITION PRESSURES 280-360°C CORRECTED TO 25°C BY 2ND LAW	$\Delta H$ =	85.4	3.3	.000	6.0	62KRA/PET
24	Rb2O2(cr) = Rb2O(cr) + 0.5 O2(g) DECOMPOSITION PRESSURES 300-360°C CORRECTED TO 25°C BY 2ND LAW VALUE APPEARS LOW IN COMPARISON WITH Na2O AND K2O SYSTEMS <u>LISTED FOR INFORMATION ONLY.</u>	$\Delta H$ =	32.43	4.18	-100.625	7.5	62KRA/PET
25	Rb2O2(cr) = Rb2O(cr) + 0.5 O2(g) <u>LISTED FOR INFORMATION ONLY.</u>	$\Delta H$ =	109.	21.	-24.267	b	34CEN/BLU
26	Rb2O(cr) + H2(g) = 2 Rb(cr) + H2O(l) COMBINATION OF HEATS OF REACTION WITH H2O OF Rb AND Rb2O $\Delta C_p = 8 \text{ CAL/(MOL K)}$ <u>LISTED FOR INFORMATION ONLY.</u>	$\Delta H$ =	110.9	6.3	57.802	6.0	90BEK

# THERMOCHEMICAL MEASUREMENTS ON RUBIDIUM COMPOUNDS

21

Table 2. The Catalog of Thermochemical Measurements at 298.15 K - Continued

NO.	REACTION OR SUBSTANCE	PROP. MEAS.	OBSV'D. VALUE	INIT. UNC.	RESID. OBS-CALC	EST. REL.	REF.
27	Rb <sub>2</sub> O(cr) + H <sub>2</sub> O(l) = 2 RbOH(ai)		ΔH = -337.2	2.9	.356	6.0	08REN
	CORR. TO INFINITE DILN AND 25°C FROM 18°C. ΔC <sub>p</sub> = -85 CAL/(MOL K)						
28	RbO <sub>2</sub> (cr) + 0.5 H <sub>2</sub> O(l) = RbOH(ai) + 0.75 O <sub>2</sub> (g)		ΔH = -58.6	0.8	1.015	2.0	65D'0/WOO
	IN DIL. NaOH. CORR TO INFINITE DILN.						
29	Rb <sub>2</sub> O(g) = 2 Rb(g) + 0.5 O <sub>2</sub> (g)		ΔH = 212.1	14.6	.167	a	66NOR/STA
	KNUDSEN EFFUSION AND MASS SPECTROMETRY						
30	RbH(cr) = Rb(cr) + 0.5 H <sub>2</sub> (g)		ΔH = 26.8	6.3	-25.522	0.23	51HER
	DECOMP. PRESS. 245-350°C. CORR. TO SOLID AND 25°C						
	<u>LISTED FOR INFORMATION ONLY.</u>						
31	RbOH(g) = Rb(g) + OH(g)		ΔH = 351.	17.	-6.862	8.0	66JEN/PAD
	FROM FLAME STUDIES REDUCED BY THIRD LAW TO 0 K						
32	Rb(g) + H <sub>2</sub> O(g) = RbOH(g) + H(g)		ΔH = 138.	21.	-2.347	8.0	71KEL/PAD
	FROM FLAME STUDIES						
33	RbH(cr) + H <sub>2</sub> O(l) = RbOH(ai) + H <sub>2</sub> (g)		ΔH = -142.955	0.126	.075	0.20	67GUN
	CORR. TO INFINITE DILN.						
34	RbOH(cr) = RbOH(ai)		ΔH = -62.97	0.63	.000	a	06FOR
	CONVERTED FROM 20°C WITH ΔC <sub>p</sub> = -38 CAL/(MOL K)						
35	RbOH:H <sub>2</sub> O(cr) = RbOH(ai) + H <sub>2</sub> O(l)		ΔH = -18.16	0.29	-.021	0.63	06FOR
	CONVERTED FROM 20°C WITH ΔC <sub>p</sub> = -28 CAL/(MOL K)						
36	RbOH:2H <sub>2</sub> O(cr) = RbOH(ai) + 2 H <sub>2</sub> O(l)		ΔH = 0.42	0.29	.000	0.63	09FOR
	CONVERTED FROM 15°C WITH ΔC <sub>p</sub> = -20 CAL/(MOL K)						
37	2 RbOH(g) = (RbOH) <sub>2</sub> (g)		ΔH = -180.	42.	.000	a	59SCH/POR2
	KNUDSEN EFFUSION AND MASS SPECTROMETRY						
38	RbF(cr) = RbF(g)		ΔH = 226.15	2.51	-.209	4.4	58SEN/STO
	VP 862-1063 K						
	CORRECTED TO 298 K USING 61SMI/KAY AND 73MAC 2ND LAW						
39	RbF(cr) = RbF(g)		ΔH = 226.81	2.51	.460	b	58SEN/STO
	VP 1087-1332 K						
	CORRECTED TO 298 K USING 61SMI/KAY AND 73MAC 2ND LAW						
40	RbF(cr) = RbF(g)		ΔH = 242.3	6.3	15.899	b	22RUF/SCH
	VP 1140-1400°C. CORRECTED TO 298 K USING 61SMI/KAY AND 73MAC						
	2ND LAW						
41	RbF(cr) = RbF(g)		ΔH = 225.9	6.3	-.418	b	21WAR/SCH
	VP 1163-1410°C. CORRECTED TO 298 K USING 61SMI/KAY AND 73MAC						
	2ND LAW						

Table 2. The Catalog of Thermochemical Measurements at 298.15 K - Continued

NO.	REACTION OR SUBSTANCE	PROP. MEAS.	OBSV'D. VALUE	INIT. UNC.	RESID. OBS-CALC	EST. REL.	REF.
							kJ/mol or J/(mol K)
42	RbF(cr) = RbF(g) 2ND LAW FROM MASS SPECT-KNUDSEN AT 950 K, CORR TO 25°C		ΔH= 225.1	3.3	-1.255	b	58EIS/ROT
43	RbF(g) At 0.1 MPa. H-E(0 K) = 2.292±0.025 KCAL/MOL, Cp = 8.53±0.10 CAL/(MOL K) CALCULATED FROM MOLECULAR DATA IN 73BRU/KAR,		S- 237.08	0.53	.000	a	78NES
44	RbF(cr) = RbF(g) VP 853-960 K. EQUATION ONLY		ΔH= 233.9	4.2	7.531	b	58FUG/BAR
45	RbF(cr) = RbF(100H2O) CORR. TO 25°C FROM 15°C WITH ΔCp = -30 CAL/(MOL K)		ΔH= -25.5	0.4	-.042	a	11FOR
46	RbF(100000H2O) = RbF(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>		ΔH= -0.042	0.013	.000	a	65PAR
47	RbF(50000H2O) = RbF(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>		ΔH= -0.054	0.013	.000	a	65PAR
48	RbF(20000H2O) = RbF(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>		ΔH= -0.088	0.013	.000	a	65PAR
49	RbF(10000H2O) = RbF(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>		ΔH= -0.121	0.013	.000	a	65PAR
50	RbF(5000H2O) = RbF(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>		ΔH= -0.163	0.013	.000	a	65PAR
51	RbF(3000H2O) = RbF(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>		ΔH= -0.201	0.013	.000	a	65PAR
52	RbF(2000H2O) = RbF(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>		ΔH= -0.238	0.013	.000	a	65PAR
53	RbF(1500H2O) = RbF(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>		ΔH= -0.264	0.013	.000	a	65PAR
54	RbF(1000H2O) = RbF(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>		ΔH= -0.310	0.013	.000	a	65PAR
55	RbF(800H2O) = RbF(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>		ΔH= -0.335	0.013	.000	a	65PAR
56	RbF(600H2O) = RbF(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>		ΔH= -0.372	0.013	.000	a	65PAR
57	RbF(500H2O) = RbF(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>		ΔH= -0.397	0.013	.000	a	65PAR
58	RbF(400H2O) = RbF(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>		ΔH= -0.427	0.013	.000	a	65PAR

# THERMOCHEMICAL MEASUREMENTS ON RUBIDIUM COMPOUNDS

23

Table 2. The Catalog of Thermochemical Measurements at 298.15 K - Continued

NO.	REACTION OR SUBSTANCE	PROP. MEAS.	OBSV.D.	INIT.	RESID.	EST.	REF.
			VALUE	UNC.	OBS-CALC	REL.	
kJ/mol or J/(mol K)							
59	RbF(300H <sub>2</sub> O) = RbF(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔH=	-0.464	0.013	.000	a	65PAR
kJ/mol or J/(mol K)							
60	RbF(200H <sub>2</sub> O) = RbF(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔH=	-0.510	0.013	.000	a	65PAR
kJ/mol or J/(mol K)							
61	RbF(150H <sub>2</sub> O) = RbF(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔH=	-0.544	0.013	.000	a	65PAR
kJ/mol or J/(mol K)							
62	RbF(100H <sub>2</sub> O) = RbF(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔH=	-0.586	0.013	.000	a	65PAR
kJ/mol or J/(mol K)							
63	RbF(cr) = RbF(HCONH <sub>2</sub> :s) FORMAMIDE	ΔH=	-22.05	0.16	.000	a	65SOM/COO
kJ/mol or J/(mol K)							
64	RbF:1.5H <sub>2</sub> O(cr) = RbF(100H <sub>2</sub> O) + 1.5 H <sub>2</sub> O(l) CORR. TO 25°C FROM 15°C WITH ΔC <sub>p</sub> = -15 CAL/(MOL K)	ΔH=	1.97	0.63	.136	0.80	11FOR2
kJ/mol or J/(mol K)							
65	RbF:1.5H <sub>2</sub> O(cr) = RbF(cr) + 1.5 H <sub>2</sub> O(g) DECOMPOSITION OF HYDRATE AT 30-80°C	ΔH=	93.3	1.3	-.025	0.80	68THA/CHI
kJ/mol or J/(mol K)							
66	Rb <sub>2</sub> F <sub>2</sub> (g) At 0.1 MPa. CALCULATED FROM DATA IN 76WEL/LAZ. H-H(0 K) = 4.60±0.15 KCAL/MOL C <sub>p</sub> = 19.1±0.2 CAL/(MOL K)	S=	344.0	1.3	.000	a	78NBS
kJ/mol or J/(mol K)							
67	Rb <sub>2</sub> F <sub>2</sub> (g) = 2 RbF(g) FROM MASS SPECTRAL INTENSITIES	ΔH=	183.7	20.9	-7.113	19.	58EIS/ROT
kJ/mol or J/(mol K)							
68	Rb <sub>2</sub> F <sub>2</sub> (g) = 2 RbF(g) MASS SPECTROMETRIC USING Na <sub>2</sub> F <sub>2</sub> AS REFERENCE	ΔH=	202.1	20.9	11.297	b	59SCH/POR1
kJ/mol or J/(mol K)							
69	RbHF <sub>2</sub> (cr) H-H(0 K) = 3.932±0.004 KCAL/MOL, C <sub>p</sub> = 18.97±0.02 CAL/(MOL K)	S=	120.08	0.13	.000	a	61BUR/WES
kJ/mol or J/(mol K)							
70	RbHF <sub>2</sub> (cr) = RbF(100H <sub>2</sub> O) + HF(100H <sub>2</sub> O) CONVERTED FROM 16°C WITH ΔC <sub>p</sub> = -55 CAL/(MOL K)	ΔH=	19.92	0.63	-.042	a	11FOR3
kJ/mol or J/(mol K)							
71	RbCl(cr) REINTEGRATED AT NBS. H-H(0 K) = 2.917±0.004 KCAL/MOL, C <sub>p</sub> = 12.52±0.04 CAL/(MOL K) <u>CONSTRAINT - SOLVED EXACTLY.</u>	S=	95.90	0.17	.000	a	69PAU/KHR
kJ/mol or J/(mol K)							
72	RbCl(g) At 0.1 MPa. CALCULATED FROM MOLECULAR CONSTANTS IN 73BRU/KAR, H-H(0 K) = 2.402±0.025 KCAL/MOL, C <sub>p</sub> = 8.80±0.05 CAL/(MOL K)	S=	249.56	0.63	.000	a	78NBS
kJ/mol or J/(mol K)							
73	RbCl(cr) = RbCl(g) VP 833-964 K, 3RD LAW APPROX. CORR. FOR DIMER REDUCED TO 298 K USING 60DW0/BRE AND 69VAS/POD	ΔH=	215.9	1.3	9.414	4.4	38NIW
kJ/mol or J/(mol K)							

Table 2. The Catalog of Thermochemical Measurements at 298.15 K - Continued

NO.	REACTION OR SUBSTANCE	PROP. MEAS.	OBSV.D.	INIT.	RESID.	EST.	REF.
			VALUE	UNC.	OBS-CALC	REL.	
							kJ/mol or J/(mol K)
74	RbCl(cr) = RbCl(g)		ΔH= 215.0	1.0	9.414	b	38NIW2
	VP 833-964 K, 3RD LAW	SAME DATA AS 38NIW					
	APPROX. CORR. FOR DIMER						
	REDUCED TO 298 K USING 60DWO/BRE AND 69VAS/POD						
	<u>LISTED FOR INFORMATION ONLY.</u>						
75	RbCl(cr) = RbCl(g)		ΔH= 207.9	1.3	1.464	b	38NIW
	VP 833-964 K, 2ND LAW.	APPROX. CORR. FOR DIMER.					
	REDUCED TO 298 K USING 60DWO/BRE AND 69VAS/POD						
76	RbCl(cr) = RbCl(g)		ΔH= 207.9	1.3	1.464	b	38NIW2
	VP 833-964 K, 2ND LAW.	APPROX. CORR. FOR DIMER.					
	SAME DATA AS 38NIW						
	REDUCED TO 298 K USING 60DWO/BRE AND 69VAS/POD						
	<u>LISTED FOR INFORMATION ONLY.</u>						
77	RbCl(cr) = RbCl(g)		ΔH= 190.8	4.2	-15.690	b	38KAN/WIE
	REDUCED TO 298 K USING 60DWO/BRE AND 69VAS/POD						
	VP 1133-1263 K, 2ND LAW.	APPROX. CORR. FOR DIMER.					
	<u>LISTED FOR INFORMATION ONLY.</u>						
78	RbCl(cr) = RbCl(g)		ΔH= 221.8	7.5	15.272	b	38MAY/WIN
	VP 885-925 K, 2ND LAW						
	APPROX. CORR. FOR DIMER.						
	REDUCED TO 298 K USING 60DWO/BRE AND 69VAS/POD						
	<u>LISTED FOR INFORMATION ONLY.</u>						
79	RbCl(cr) = RbCl(g)		ΔH= 201.2	4.6	-5.230	b	53TRE/WER
	VP 831-944 K, 2ND LAW						
	APPROX. CORR. FOR DIMER.						
	REDUCED TO 298 K USING 60DWO/BRE AND 69VAS/POD						
80	RbCl(cr) = RbCl(g)		ΔH= 210.9	1.3	4.393	b	53TRE/WER
	VP 831-944 K, 3RD LAW						
	APPROX. CORR. FOR DIMER.						
	REDUCED TO 298 K USING 60DWO/BRE AND 69VAS/POD						
81	RbCl(cr) = RbCl(g)		ΔH= 208.4	1.3	1.883	b	57NES/SAZ
	VP 876-978 K, 3RD LAW						
	APPROX. CORR. FOR DIMER.						
	REDUCED TO 298 K USING 60DWO/BRE AND 69VAS/POD						
82	RbCl(cr) = RbCl(g)		ΔH= 251.5	18.8	44.978	b	21RUF/MUG
	VP 1415-1668 K, 2ND LAW						
	APPROX. CORR. FOR DIMER.						
	REDUCED TO 298 K USING 60DWO/BRE AND 69VAS/POD						
	<u>LISTED FOR INFORMATION ONLY.</u>						
83	RbCl(cr) = RbCl(g)		ΔH= 245.2	1.3	38.702	b	38MAY/WIN
	VP 885-925 K, 3RD LAW						
	APPROX. CORR. FOR DIMER.						
	REDUCED TO 298 K USING 60DWO/BRE AND 69VAS/POD						
	<u>LISTED FOR INFORMATION ONLY.</u>						

# THERMOCHEMICAL MEASUREMENTS ON RUBIDIUM COMPOUNDS

25

Table 2. The Catalog of Thermochemical Measurements at 298.15 K - Continued

NO.	REACTION OR SUBSTANCE	PROP. MEAS.	OBSVSD. VALUE	INIT. UNC.	RESID. OBS-CALC	EST. REL.	REF.
							kJ/mol or J/(mol K)
84	RbCl(cr) = RbCl(g) VP 676-878 K, 2ND LAW APPROX. CORR. FOR DIMER. REDUCED TO 298 K USING 60DWO/BRE AND 69VAS/POD	$\Delta H^\circ$	202.5	3.8	-3.975	b	57NES/SAZ
85	RbCl(cr) = RbCl(g) VP 1434-1557 K, 2ND LAW APPROX. CORR. FOR DIMER. REDUCED TO 298 K USING 60DWO/BRE AND 69VAS/POD	$\Delta H^\circ$	210.5	3.8	3.975	b	21WAR/SCH
86	RbCl(cr) = RbCl(g) ION CURRENTS 830-970 K, 2ND LAW CORRECTED FOR DIMER. REDUCED TO 298 K USING 60DWO/BRE AND 69VAS/POD	$\Delta H^\circ$	205.0	6.3	-1.464	b	60MIL/KLE
87	RbCl(cr) = RbCl(g) FROM VP AT 1200 K, NO DETAILS. 2ND LAW APPROX. CORR. FOR DIMER. REDUCED TO 298 K USING 60DWO/BRE AND 69VAS/POD <u>LISTED FOR INFORMATION ONLY.</u>	$\Delta H^\circ$	193.3	3.3	-13.180	b	72EMO/BRA
88	RbCl(cr) = RbCl(g) VP 890-980 K, ONLY 2ND LAW DELTA H GIVEN. APPROX. CORR. FOR DIMER. REDUCED TO 298 K USING 60DWO/BRE AND 69VAS/POD	$\Delta H^\circ$	212.5	4.2	6.067	b	69HAS/SWI
89	RbCl(cr) = RbCl(g) VP 1213-1362 K, EQUATION ONLY, 2ND LAW. APPROX. CORR. FOR DIMER. REDUCED TO 298 K USING 60DWO/BRE AND 69VAS/POD <u>LISTED FOR INFORMATION ONLY.</u>	$\Delta H^\circ$	192.9	2.9	-13.598	b	72TOP
90	RbCl(cr) = RbCl(g) VP 825 K, 2ND LAW DELTA H ONLY. APPROX. CORR. FOR DIMER. REDUCED TO 298 K USING 60DWO/BRE AND 69VAS/POD	$\Delta H^\circ$	213.4	14.6	6.904	b	68BLO/HAS
91	Rb(cr) + AgCl(cr) = RbCl(ai) + Ag(cr) CELL Rb(Hg)/RbCl(aq)/AgCl/Ag AND Rb/Rb(Hg) FROM 56FKR1/SCH <u>LISTED FOR INFORMATION ONLY.</u>	$\Delta G^\circ$	-303.357	0.033	2.059	0.20	64LEB/ALE
92	Rb(cr) + AgCl(cr) = Ag(cr) + RbCl(ai) USED Rb/Rb(Hg) FROM 75JOR/TOB <u>LISTED FOR INFORMATION ONLY.</u>	$\Delta G^\circ$	-303.591	0.209	1.824	b	74LON/MUS
93	Rb(cr) + AgCl(cr) = RbCl(ai) + Ag(cr) USED Rb/Rb(Hg) FROM 75JOR/TOB <u>LISTED FOR INFORMATION ONLY.</u>	$\Delta G^\circ$	-303.813	0.209	1.602	b	64LEB/ALE
94	RbCl(cr) = RbCl(ai) CORRECTED TO 25°C AND INFINITE DILUTION	$\Delta H^\circ$	16.82	0.63	-.209	0.15	12HAI

Table 2. The Catalog of Thermochemical Measurements at 298.15 K - Continued

NO.	REACTION OR SUBSTANCE	PROP. MEAS.	OBSV.D.	INIT.	RESID.	EST.	REF.
			VALUE	UNC.	OBS-CALC	REL.	
95	RbCl(cr) = RbCl(ai) CORR. TO INFINITE DILN.	$\Delta H^\ddagger$	17.217	0.167	.188	b	56SAM
96	RbCl(cr) = RbCl(1000H <sub>2</sub> O)	$\Delta H^\ddagger$	17.82	0.42	.555	0.17	64PAO/VAC
97	RbCl(400H <sub>2</sub> O) = RbCl(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	$\Delta H^\ddagger$	-0.289	0.042	.000	a	65PAR
98	RbCl(1000H <sub>2</sub> O) = RbCl(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	$\Delta H^\ddagger$	-0.264	0.084	-.025	a	65PAR
99	RbCl(2500H <sub>2</sub> O) = RbCl(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	$\Delta H^\ddagger$	-0.21	0.08	.000	a	65PAR
100	RbCl(cr) = RbCl(ai) CORR. TO 25°C FROM 15 AND 35°C, AND TO INFINITE DILN.	$\Delta H^\ddagger$	17.45	0.54	.418	b	60SAM/BUS
101	RbCl(cr) = RbCl(ai) CORR. TO 25°C AND INFINITE DILN.	$\Delta H^\ddagger$	17.07	0.33	.042	b	10ZEM/RAM
102	RbCl(cr) = RbCl(ai) CORR. TO INFINITE DILN.	$\Delta H^\ddagger$	16.95	0.13	-.084	b	65EHR/KOK
103	RbCl(cr) = RbCl(ai) CORR. TO INFINITE DILN.	$\Delta H^\ddagger$	16.74	0.08	-.293	b	66VOR/IBR
104	RbCl(cr) = RbCl(ai)	$\Delta H^\ddagger$	16.90	0.08	-.126	b	66WU/FRI
105	RbCl(cr) = RbCl(ai) FROM SOLUBILITY AND ACTIVITY DATA IN 58MAK/EVS, 66BEL/LE, 53DUR/ROC, 58RAT/MAK	$\Delta G^\ddagger$	-7.41	0.08	.000	a	75NBS
106	RbCl(cr) = RbCl(ai) CORR. TO INFINITE DILN.	$\Delta H^\ddagger$	17.029	0.293	.000	b	69TSV/RAB
107	RbCl(cr) = RbCl(ai) CORR. TO 25°C AND INFINITE DILN.	$\Delta H^\ddagger$	17.209	0.628	.180	b	06FOR2
108	RbCl(cr) = RbCl(50HCOOH) FORMIC ACID	$\Delta H^\ddagger$	4.008	0.84	.033	a	64KOT/IVA
109	RbCl(cr) = RbCl(HCONH <sub>2</sub> :s) FORMAMIDE	$\Delta H^\ddagger$	2.971	0.021	.042	0.05	65SOM/COO
110	RbCl(cr) = RbCl(HCONHCH <sub>3</sub> :s) CONVERTED FROM 26.9°C WITH $\Delta C_p$ = -25 CAL/(MOL K). N-METHYLFORMAMIDE	$\Delta H^\ddagger$	3.56	0.21	.042	a	72GIL/SIN
111	RbCl(cr) = RbCl(CH <sub>3</sub> OH:u)	$\Delta H^\ddagger$	9.20	0.33	.042	a	71KRI/FRI
112	RbCl(cr) = RbCl(C <sub>4</sub> H <sub>8</sub> O <sub>2</sub> :s) IN 20 PERCENT DIOXANE-WATER MIXTURE	$\Delta H^\ddagger$	15.376	0.209	.021	a	66FEA/SMI

# THERMOCHEMICAL MEASUREMENTS ON RUBIDIUM COMPOUNDS

27

Table 2. The Catalog of Thermochemical Measurements at 298.15 K - Continued

NO.	REACTION OR SUBSTANCE	PROP. MEAS.	OBSVD. VALUE	INIT. UNC.	RESID. OBS-CALC	EST. REL.	REF.
							kJ/mol or J/(mol K)
113	2 RbCl(g) = Rb <sub>2</sub> Cl <sub>2</sub> (g) FROM RELATIVE ION CURRENTS IN MASS SPECTROMETER		ΔH= -175.7	20.9	-14.226	b	61DAT/SMI
114	Rb <sub>2</sub> Cl <sub>2</sub> (g) At 0.1 MPa. H-H(0 K) = 4.94±0.15 KCAL/MOL, Cp = 19.4±0.2 CAL/(MOL K) CALCULATED FROM DATA IN 76WEL/LAZ		S= 373.3	1.3	.000	a	78.NBS
115	2 RbCl(g) = Rb <sub>2</sub> Cl <sub>2</sub> (g) FROM DIFFERENCE IN SUBLIMATION SLOPES (ION CURRENTS)		ΔH= -155.2	20.9	6.276	12.	60MIL/KLE
116	2 RbCl(cr) = Rb <sub>2</sub> Cl <sub>2</sub> (g) FROM PARTIAL PRESSURES, ION CURRENTS		ΔH= 255.2	20.9	3.766	12.	60MIL/KLE
117	RbClO <sub>3</sub> (cr) Cp = 24.86±0.05 CAL/(MOL K)		S= 151.9	1.7	.000	a	61KEL/KIN
118	RbClO <sub>3</sub> (cr) = RbClO <sub>3</sub> (ai) CORR. TO INFINITE DILN.		ΔH= 47.74	0.25	-.042	a	38PIT
119	RbClO <sub>3</sub> (cr) = RbClO <sub>3</sub> (ai) SOLUBILITY DATA. GAMMA FROM DAVIES EQ.		ΔG= 7.15	0.42	-1.339	0.85	12CAL
120	RbClO <sub>4</sub> (cr) = RbClO <sub>4</sub> (ai) CORR. TO INFINITE DILN.		ΔH= 56.73	0.25	.000	a	38PIT
121	RbClO <sub>4</sub> (cr) = RbClO <sub>4</sub> (ai) IN NaOH(400) CORR. TO INFINITE DILN. TAKEN AS NEGLECTABLE		ΔH= 56.61	0.42	-.126	b	73KRI/BAB
122	RbClO <sub>4</sub> (cr) = RbClO <sub>4</sub> (ai) SOLUBILITY. GAMMA FROM DAVIES EQ.		ΔG= 14.234	0.042	-.159	0.05	69GUE
123	RbClO <sub>4</sub> (cr) = RbClO <sub>4</sub> (ai) SOLUBILITY. GAMMA FROM DAVIES EQ.		ΔG= 14.401	0.042	.008	b	12CAL
124	RbClO <sub>4</sub> (cr) = RbClO <sub>4</sub> (ai) SOLUBILITY. GAMMA FROM DAVIES EQ.		ΔG= 14.410	0.042	.017	b	70BIK/KUZ
125	RbClO <sub>4</sub> (cr) = RbClO <sub>4</sub> (C <sub>4</sub> H <sub>8</sub> SO <sub>2</sub> :v) CORR. TO 25°C. SULFOLANE.		ΔH= 9.41	0.63	.000	a	69CHO/BEN
126	RbClO <sub>4</sub> (cr) = RbClO <sub>4</sub> (HCON(CH <sub>3</sub> ) <sub>2</sub> :s) CONVERTED FROM 26.9°C WITH ΔCp = -50 CAL/(MOL K). N,N-DIMETHYLFORMAMIDE		ΔH= -7.74	0.21	.000	a	72GIL/SIN
127	RbClO <sub>4</sub> (cr) = RbClO <sub>4</sub> (HCONHCH <sub>3</sub> :s) CONVERTED FROM 26.9°C WITH ΔCp = -50 CAL/(MOL K). N-METHYLFORMAMIDE		ΔH= 11.72	0.21	.000	a	72GIL/SIN
128	RbClO <sub>4</sub> (cr) = RbClO <sub>4</sub> (HCONH <sub>2</sub> :s) FORMAMIDE. CONVERTED FROM 26.9°C WITH ΔCp = -50 CAL/(MOL K).		ΔH= 17.32	0.21	.000	a	72GIL/SIN

Table 2. The Catalog of Thermochemical Measurements at 298.15 K - Continued

NO.	REACTION OR SUBSTANCE		PROP.	OBSVd.	INIT.	RESID.	EST.	REF.
			MEAS.	VALUE	UNC.	OBS-CALC	REL.	
								kJ/mol or J/(mol K)
129	RbClO <sub>4</sub> (cr) = RbClO <sub>4</sub> (CH <sub>3</sub> CON(CH <sub>3</sub> ) <sub>2</sub> -s) N,N-DIMETHYLACETAMIDE CORRECTED FROM 26.9°C WITH ΔC <sub>p</sub> = -45 CAL/(MOL K)		ΔH <sub>f</sub>	-10.04	0.21	.000	a	75RAU/BAN
130	RbBr(cr) H-H(0 K) = 3.124±0.005 KCAL/MOL, C <sub>p</sub> = 12.63±0.01 CAL/(MOL K). REINTEGRATED AT NBS. <u>CONSTRAINT - SOLVED EXACTLY.</u>		S <sub>f</sub>	109.96	0.21	.000	a	49CLU/GOL
131	RbBr(g) At 0.1 MPa. CALCULATED FROM MOLECULAR CONSTANTS IN 73BRU/KAR, H-H(0 K) = 2.455±0.025 KCAL/MOL, C <sub>p</sub> = 8.89±0.05 CAL/(MOL K)		S <sub>f</sub>	261.02	0.63	.000	a	78NBS
132	Rb <sub>2</sub> Br <sub>2</sub> (s) At 0.1 MPa. CALCULATED FROM DATA IN 76WEL/LAZ H-H(0 K) = 5.19±0.15 KCAL/MOL, C <sub>p</sub> = 19.6±0.2 CAL/(MOL K)		S <sub>f</sub>	390.6	1.3	.000	a	78NBS
133	RbBr(cr) = RbBr(g) VP 1372-1631 K, 2ND LAW. APPROX. CORR. FOR DIMER. USED ESTIMATED ΔC <sub>p</sub> TO CORRECT TO 298 K. ΔfusH FROM 60DWG/BRE		ΔH <sub>f</sub>	209.6	2.1	-2.134	4.5	21WAR/SCH
134	RbBr(cr) = RbBr(g) VP 1323-1638 K, 2ND LAW APPROX. CORR. FOR DIMER. USED ESTIMATED ΔC <sub>p</sub> TO CORRECT TO 298 K. ΔfusH FROM 60DWG/BRE		ΔH <sub>f</sub>	208.8	7.5	-2.971	b	21RUF/MUG
135	RbBr(cr) = RbBr(g) VP 856-911 K, 2ND LAW. APPROX. CORR. FOR DIMER. USED ESTIMATED ΔC <sub>p</sub> TO CORRECT TO 298 K. ΔfusH FROM 60DWG/BRE		ΔH <sub>f</sub>	219.7	6.3	7.908	b	38MAY/WIN
136	RbBr(cr) = RbBr(g) VP 650-850 K. EQUATION ONLY. 2ND LAW. APPROX. CORR. FOR DIMER. USED ESTIMATED ΔC <sub>p</sub> TO CORRECT TO 298 K. ΔfusH FROM 60DWG/BRE		ΔH <sub>f</sub>	208.4	2.9	-3.389	b	68MAK/STU
137	RbBr(cr) = RbBr(g) VP EQUATION ONLY, 2ND LAW. APPROX. CORR. FOR DIMER. USED ESTIMATED ΔC <sub>p</sub> TO CORRECT TO 298 K. ΔfusH FROM 60DWG/BRE <u>LISTED FOR INFORMATION ONLY.</u>		ΔH <sub>f</sub>	194.6	2.9	-17.196	b	72TOP
138	RbBr(1000H <sub>2</sub> O) = RbBr(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>		ΔH <sub>f</sub>	-0.234	0.084	.000	a	65PAR
139	RbBr(cr) = RbBr(ai) IN H <sub>2</sub> CL(100) CORR. UNCERTAIN.		ΔH <sub>f</sub>	23.51	1.26	1.632	0.4	64SHC/VAS

# THERMOCHEMICAL MEASUREMENTS ON RUBIDIUM COMPOUNDS

29

Table 2. The Catalog of Thermochemical Measurements at 298.15 K - Continued

NO.	REACTION OR SUBSTANCE	PROP. MEAS.	OBSVD.	INIT.	RESID.	EST.	REF.
			VALUE	UNC.	OBS-CALC	REL.	
140	RbBr(cr) = RbBr(ai) CORR. TO INFINITE DILN.	$\Delta H =$	23.01	1.05	1.130	b	11FOR
141	RbBr(cr) = RbBr(ai) IN RB101H(75). CORR.-TO INFINITE DILN.	$\Delta H =$	21.67	0.63	-.209	b	68STE/PLY
142	RbBr(cr) = RbBr(ai) CORR. TO INFINITE DILN.	$\Delta H =$	21.88	0.42	.000	b	37LAN/MAR
143	RbBr(cr) = RbBr(ai) SOLUBILITY. GAMMA FROM 54MAX/VLA	$\Delta G =$	-6.159	0.042	-.008	0.20	59MAK/POP
144	RbBr(cr) = RbBr(ai) SOLUBILITY. GAMMA FROM 54MAX/VLA	$\Delta G =$	-6.443	0.029	-.293	b	66VLA/STE
145	RbBr(cr) = RbBr(ai) SOLUBILITY. GAMMA FROM 54MAX/VLA	$\Delta G =$	-6.259	0.209	-.109	b	53DUR/ROC
146	RbBr(cr) = RbBr(HCONH2:s) FORMAMIDE	$\Delta H =$	3.14	0.04	.000	a	65SQM/COO
147	RbBr3(cr) = RbBr(cr) + Br2(g) DECOMPOSITION PRESSURE 63-105°C	$\Delta H =$	53.6	4.2	-1.159	4.0	17EPH
148	RbBr3(cr) = RbBr(cr) + Br2(g) DECOMPOSITION PRESSURES 36-78°C	$\Delta H =$	56.5	5.4	1.770	b	25HUT/SCH
149	RbBr3(cr) = RbBr(cr) + Br2(g) At 0.1 MPa. DECOMPOSITION PRESSURE 63-105°C LEADS TO UNREASONABLE S RbBr3(cr)=50 CAL/(MOL K) <u>FOR INFORMATION ONLY.</u> ALSO, VARIABLE NOT SOLVED OR DATA MISSING.	$\Delta G =$	11.3	1.3			17EPH
150	RbBr3(cr) = RbBr(cr) + Br2(g) At 0.1 MPa. DECOMPOSITION PRESSURES 36-78°C LEADS TO UNREASONABLE S RbBr3(cr)=53 CAL/(MOL K) <u>FOR INFORMATION ONLY.</u> ALSO, VARIABLE NOT SOLVED OR DATA MISSING.	$\Delta G =$	13.4	1.7			25HUT/SCH
151	RbBrO3(cr) = RbBrO3(ai) SOLUBILITY. GAMMA FROM DAVIES EQ.	$\Delta G =$	12.64	0.21	-.042	a	21BUE/MCC
152	RbBrO3(cr) = RbBrO3(ai) CORR. TO INFINITE DILN.	$\Delta H =$	49.04	0.42	.000	a	62BOY/VAL
153	RbBrCl2(cr) = RbCl(cr) + 0.5 Br2(g) + 0.5 Cl2(g)	$\Delta G =$	8.3	2.1			17EPH
	At 0.1 MPa. DECOMPOSITION PRESSURES 17-93°C PRODUCTS UNCERTAIN <u>FOR INFORMATION ONLY.</u> ALSO, VARIABLE NOT SOLVED OR DATA MISSING.						
154	RbBrCl2(cr) = RbCl(cr) + 0.5 Br2(g) + 0.5 Cl2(g)	$\Delta H =$	65.3	6.3	-1.018	a	17EPH
	DECOMPOSITION PRESSURES 17-93°C PRODUCTS UNCERTAIN						

Table 2. The Catalog of Thermochemical Measurements at 298.15 K - Continued

NO.	REACTION OR SUBSTANCE	PROP. MEAS.	OBSV.D.	INIT.	RESID.	EST.	REF.
			VALUE	UNC.	OBS-CALC	REL.	
							kJ/mol or J/(mol K)
155	RbBr <sub>2</sub> Cl(cr) = RbCl(cr) + Br <sub>2</sub> (g) At 0.1 MPa. DECOMPOSITION PRESSURES 18-81°C <u>FOR INFORMATION ONLY. ALSO. VARIABLE NOT SOLVED OR DATA MISSING</u>		ΔG=	10.0	1.3		17EPH
156	RbBr <sub>2</sub> Cl(cr) = RbCl(cr) + Br <sub>2</sub> (g) DECOMPOSITION PRESSURES 18-81°C		ΔH=	67.8	4.2	- .155	a 17EPH
157	RbI(cr)		S=	118.41	0.21	.000	a 49CLU/GOL
	H-H(0 K) = 3.190±0.010 KCAL/MOL, Cp = 12.71±0.05 cal.K -1. REINTEGRATED AT NBS <u>CONSTRAINT - SOLVED EXACTLY.</u>						
158	RbI(g)		S=	268.81	0.63	.000	a 78NBS
	At 0.1 MPa. CALCULATED FROM MOLECULAR DATA IN 73BRU/KAR, H-H(0 K) = 2.499±0.025. KCAL/MOL, Cp = 8.93±0.05 CAL/(MOL K)						
159	Rb <sub>2</sub> I <sub>2</sub> (g)		S=	415.6	1.3	.000	a 78NBS
	At 0.1 MPa. CALCULATED FROM DATA IN 76WEL/LAZ. H-H(0 K) = 5.29± 0.15 KCAL/MOL, Cp = 19.7±0.2 CAL/(MOL K)						
160	RbI(cr) = RbI(g)		ΔH=	198.3	2.1	-1.172	4.5 68MAK/STU
	VP 650-850 K, EQUATION ONLY, 2ND LAW. APPROX. CORR. FOR DIMER. USED ESTIMATED ΔC <sub>p</sub> TO CORRECT TO 298 K. ΔfusH FROM 60DWO/BRE						
161	RbI(cr) = RbI(g)		ΔH=	205.4	1.3	5.941	b 58BRI
	VP 700-900 K, 2ND LAW. APPROX. CORR. FOR DIMER. USED ESTIMATED ΔC <sub>p</sub> TO CORRECT TO 298 K. ΔfusH FROM 60DWO/BRE						
162	RbI(cr) = RbI(g)		ΔH=	203.8	8.4	4.268	b 21RUF/MUG
	VP 1348-1598 K, 2ND LAW. APPROX. CORR. FOR DIMER. USED ESTIMATED ΔC <sub>p</sub> TO CORRECT TO 298 K. ΔfusH FROM 60DWO/BRE						
163	RbI(cr) = RbI(g)		ΔH=	202.5	4.2	3.012	b 21WAR/SCH
	VP 1308-1575 K, 2ND LAW. APPROX. CORR. FOR DIMER. USED ESTIMATED ΔC <sub>p</sub> TO CORRECT TO 298 K. ΔfusH FROM 60DWO/BRE						
164	RbI(cr) = RbI(g)		ΔH=	195.0	6.3	-4.519	b 38NIW
	VP 773-873 K, 2ND LAW. APPROX. CORR. FOR DIMER. USED ESTIMATED ΔC <sub>p</sub> TO CORRECT TO 298 K. ΔfusH FROM 60DWO/BRE.						
165	RbI(cr) = RbI(g)		ΔH=	195.0	6.3	-4.519	b 38NIW2
	VP 773-873 K, 2ND LAW. APPROX. CORR. FOR DIMER. SAME DATA AS 38NIW USED ESTIMATED ΔC <sub>p</sub> TO CORRECT TO 298 K. ΔfusH FROM 60DWO/BRE. <u>LISTED FOR INFORMATION ONLY.</u>						

## THERMOCHEMICAL MEASUREMENTS ON RUBIDIUM COMPOUNDS

31

Table 2. The Catalog of Thermochemical Measurements at 298.15 K - Continued

NO.	REACTION OR SUBSTANCE	PROP. MEAS.	OBSV.D. VALUE	INIT. UNC.	RESID. OBS-CALC	EST. REL.	REF.
166	RbI(cr) = RbI(g)	$\Delta H^\circ$	197.1	2.9	-2.427	b	72TOP
	VP EQUATION ONLY, 2ND LAW. APPROX. CORR. FOR DIMER.						
	USED ESTIMATED $\Delta C_p$ TO CORRECT TO 298 K.						
	$\Delta f_{usH}$ FROM 60DWO/BRE						
167	RbI(cr) = RbI(ai)	$\Delta G^\circ$	-6.69	0.08	.000	a	75NBS
	SOLUBILITIES FROM 41BRI/CON, 31PAJ/KAR, 08FOO/CHA, GAMMA						
	FROM 61MAR/STU						
168	RbI(cr) = RbI(ai)	$\Delta G^\circ$	-6.640	0.084	.054	b	61MAK/STU
	SOLUBILITY AND ACTIVITY COEF.						
169	RbI(cr) = RbI(ai)	$\Delta H^\circ$	25.5	0.8	-1.925	1.5	11FOR
	CONVERTED FROM 15°C WITH $\Delta C_p = -40$ CAL/(MOL K)						
170	RbI(2000H2O) = RbI(ai)	$\Delta H^\circ$	-0.197	0.021	.000	a	65PAR
	<u>CONSTRAINT - SOLVED EXACTLY.</u>						
171	RbI(cr) = RbI(2000H2O)	$\Delta H^\circ$	24.06	0.42	-3.586	1.5	97MOS
	CONVERTED FROM 15°C WITH $\Delta C_p = -40$ CAL/(MOL K)						
172	RbI(cr) = RbI(CH3CN:u)	$\Delta H^\circ$	-7.95	0.29	.000	a	73ABR
	ACETONITRILE						
173	RbI(cr) = RbI(HCONHCH3:s)	$\Delta H^\circ$	6.44	0.21	.000	a	72GIL/SIN
	CONVERTED FROM 26.9°C WITH $\Delta C_p = -20$ CAL/(MOL K).						
	N-METHYLFORMAMIDE						
174	RbI( $\alpha$ s) = RbI(CH3CONHCH3: $\alpha$ 2)	$\Delta H^\circ$	-1.500	0.100	.000	a	67WEE/SOM2
	N-METHYLACETAMIDE. CORR. TO 25°C.						
	CONVERTED FROM 26.9°C WITH $\Delta C_p = -20$ CAL/(MOL K).						
175	RbI(cr) = RbI(HCON(CH3)2:s)	$\Delta H^\circ$	-27.61	0.13	.084	0.20	72GIL/SIN
	CORR TO 25°C. N,N-DIMETHYLFORMAMIDE.						
176	RbI(cr) = RbI(HCON(CH3)2:s)	$\Delta H^\circ$	-27.78	0.08	-.084	0.20	67WEE/SOM
	N,N-DIMETHYLFORMAMIDE						
177	RbI(cr) = RbI(HCON(CH3)2:s)	$\Delta H^\circ$	-25.86	0.21	1.841	b	71KRE/ZVE
	N,N-DIMETHYLFORMAMIDE						
178	RbI(cr) = RbI(1000NH2CH2CH2NH2)	$\Delta H^\circ$	-18.83	0.21	.000	a	68SCR/GOD
	ETHYLENEDIAMINE						
179	RbI(cr) = RbI(HCONH2:s)	$\Delta H^\circ$	0.96	0.04	.000	a	65SOM/COO
	FORMAMIDE						
180	RbI(cr) + I2(cr) = RbI3(cr)	$\Delta G^\circ$	-10.17	0.42	-.126	a	
	FROM SOLID STATE CELLS.						

Table 2. The Catalog of Thermochemical Measurements at 298.15 K - Continued

NO.	REACTION OR SUBSTANCE	PROP. MEAS.	OBSV.D.	INIT.	RESID.	EST.	REF.
			VALUE	UNC.	OBS-CALC	REL.	
							kJ/mol or J/(mol K)
181	RbI(cr) + I2(cr) = RbI3(cr) FROM SOLID STATE CELLS.		ΔS= -9.6	2.1	- .598	a	68TOP
182	RbI3(cr) = RbI(cr) + I2(g) DECOMPOSITION PRESSURES 100-180°C, CORRECTED TO 25°C SEE ALSO 68BAB/STE		ΔH= 72.4	2.0	-2.600	0.8	65STE/BAB
183	RbI3(cr) = RbI(cr) + I2(g) DECOMPOSITION PRESSURES 166-200°C, CORR 25°C <u>LISTED FOR INFORMATION ONLY.</u>		ΔH= 59.8	4.2	-15.242	b	17EPH
184	RbI3(cr) = RbI(cr) + I2(g) THERMOGRAVIMETRIC ANALYSIS OF DECOMPOSITION, CORR 25°C		ΔH= 74.5	2.1	- .598	b	69STE/ALL
185	RbIO3(cr) = RbI(cr) + 1.5 O2(g) DECOMPOSITION PRESSURES 597-748K CORR 25°C NOT CLEAR IF AN EQUILIBRIUM PROCESS <u>FOR INFORMATION ONLY.</u> ALSO, VARIABLE NOT SOLVED OR DATA MISSING.		ΔH= 129.3	6.3			67BOU/REM
186	RbIO3(cr) = RbI(cr) + 1.5 O2(g) AT 0.1 MPa. DECOMPOSITION PRESSURES 597-748 K CORR 25°C NOT CLEAR IF AN EQUILIBRIUM PROCESS <u>LISTED FOR INFORMATION ONLY.</u>		ΔG= 74.4	6.3	-23.012	2.0	67BOU/REM
187	RbIO3(cr) = RbIO3(ai) SOLUBILITY = .0926 mol/kg FROM 52LAR/REN, GAMMA=0.6135 FROM DAVIES EQUATION		ΔG= 14.23	0.21	.000	a	75NBS
188	RbICl2(cr) = RbCl(cr) + ICl(CC14:x)		ΔG= 27.2	2.1	- .126	a	31CRE/DUN
189	RbICl4(cr) = RbCl(cr) + Cl2(g) + ICl(g) DECOMPOSITION 35-90°C. FROM THEIR EQUATION		ΔH= 123.68	4.18	-15.648	2.9	58SMY/CUT
190	RbICl4(cr) = RbCl(cr) + Cl2(g) + ICl(g) AT 0.1 MPa. DECOMPOSITION 35-90°C. FROM THEIR EQUATION LEADS TO S RbICl4(cr)=48.6 CAL/(MOL K), CONSIDERED LOW. <u>FOR INFORMATION ONLY.</u> ALSO, VARIABLE NOT SOLVED OR DATA MISSING.		ΔG= 30.81	1.05			58SMY/CUT
191	3 RbICl4(cr) + 15 AgNO3(2000H2O) + 6 H2O(l) = AgI(cr) + 2 AgIO3(cr) + (12HNO3:3RbNO3:12AgCl)(aq) REACTION SPLIT FOR MACHINE PROCESSING		ΔH= -878.58	1.50	.064	a	77FIN/GAT
192	(12HNO3:3RbNO3:12AgCl)(aq) = 12 HNO3(4000H2O) + 12 AgCl(cr) + 3 RbNO3(6000H2O) <u>CONSTRAINT - SOLVED EXACTLY.</u>		ΔH= 0.0	0.0	.000		77FIN/GAT
193	RbIBr2(cr) = RbBr(cr) + IBr(g) DECOMPOSITION 106-175°C LEADS TO S RbIBr2(cr)=60 CAL/(MOL K) <u>FOR INFORMATION ONLY.</u> ALSO, VARIABLE NOT SOLVED OR DATA MISSING.		ΔH= 52.3	2.1			17EPH

Table 2. The Catalog of Thermochemical Measurements at 298.15 K - Continued

NO.	REACTION OR SUBSTANCE	PROP. MEAS.	OBSV'D. VALUE	INIT. UNC.	RESID. OBS-CALC	EST. REL.	REF.
							kJ/mol or J/(mol K)
194	RbIBr <sub>2</sub> (cr) = RbBr(cr) + IBr(g) At 0.1 MPa. DECOMPOSITION 106-175°C.	ΔG=	17.29	2.09	-6.276	1.7	17EPH
195	RbIBr <sub>2</sub> (cr) = RbBr(cr) + IBr(CCl <sub>4</sub> :x)	ΔG=	18.8	1.3	.628	a	31CRE/DUN
196	RbIBrCl(cr) = RbCl(cr) + IBr(CCl <sub>4</sub> :x)	ΔG=	18.8	1.3	.293	a	31CRE/DUN
197	2 RbOH(200H <sub>2</sub> O) + H <sub>2</sub> S(ao) = Rb <sub>2</sub> S(500H <sub>2</sub> O) + 2 H <sub>2</sub> O(l) CONVERTED FROM 18°C WITH ΔC <sub>p</sub> = -60 CAL/(MOL K)	ΔH=	-35.6	2.1	.126	a	14REN/COS
198	Rb <sub>2</sub> S(cr) = Rb <sub>2</sub> S(500H <sub>2</sub> O) CONVERTED FROM 18°C WITH ΔC <sub>p</sub> = -35 CAL/(MOL K)	ΔH=	-103.8	4.2	.000	a	14REN/COS
199	Rb <sup>+</sup> (ao) + S <sub>2</sub> O <sub>8</sub> -2(ao) = RbS <sub>2</sub> O <sub>8</sub> -(ao) FROM OSMOMETRIC MEAS AS FUNCTION OF TEMP AROUND 25°C	ΔG=	-6.65	0.84	.167	a	71CHL/LIS
200	Rb <sup>+</sup> (ao) + S <sub>2</sub> O <sub>8</sub> -2(ao) = RbS <sub>2</sub> O <sub>8</sub> -(ao) FROM OSMOMETRIC MEAS AS FUNCTION OF TEMP AROUND 25°C	ΔH=	5.4	2.1	-.126	a	71CHL/LIS
201	RbOH(200H <sub>2</sub> O) + H <sub>2</sub> S(ao) = RbHS(500H <sub>2</sub> O) + H <sub>2</sub> O(l) ASSUMING RbHS RATHER THAN Rb <sub>2</sub> S	ΔH=	-35.6	2.1	.063	a	14REN/COS
202	RbHS(cr) = RbHS(500H <sub>2</sub> O) CONVERTED FROM 0°C WITH ΔC <sub>p</sub> = -30 CAL/(MOL K)	ΔH=	-3.14	0.42	-.209	0.50	41TEI/KLE
203	Rb <sub>2</sub> SO <sub>4</sub> (cr) H-H(0 K) = 6.458±0.010 KCAL/MOL, C <sub>p</sub> = 32.04±0.05 CAL/(MOL K)	S=	197.44	0.21	.000	a	68PAU/LAV
204	Rb <sub>2</sub> SO <sub>4</sub> (cr) = Rb <sub>2</sub> SO <sub>4</sub> (g) KNUDSEN VAPOR PRESSURES 1090-1300 K, 2ND LAW CORRECTED TO 25° WITH ESTIMATED ΔC <sub>p</sub>	ΔH=	366.9	12.8	-.084	a	71CUB
205	Rb <sub>2</sub> SO <sub>4</sub> (cr) = Rb <sub>2</sub> SO <sub>4</sub> (ai) CONVERTED FROM 15°C WITH ΔC <sub>p</sub> = -75 CAL/(MOL K)	ΔH=	23.8	0.4	-.167	b	06FOR2
206	Rb <sub>2</sub> SO <sub>4</sub> (cr) = Rb <sub>2</sub> SO <sub>4</sub> (ai) CORRECTED TO INFINITE DILN.	ΔH=	24.02	0.13	.000	a	65VOR/IBR
207	2 RbOH(ai) + H <sub>2</sub> SO <sub>4</sub> (200H <sub>2</sub> O) = 2 H <sub>2</sub> O(l) + Rb <sub>2</sub> SO <sub>4</sub> (500H <sub>2</sub> O) CONVERTED FROM 15°C WITH ΔC <sub>p</sub> = -80 CAL/(MOL K)	ΔH=	-126.44	0.84	4.954	0.08	06FOR2
208	Rb <sub>2</sub> SO <sub>4</sub> (cr) = Rb <sub>2</sub> SO <sub>4</sub> (ai) SOLUBILITY FROM 04ETA, 04BER, 52CAL/SMT, GAMMA FROM 50ROB/STO	ΔG=	4.39	0.08	.000	a	75NES
209	Rb <sub>2</sub> SO <sub>4</sub> (500H <sub>2</sub> O) = Rb <sub>2</sub> SO <sub>4</sub> (ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔH=	-0.916	0.013	.000	a	31LAN/STR
210	Rb <sub>2</sub> SO <sub>4</sub> (800H <sub>2</sub> O) = Rb <sub>2</sub> SO <sub>4</sub> (ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔH=	-0.937	0.013	.000	a	31LAN/STR

Table 2. The Catalog of Thermochemical Measurements at 298.15 K - Continued

NO.	REACTION OR SUBSTANCE	PROP. MEAS.	OBSV.D. VALUE	INIT. UNC.	RESID. OBS-CALC	EST. REL.	REF.
						KJ/mol or J/(mol K)	
211	Rb <sub>2</sub> SO <sub>4</sub> (1000H <sub>2</sub> O) = Rb <sub>2</sub> SO <sub>4</sub> (ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔH=	-0.933	0.013	.000	a	31LAN/STR
212	Rb <sub>2</sub> SO <sub>4</sub> (1500H <sub>2</sub> O) = Rb <sub>2</sub> SO <sub>4</sub> (ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔH=	-0.904	0.013	.000	a	31LAN/STR
213	Rb <sub>2</sub> SO <sub>4</sub> (2000H <sub>2</sub> O) = Rb <sub>2</sub> SO <sub>4</sub> (ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔH=	-0.879	0.013	.000	a	31LAN/STR
214	Rb <sub>2</sub> SO <sub>4</sub> (3000H <sub>2</sub> O) = Rb <sub>2</sub> SO <sub>4</sub> (ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔH=	-0.824	0.013	.000	a	31LAN/STR
215	Rb <sub>2</sub> SO <sub>4</sub> (5000H <sub>2</sub> O) = Rb <sub>2</sub> SO <sub>4</sub> (ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔH=	-0.736	0.013	.000	a	31LAN/STR
216	Rb <sub>2</sub> SO <sub>4</sub> (10000H <sub>2</sub> O) = Rb <sub>2</sub> SO <sub>4</sub> (ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔH=	-0.577	0.013	.000	a	31LAN/STR
217	Rb <sub>2</sub> SO <sub>4</sub> (20000H <sub>2</sub> O) = Rb <sub>2</sub> SO <sub>4</sub> (ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔH=	-0.435	0.013	.000	a	31LAN/STR
218	Rb <sub>2</sub> SO <sub>4</sub> (50000H <sub>2</sub> O) = Rb <sub>2</sub> SO <sub>4</sub> (ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔH=	-0.293	0.013	.000	a	31LAN/STR
219	Rb <sub>2</sub> SO <sub>4</sub> (100000H <sub>2</sub> O) = Rb <sub>2</sub> SO <sub>4</sub> (ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔH=	-0.213	0.013	.000	a	31LAN/STR
220	RbOH(200H <sub>2</sub> O) + H <sub>2</sub> SO <sub>4</sub> (200H <sub>2</sub> O) = RbHSO <sub>4</sub> (400H <sub>2</sub> O) + H <sub>2</sub> O(1) CONVERTED FROM 15°C WITH ΔC <sub>p</sub> = 50 CAL/(MOL K)	ΔH=	-0.155	0.013	.000	a	31LAN/STR
221	Rb <sub>2</sub> SO <sub>4</sub> (500000H <sub>2</sub> O) = Rb <sub>2</sub> SO <sub>4</sub> (ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔH=	-0.100	0.013	.000	a	31LAN/STR
222	RbOH(200H <sub>2</sub> O) + H <sub>2</sub> SO <sub>4</sub> (200H <sub>2</sub> O) = RbHSO <sub>4</sub> (400H <sub>2</sub> O) + H <sub>2</sub> O(1) CONVERTED FROM 15°C WITH ΔC <sub>p</sub> = -40 CAL/(MOL K)	ΔH=	-62.13	0.42	-.092	0.40	06FOR2
223	RbHSO <sub>4</sub> (cr) = RbHSO <sub>4</sub> (400H <sub>2</sub> O) CONVERTED FROM 15°C WITH ΔC <sub>p</sub> = -40 CAL/(MOL K)	ΔH=	13.8	0.4	.000	a	06FOR2
224	RbSO <sub>2</sub> F(cr) = RbF(cr) + SO <sub>2</sub> (g) CORRECTED TO 25°C FROM 150°C. THEIR EQUATION ONLY.	ΔH=	89.5	2.1	-.234	a	66SEE/BOU
225	RbI:3SO <sub>2</sub> (cr) = 3 SO <sub>2</sub> (g) + RbI(cr) LEAST SQ OF DECOMP PRESSURE, CORR TO 25°C COMPOUND MAY BE LIQUID	ΔH=	128.03	2.09	.050	3.0	31FOO/FLE
226	RbI:3SO <sub>2</sub> (cr) = 3 SO <sub>2</sub> (g) + RbI(cr) LEAST SQ OF DECOMP DATA COMPOUND MAY BE LIQUID	ΔH=	129.7	6.3	1.724	b	19FOR/TAB

# THERMOCHEMICAL MEASUREMENTS ON RUBIDIUM COMPOUNDS

35

Table 2. The Catalog of Thermochemical Measurements at 298.15 K - Continued

NO.	REACTION OR SUBSTANCE	PROP. MEAS.	OBSV'D. VALUE	TINIT. UNC.	RESID. OBS-CALC	EST. REL.	REF.
227	RbI:SSO <sub>2</sub> (cr) = 3 SO <sub>2</sub> (g) + RbI(cr)	ΔH=	120.1	3.1	-7.899	b	16EPH/KOR LEAST SQ OF DECOMP DATA, CORR TO 25°C. COMPOUND MAY BE LIQUID
228	Rb <sub>2</sub> SeO <sub>3</sub> (cr) = 2 Rb+(ao) + SeO <sub>3</sub> -2(ao)	ΔH=	-36.24	0.64	.502	0.50	60KLU/EEL COMBINING HEATS OF REACTION OF Na <sub>2</sub> SeO <sub>3</sub> AND Rb <sub>2</sub> SeO <sub>3</sub> WITH Pb(NO <sub>3</sub> ) <sub>2</sub> USING DATA FROM 62SEL/LES AND 63SEL/LES
229	Rb <sub>2</sub> SeO <sub>3</sub> (cr)+ 2 NaNO <sub>3</sub> (400H <sub>2</sub> O) = 2 RbNO <sub>3</sub> (400H <sub>2</sub> O) + Na <sub>2</sub> SeO <sub>3</sub> (cr)	ΔH=	-8.8	0.4	.000	0.50	69KLU/SEL
230	Rb <sub>2</sub> SeO <sub>4</sub> (cr) + 2 AgNO <sub>3</sub> (400H <sub>2</sub> O) = Ag <sub>2</sub> SeO <sub>4</sub> (cr) + 2 RbNO <sub>3</sub> (400H <sub>2</sub> O)	ΔH=	-20.21	0.42	-.100	a	60GEL/GAS
231	Rb <sub>2</sub> SeO <sub>4</sub> (aq) = 2 Rb+(ao) + SeO <sub>4</sub> -2(ao)	ΔH=	0.	0.	-.167		75NBS ASSUMED <u>CONSTRAINT - SOLVED EXACTLY.</u>
232	RbHS <sub>e</sub> (cr) - RbHS <sub>e</sub> (aq)	ΔH=	5.20	2.09	.209	a	41TBI/KLE CONVERTED FROM 0°C WITH ΔC <sub>p</sub> = -30 CAL/(MOL K)
233	RbHS <sub>e</sub> (aq) = RbHS <sub>e</sub> (ai)	ΔH=	-0.8	0.4	.000	a	75NBS BASED ON RbHS DATA
234	RbHS <sub>e</sub> (ai) = Rb+(ao) + HSe-(ao)	ΔH=	0.	0.	.126		75NBS <u>CONSTRAINT - SOLVED EXACTLY.</u>
235	Rb <sub>2</sub> TeO <sub>3</sub> (cr) = Rb <sub>2</sub> TeO <sub>3</sub> (6000H <sub>2</sub> O)	ΔH=	-50.96	0.42	.084	0.84	69KHA/SAM CONCENTRATION ASSUMED BASED ON PREVIOUS WORK
236	Rb <sub>2</sub> TeO <sub>3</sub> :H <sub>2</sub> O(cr) = Rb <sub>2</sub> TeO <sub>3</sub> (6000H <sub>2</sub> O) + H <sub>2</sub> O(l)	ΔH=	-27.61	0.21	.063	0.42	69KHA/SAM CONCENTRATION ASSUMED BASED ON PREVIOUS WORK
237	Rb <sub>2</sub> TeO <sub>3</sub> :H <sub>2</sub> O(cr) + Pb(NO <sub>3</sub> ) <sub>2</sub> (265H <sub>2</sub> O) = 2 RbNO <sub>3</sub> (135H <sub>2</sub> O) + PbTeO <sub>3</sub> :0.667H <sub>2</sub> O(vit) + 0.333 H <sub>2</sub> O(l)	ΔH=	-57.3	0.8	-.381	1.6	69KHA/SAM BACK CALCULATED FROM REPORTED ΔH <sub>f</sub>
238	Rb <sub>2</sub> TeO <sub>3</sub> :3H <sub>2</sub> O(cr) + Pb(NO <sub>3</sub> ) <sub>2</sub> (265H <sub>2</sub> O) = 2 RbNO <sub>3</sub> (130H <sub>2</sub> O) + PbTeO <sub>3</sub> :0.667H <sub>2</sub> O(vit) + 2.333 H <sub>2</sub> O(l)	ΔH=	-36.86	0.21	-.214	0.42	69KHA/SAM
239	6 RbBr(cr) + TeO <sub>2</sub> (cr) + 2 H <sub>2</sub> O(l) = Rb <sub>2</sub> TeBr <sub>6</sub> (cr) + 4 RbOH(75H <sub>2</sub> O)	ΔH=	341.0	0.4	-.377	0.80	68STE/PLY
240	RbN <sub>3</sub> (cr) = RbN <sub>3</sub> (aq)	ΔH=	28.03	0.13	.084	0.15	56GRA/WAD ESTIMATED
241	RbN <sub>3</sub> (aq) = RbN <sub>3</sub> (ai)	ΔH=	-0.21	0.21	.000	a	75NBS <u>CONSTRAINT - SOLVED EXACTLY.</u>
242	RbNO <sub>2</sub> (cr) = RbNO <sub>2</sub> (ai)	ΔG=	-9.79	0.63	.251	a	69CHE/PRO V.P. OF SAT. SOLN.
243	RbNO <sub>2</sub> (cr) = RbNO <sub>2</sub> (ai)	ΔH=	12.6	2.1			62PRO/AND FROM MEAT SOLN. MIXTURES WITH Ba(NO <sub>2</sub> ) <sub>2</sub> LEADS TO UNREASONABLE S RbNO <sub>2</sub> (cr)=45 CAL/(MOL K) A VALUE IN LOW 30'S WOULD BE EXPECTED FOR INFORMATION ONLY. ALSO. VARIABLE NOT SOLVED OR DATA MISSING.

Table 2. The Catalog of Thermochemical Measurements at 298.15 K - Continued

NO.	REACTION OR SUBSTANCE	PROP. MEAS.	OBSVd.	INIT.	RESID.	EST.	REF.
			VALUE	UNC.	OBS-CALC	REL.	
244	RbNO <sub>3</sub> (135H <sub>2</sub> O) = RbNO <sub>3</sub> (ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔH=	1.42	0.21	.000	a	65PAR
245	RbNO <sub>3</sub> (130H <sub>2</sub> O) = RbNO <sub>3</sub> (ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔH=	1.46	0.21	.000	a	65PAR
246	RbNO <sub>3</sub> (200H <sub>2</sub> O) = RbNO <sub>3</sub> (ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔH=	0.920	0.209	.000	a	65PAR
247	RbNO <sub>3</sub> (400H <sub>2</sub> O) = RbNO <sub>3</sub> (ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔH=	0.365	0.126	.000	a	65PAR
248	RbNO <sub>3</sub> (1000H <sub>2</sub> O) = RbNO <sub>3</sub> (ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔH=	0.042	0.126	.000	a	65PAR
249	RbNO <sub>3</sub> (3200H <sub>2</sub> O) = RbNO <sub>3</sub> (ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔH=	-0.088	0.021	.004	a	65PAR
250	RbNO <sub>3</sub> (5000H <sub>2</sub> O) = RbNO <sub>3</sub> (ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔH=	-0.092	0.126	.000	a	65PAR
251	RbNO <sub>3</sub> (cr) = RbNO <sub>3</sub> (ai) SOLUBILITY FROM 04BER, GAMMA FROM 72HAM/WU	ΔG=	0.527	0.209	-.017	a	75NBS
252	RbNO <sub>3</sub> (cr) = RbNO <sub>3</sub> (ai) CORRECTED TO 25°C	ΔH=	36.44	0.17	-.084	0.20	12HAI
253	RbNO <sub>3</sub> (cr) = RbNO <sub>3</sub> (ai) UNKNOWN CORR. TO INFINITE DILN.	ΔH=	36.23	0.21	-.293	b	67KRE/EGO
254	RbF:HNF <sub>2</sub> (cr) = RbF(cr) + NF <sub>2</sub> H(g) DECOMPOSITION PRESSURES -65 TO -32°C, CORRECTED TO 25°C <u>NO SOLUTION FOR VARIABLE OR DATA MISSING</u>	ΔH=	38.9	4.2			65LAW/PIL
255	RbH <sub>2</sub> PO <sub>4</sub> (cr) = Rb+(ao) + H <sub>2</sub> PO <sub>4</sub> -(ao)	ΔH=	14.81	0.42	.000	a	74VOR/MON
256	H <sub>3</sub> PO <sub>4</sub> (0.628H <sub>2</sub> O) + RbOH(147H <sub>2</sub> O) = RbH <sub>2</sub> PO <sub>4</sub> (cr) + H <sub>2</sub> O(1)	ΔH=	-100.8	2.1	-5.711	1.2	73RUD/YAG2
257	2 RbH <sub>2</sub> PO <sub>4</sub> (cr) = Rb <sub>2</sub> H <sub>2</sub> P <sub>2</sub> O <sub>7</sub> (cr) + H <sub>2</sub> O(g) DECOMPOSITION PRESSURES. ONLY ΔH AND ΔS GIVEN	ΔH=	75.3	2.9	.067	a	73RUD/YAG
258	Rb <sub>2</sub> H <sub>2</sub> P <sub>2</sub> O <sub>7</sub> (cr) = 2 RbPO <sub>3</sub> (cr) + H <sub>2</sub> O(g) DECOMPOSITION PRESSURES. ONLY ΔH AND ΔS GIVEN	ΔH=	91.2	2.9	-.017	a	73RUD/YAG
259	RbPF <sub>6</sub> (cr) C <sub>p</sub> = 35.4±0.1 CAL/(MOL K)	S=	221.84	0.63	.000	a	63STA/GRE
260	RbPF <sub>6</sub> (cr) = RbF(cr) + PF <sub>5</sub> (g) ESTIMATED, BASED ON K <sub>2</sub> CO <sub>3</sub>	ΔH=	201.2	4.2	.000	a	72EHL/HSI

## THERMOCHEMICAL MEASUREMENTS ON RUBIDIUM COMPOUNDS

37

Table 2. The Catalog of Thermochemical Measurements at 298.15 K - Continued

NO.	REACTION OR SUBSTANCE	PROP. MEAS.	OBSV'D.	INIT.	RESID.	EST.	REF.
			VALUE	UNC.	OBS-CALC	REL.	
kJ/mol or J/(mol K)							
261	Rb <sub>3</sub> Sb <sub>7</sub> (cr) = 7 Sb(cr) + 3 Rb(g) DECOMPOSITION PRESSURE, 596-654 K CORR TO 25°C	ΔH=	552.7	20.9	.042	a	69GER/VOR
262	7 RbSb <sub>2</sub> (cr) = 2 Rb <sub>3</sub> Sb <sub>7</sub> (cr) + Rb(g) DECOMPOSITION PRESSURE 596-690 K, CORR TO 25°C	ΔH=	177.15	4.18	-1.213	a	69GER/VOR
263	2 RbSb(cr) = RbSb <sub>2</sub> (cr) + Rb(g) DECOMPOSITION PRESSURE 589-642 K, CORR TO 25°C	ΔH=	178.2	3.3	-.126	a	69GER/VOR
264	Rb <sub>5</sub> Sb <sub>4</sub> (cr) = 4 RbSb(cr) + Rb(g) DECOMPOSITION PRESSURE, 425-564 K, CORR TO 25°C	ΔH=	124.77	1.67	-.042	a	69GER/VOR
265	4 Rb <sub>3</sub> Sb(cr) = Rb <sub>5</sub> Sb <sub>4</sub> (cr) + 7 Rb(g) DECOMPOSITION PRESSURE, 392-554 K CORR TO 25°C	ΔH=	817.1	1.7	.377	a	69GER/VOR
266	SbCl <sub>3</sub> :3RbCl(cr) = 3 RbCl(cr) + SbCl <sub>3</sub> (g) ESTIMATED CORR. TO 25°C	ΔH=	96.2	3.3	-.209	a	69STE/ALL
267	7RbBr:3SbBr <sub>3</sub> (cr) = 7 RbBr(cr) + 3 SbBr <sub>3</sub> (g) ESTIMATED CORR. TO 25°C	ΔH=	355.2	9.2	-.126	a	69STE/ALL
268	8 C(cr) + Rb(cr) = RbC <sub>8</sub> (cr) CORRECTED FOR HEAT OF FUSION OF Rb	ΔH=	-44.3	2.1	.000	a	64SAE
269	4 RbC <sub>10</sub> (cr) + Rb(g) = 5 RbC <sub>8</sub> (cr) REDUCED FROM 450°C WITH ΔC <sub>p</sub> = -2 CAL/(MOL K)	ΔH=	-169.9	6.3	.544	a	66SAL/ARO
270	5 RbC <sub>24</sub> (cr) + 7 Rb(g) = 12 RbC <sub>10</sub> (cr) REDUCED FROM 500°C WITH ΔC <sub>p</sub> = -14 CAL/(MOL K)	ΔH=	-767.3	43.9	.879	a	66SAL/ARO
271	2 RbC <sub>36</sub> (cr) + Rb(g) = 3 RbC <sub>24</sub> (cr) REDUCED FROM 600°C WITH ΔC <sub>p</sub> = -2 CAL/(MOL K)	ΔH=	-118.4	6.3	-.293	a	66SAL/ARO
272	3 RbC <sub>48</sub> (cr) + Rb(g) = 4 RbC <sub>36</sub> (cr) REDUCED FROM 600°C WITH ΔC <sub>p</sub> = -2 CAL/(MOL K)	ΔH=	-128.0	6.3	.126	a	66SAL/ARO
273	4 RbC <sub>60</sub> (cr) + Rb(g) = 5 RbC <sub>48</sub> (cr) REDUCED FROM 600°C WITH ΔC <sub>p</sub> = -2 CAL/(MOL K)	ΔH=	-134.7	6.3	.126	a	66SAL/ARO
274	5 RbC <sub>72</sub> (cr) + Rb(g) = 6 RbC <sub>60</sub> (cr) REDUCED FROM 600°C WITH ΔC <sub>p</sub> = -2 CAL/(MOL K)	ΔH=	-137.7	6.3	-.711	a	66SAL/ARO
275	Rb <sub>2</sub> CO <sub>3</sub> (cr) H-H(0 K) = 5.851±0.010 KCAL/MOL, C <sub>p</sub> = 8.11±0.06 CAL/(MOL K)	S=	181.33	0.42	.000	a	71PAU/KHR
276	H <sub>2</sub> CO <sub>3</sub> (ao) + 2 RbOH(100H <sub>2</sub> O) = Rb <sub>2</sub> CO <sub>3</sub> (2000H <sub>2</sub> O) + 2 H <sub>2</sub> O(l) CONVERTED FROM 15°C WITH ΔC <sub>p</sub> = -30 CAL/(MOL K) <u>LISTED FOR INFORMATION ONLY.</u>	ΔH=	-84.81	0.29	5.021	0.80	08FOR
277	Rb <sub>2</sub> CO <sub>3</sub> (2000H <sub>2</sub> O) = Rb <sub>2</sub> CO <sub>3</sub> (ai) DECOMPOSITION PRESSURE 576-705 K, 2ND LAW CORRECTED TO 25°C	ΔH=	-0.84	0.13	.000	a	75NBS

## PARKER, EVANS, AND NUTTALL

Table 2. The Catalog of Thermochemical Measurements at 298.15 K - Continued

NO.	REACTION OR SUBSTANCE	PROP. MEAS.	OBSV'D. VALUE	INIT. UNC.	RESID. OBS-CALC	EST. REL.	REF.
278	Rb <sub>2</sub> CO <sub>3</sub> (5.76H <sub>2</sub> O) = Rb <sub>2</sub> CO <sub>3</sub> (200H <sub>2</sub> O) CONVERTED FROM 15°C WITH ΔC <sub>p</sub> = -20 CAL/(MOL K)	ΔH <sup>a</sup>	-4.52	0.21	.084	a	09FOR2
279	Rb <sub>2</sub> CO <sub>3</sub> (cr) = Rb <sub>2</sub> CO <sub>3</sub> (200H <sub>2</sub> O) CONVERTED FROM 15°C WITH ΔC <sub>p</sub> = -50 CAL/(MOL K)	ΔH <sup>a</sup>	-40.08	0.84	.502	a	09FOR2
280	Rb <sub>2</sub> CO <sub>3</sub> (200H <sub>2</sub> O) = Rb <sub>2</sub> CO <sub>3</sub> (2000H <sub>2</sub> O) ESTIMATED <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔH <sup>a</sup>	-2.1	0.4	.000	a	75NBS
281	Rb <sub>2</sub> CO <sub>3</sub> (cr) = Rb <sub>2</sub> CO <sub>3</sub> (ai) UNKNOWN EXTRAPOLATION TO INFINITE DILN. <u>LISTED FOR INFORMATION ONLY.</u>	ΔH <sup>a</sup>	-26.28	2.59	17.238	0.7	71RAF/MY
282	Rb <sub>2</sub> CO <sub>3</sub> :H <sub>2</sub> O(cr) = Rb <sub>2</sub> CO <sub>3</sub> (200H <sub>2</sub> O) + H <sub>2</sub> O(1) CONVERTED FROM 15°C WITH ΔC <sub>p</sub> = -40 CAL/(MOL K)	ΔH <sup>a</sup>	-13.72	0.63	.146	a	09FOR2
283	Rb <sub>2</sub> CO <sub>3</sub> :1.5H <sub>2</sub> O(cr) = Rb <sub>2</sub> CO <sub>3</sub> (200H <sub>2</sub> O) + 1.5 H <sub>2</sub> O(1) CONVERTED FROM 15°C WITH ΔC <sub>p</sub> = -35 CAL/(MOL K)	ΔH <sup>a</sup>	-0.67	0.42	.052	a	09FOR2
284	Rb <sub>2</sub> CO <sub>3</sub> :7/2H <sub>2</sub> O(cr) = Rb <sub>2</sub> CO <sub>3</sub> (200H <sub>2</sub> O) + 3.5 H <sub>2</sub> O(1) CONVERTED FROM 15°C WITH ΔC <sub>p</sub> = -15 CAL/(MOL K) 63CAR AND 67DOB/DZY INDICATE NO 3.5 HYDRATE SEE REWORKED EQN <u>FOR INFORMATION ONLY. ALSO, VARIABLE NOT SOLVED OR DATA MISSING.</u>	ΔH <sup>a</sup>	14.43	0.42			09FOR2
285	Rb <sub>2</sub> CO <sub>3</sub> :3H <sub>2</sub> O(cr) = Rb <sub>2</sub> CO <sub>3</sub> (200H <sub>2</sub> O) + 3 H <sub>2</sub> O(1) REPORTED AS 3.5H <sub>2</sub> O. ASSUMED SAMPLE CONTAINED EXCESS H <sub>2</sub> O; CONVERTED FROM 15°C USING ΔC <sub>p</sub> =-20 CAL/(MOL K)	ΔH <sup>a</sup>	14.23	0.84	.188	a	09FOR2
286	RbOH(100H <sub>2</sub> O) + H <sub>2</sub> CO <sub>3</sub> (aq) = RbHCO <sub>3</sub> (2000H <sub>2</sub> O) + H <sub>2</sub> O(1) CONVERTED FROM 15°C WITH ΔC <sub>p</sub> = 15 CAL/(MOL K) <u>LISTED FOR INFORMATION ONLY.</u>	ΔH <sup>a</sup>	-45.52	0.29	2.071	0.50	09FOR4
287	RbHCO <sub>3</sub> (2000H <sub>2</sub> O) = RbHCO <sub>3</sub> (ai) ESTIMATED <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔH <sup>a</sup>	-1.3	0.4	.084	a	75NBS
288	RbHCO <sub>3</sub> (200H <sub>2</sub> O) = RbHCO <sub>3</sub> (2000H <sub>2</sub> O) ESTIMATED <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔH <sup>a</sup>	-1.7	0.4	.000	a	75NBS
289	C <sub>2</sub> H <sub>5</sub> OB: C <sub>2</sub> H <sub>5</sub> OH(cr) + 0.5 H <sub>2</sub> SO <sub>4</sub> (1100H <sub>2</sub> O) = 2 C <sub>2</sub> H <sub>5</sub> OH(1000H <sub>2</sub> O) + 0.5 Rb <sub>2</sub> SO <sub>4</sub> (cr) COMBINING HEATS OF SOLUTION, INCLUDING 74BLA/JOL. CORRECTED FOR DIFFERENTIAL HEAT OF SOLUTION OF H <sub>2</sub> SO <sub>4</sub>	ΔH <sup>a</sup>	-131.63	2.93	.100	a	76BOU/BLA
290	3Rb <sub>2</sub> CO <sub>3</sub> :2RbHCO <sub>3</sub> :4.5H <sub>2</sub> O(cr) = 3 Rb <sub>2</sub> CO <sub>3</sub> (200H <sub>2</sub> O) + 2 RbHCO <sub>3</sub> (200H <sub>2</sub> O) + 4.5 H <sub>2</sub> O(1) CONVERTED FROM 15°C WITH ΔC <sub>p</sub> = -150 CAL/(MOL K)	ΔH <sup>a</sup>	25.9	0.8	.073	a	09FOR3

## THERMOCHEMICAL MEASUREMENTS ON RUBIDIUM COMPOUNDS

Table 2. The Catalog of Thermochemical Measurements at 298.15 K - Continued

NO.	REACTION OR SUBSTANCE	PROP. MEAS.	OBSV'D. VALUE	INIT. UNC.	RESID. OBS-CALC	EST. REL.	REF.
291	RbHCO <sub>3</sub> (cr) = RbHCO <sub>3</sub> (ai)		ΔH=	19.79	1.26	- .209	1.1 71RAF/MY
292	2 RbHCO <sub>3</sub> (cr) = Rb <sub>2</sub> CO <sub>3</sub> (cr) + H <sub>2</sub> O(g) + CO <sub>2</sub> (g) DECOMPOSITION PRESSURES 150-170°C, REDUCED (2ND LAW) TO 25°C		ΔH=	157.7	2.1	2.707	1.1 14CAV/SAN
293	2 RbHCO <sub>3</sub> (cr) = Rb <sub>2</sub> CO <sub>3</sub> (cr) + CO <sub>2</sub> (g) + H <sub>2</sub> O(g) At 0.1 MPa. DECOMPOSITION PRESSURES 150-170°C, REDUCED (2ND LAW) TO 25°C		ΔG=	52.74	4.18	- .385	a 14CAV/SAN
294	RbHCO <sub>3</sub> (cr) = RbHCO <sub>3</sub> (200H <sub>2</sub> O) CONVERTED FROM 15°C WITH ΔC <sub>p</sub> = -33 CAL/(MOL K) <u>LISTED FOR INFORMATION ONLY.</u>		ΔH=	16.7	2.1	-6.276	1.7 09FOR4
295	RbO <sub>2</sub> CCF <sub>3</sub> (cr) = RbO <sub>2</sub> CCF <sub>3</sub> (aq) <u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>		ΔH=	7.91	0.42		66WU/FRI
296	RbO <sub>2</sub> CCF <sub>3</sub> (cr) = RbO <sub>2</sub> CCF <sub>3</sub> (CH <sub>3</sub> OH:u) METHANOL <u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>		ΔH=	1.38	0.53		71KRI/FRI2
297	RbO <sub>2</sub> CCF <sub>3</sub> (cr) = RbO <sub>2</sub> CCF <sub>3</sub> (HCON(CH <sub>3</sub> ) <sub>2</sub> :u) DIMETHYLFORMAMIDE <u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>		ΔH=	-3 .93	0.53		71KRI/FRI
298	RbCN(cr) H-H(0 K) = 4.159±0.010 KCAL/MOL, Cp = 16.20±0.02 CAL/(MOL K)		S=	140.88	0.21	.000	a 68SUG/MAT
299	RbCNS:0.5SO <sub>2</sub> (cr) = RbCNS(cr) + 0.5 SO <sub>2</sub> (g) <u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>		ΔH=	22.2	2.1		16EPH/KOR
300	Rb <sub>2</sub> SiF <sub>6</sub> (cr) = 2 RbF(cr) + SiF <sub>4</sub> (g) 977-1113 K, REDUCED (2ND LAW) TO 25°C		ΔH=	181.2	6.3	- .084	a 45CAI
301	Rb <sub>2</sub> GeCl <sub>6</sub> (cr) = 2 RbCl(cr) + GeCl <sub>4</sub> (g) EQUATION, 90-135°C, REDUCED TO 25°C		ΔH=	97.9	3.3	.000	a 63KLA
302	Rb <sub>2</sub> GeCl <sub>6</sub> (cr) = 2 RbCl(cr) + GeCl <sub>4</sub> (g) At 0.1 MPa. EQUATION, 90-135°C, REDUCED TO 25°C		ΔG=	27.2	2.1	- .251	a 63KLA
303	Rb <sub>2</sub> SnCl <sub>6</sub> (cr) Cp = 54.27±0.05 CAL/(MOL K)		S=	377.61	0.21	.000	a 60MOR/STA
304	Rb <sub>2</sub> SnCl <sub>6</sub> (cr) = 2 RbCl(cr) + SnCl <sub>4</sub> (g) DECOMPOSITION PRESSURES 454-697 K, REDUCED (2ND LAW) TO 25°C		ΔH=	180.7	4.2	.000	a 63MOR/LI
305	RbSnBr <sub>3</sub> (g) = RbBr(g) + SnBr <sub>2</sub> (g) EQUILIBRIUM 770-1000 K CORRECTED (2ND LAW) TO 25°C <u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>		ΔH=	17.	13.		71KAR/DOG
306	Rb <sub>2</sub> SnBr <sub>6</sub> (cr) Cp = 54.54±0.05 CAL/(MOL K)		S=	445.2	0.4	.000	a 60MOR/STA

Table 2. The Catalog of Thermochemical Measurements at 298.15 K - Continued

NO.	REACTION OR SUBSTANCE	PROP. MEAS.	OBSV.D. VALUE	INIT. UNC.	RESID. OBS-CALC	EST. REL.	REF.
307	RbCl(g) + PbCl <sub>2</sub> (g) = RbPbCl <sub>3</sub> (g)	ΔH=	-177.8	29.3			68BLO/HAS
	FROM MASS SPECT STUDY OF VAPORIZATION OF MIXTURES						
	740-910 K, CORR TO 25°C USING ΔC <sub>p</sub> = -4 CAL/(MOL K)						
	<u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>						
308	PbI <sub>2</sub> :2RbI(cr) = PbI <sub>2</sub> (cr) + 2 RbI(cr)	ΔH=	-390.16	0.84	.209	a	97MOS
	FROM COMBINING HEAT OF SOLUTION OF RBI AND COMPOUND						
309	PbI <sub>2</sub> :2RbI:4H <sub>2</sub> O(cr) = PbI <sub>2</sub> (cr) + 2 RbI(cr) + 4 H <sub>2</sub> O(1)	ΔH=	58.99	0.42	-.167	a	97MOS
	FROM COMBINING HEAT OF SOLUTION OF RBI AND COMPOUND						
310	RbBO <sub>2</sub> (cr)	S=	94.31	0.25	.000	a	71PAU/KHR2
	H-H(0 K) = 3.181±0.010 KCAL/MOL, Cp = 17.7±0.1 CAL/(MOL K)						
311	RbBO <sub>2</sub> (cr) = RbBO <sub>2</sub> (g)	ΔH=	298.3	8.4	.000	a	71GOR/GUS
	CORRECTED FROM 0 K						
312	Rb(cr) + O <sub>2</sub> (g) + B(cr) = RbBO <sub>2</sub> (cr)	ΔH=	-970.7	20.9	.000	a	77NBS
	BASED ON 74MAK/NIK REPORTED VALUES FOR THE GAS, BASED ON						
	MAKAROV'S THESIS DATA FOR SOLID AND 71GOR/GUS HEATS OF						
	SUBLIMATION, CORRECTED FROM 0 K TO 298 K						
313	RbBO <sub>2</sub> (g)	S=	308.26	0.42	.000	a	77NBS
	At 0.1 MPa.						
	H-H(0 K) = 3.43±0.05 KCAL/MOL, Cp = 14.17±0.15 CAL/(MOL K)						
	STRUCTURE FROM 73EZB/KOM, FREQUENCIES FROM 69SES/NIM						
314	RbF(cr) + BF <sub>3</sub> (g) = RbBF <sub>4</sub> (cr)	ΔH=	-185.4	10.5	-.209	a	72KUT
	FROM HEATS OF SOLUTION, NOT GIVEN.						
315	RbCl <sub>4</sub> (cr) + 3 H <sub>2</sub> O(1) = RbCl <sub>1</sub> (2500H <sub>2</sub> O) + 3 HCl(2500H <sub>2</sub> O) + H <sub>3</sub> BO <sub>3</sub> (10000H <sub>2</sub> O)	ΔH=	-210.0	1.3	.167	a	75FIN/GAR
316	RbCl <sub>4</sub> (cr) + 3 NaOH(550H <sub>2</sub> O) = RbCl(cr) + 3 NaCl(cr) + H <sub>3</sub> BO <sub>3</sub> (cr)	ΔH=	-423.17	2.09	7.477	1.7	73KRI/TIT
	FROM COMBINING 4 HEATS OF SOLUTION						
317	Rb(ClO <sub>4</sub> ) <sub>4</sub> (cr) + 3 NaOH(550H <sub>2</sub> O) = RbClO <sub>4</sub> (cr) + 3 NaClO <sub>4</sub> (cr) + H <sub>3</sub> BO <sub>3</sub> (cr)	ΔH=	-495.59	5.23	-.197	a	73KRI/BAB
	COMBINING HEATS OF SOLUTION						
318	2 RbAl(SeO <sub>4</sub> ) <sub>2</sub> :12H <sub>2</sub> O(cr) = Rb <sub>2</sub> SeO <sub>4</sub> (aq) + Al <sub>2</sub> (SeO <sub>4</sub> ) <sub>3</sub> (aq) + 24 H <sub>2</sub> O(1)	ΔH=	84.5	3.3	.251	a	71BOL/ZAL
319	Rb <sub>2</sub> ZnCl <sub>4</sub> (cr) = 2 RbCl(cr) + ZnCl <sub>2</sub> (2000H <sub>2</sub> O)	ΔH=	-20.75	0.04	-.042	0.10	64PAO/VAC
320	Rb <sub>2</sub> ZnBr <sub>4</sub> (cr) = 2 RbBr(1000H <sub>2</sub> O) + ZnBr <sub>2</sub> (cr)	ΔH=	85.94	0.08	-.008	0.15	65PAO
321	Rb <sub>2</sub> SO <sub>4</sub> :ZnSO <sub>4</sub> :6H <sub>2</sub> O(cr) = Rb <sub>2</sub> SO <sub>4</sub> :ZnSO <sub>4</sub> :2H <sub>2</sub> O(cr) + 4 H <sub>2</sub> O(g)	ΔG=	58.4	2.5			24CAV/FER
	At 0.1 MPa.						
	DECOMPOSITION PRESSURES 33-81°C						
	<u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>						

## THERMOCHEMICAL MEASUREMENTS ON RUBIDIUM COMPOUNDS

41

Table 2. The Catalog of Thermochemical Measurements at 298.15 K - Continued

NO.	REACTION OR SUBSTANCE	PROP. MEAS.	OBSVD.	INIT.	RESID.	EST.	REF.
			VALUE	UNC.	OBS-CALC	REL.	
322	$\text{Rb}_2\text{SO}_4 \cdot \text{ZnSO}_4 \cdot 6\text{H}_2\text{O}(\text{cr}) = \text{Rb}_2\text{SO}_4 \cdot \text{ZnSO}_4 \cdot 2\text{H}_2\text{O}(\text{cr}) + 4 \text{H}_2\text{O}(\text{g})$		$\Delta H = 262.3$	5.0			24CAV/FER
DECOMPOSITION PRESSURES 33-81°C							
	<u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>						
323	$\text{RbCl}(\text{cr}) + \text{ZnSO}_4(\text{cr}) = \text{RbCl} \cdot \text{ZnSO}_4(\text{cr})$		$\Delta H = -30.96$	0.17	.209	0.33	55VOS/PAT
COMBINATION OF HEATS OF SOLUTION OF MIXTURE AND COMPLEX							
324	$\text{Rb}_2\text{SO}_4 \cdot \text{CdSO}_4 \cdot 6\text{H}_2\text{O}(\text{cr}) = \text{Rb}_2\text{SO}_4 \cdot \text{CdSO}_4 \cdot 2\text{H}_2\text{O}(\text{cr}) + 4 \text{H}_2\text{O}(\text{g})$		$\Delta G = 37.02$	2.93			24CAV/FER
At 0.1 MPa.							
DECOMPOSITION PRESSURES 28-67°C							
	<u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>						
325	$\text{Rb}_2\text{SO}_4 \cdot \text{CdSO}_4 \cdot 6\text{H}_2\text{O}(\text{cr}) = \text{Rb}_2\text{SO}_4 \cdot \text{CdSO}_4 \cdot 2\text{H}_2\text{O}(\text{cr}) + 4 \text{H}_2\text{O}(\text{g})$		$\Delta H = 100.4$	6.3			24CAV/FER
DECOMPOSITION PRESSURES 28-67°C							
	<u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>						
326	$\text{CuCl}_2 \cdot 2\text{RbCl}(\text{cr}) = 2 \text{RbCl}(400\text{H}_2\text{O}) + \text{CuCl}_2(800\text{H}_2\text{O})$		$\Delta H = 7.82$	0.42	.092	a	23BOU/CHA
327	$\text{CuCl}_2 \cdot 2\text{RbCl}(\text{cr}) = 2 \text{RbCl}(400\text{H}_2\text{O}) + \text{CuCl}_2(800\text{H}_2\text{O})$		$\Delta H = 7.82$	0.42	.002	a	23BOU/CHA
SAME DATA AS 23BOU/CHA							
	<u>LISTED FOR INFORMATION ONLY.</u>						
328	$\text{CuCl}_2 \cdot 2\text{RbCl} \cdot 4\text{H}_2\text{O}(\text{cr}) = 2 \text{RbCl}(400\text{H}_2\text{O}) + \text{CuCl}_2(800\text{H}_2\text{O}) + 4 \text{H}_2\text{O}(1)$		$\Delta H = 39.50$	0.42	-.201	a	23BOU/CHA
329	$\text{CuCl}_2 \cdot 2\text{RbCl} \cdot 4\text{H}_2\text{O}(\text{cr}) = 2 \text{RbCl}(400\text{H}_2\text{O}) + \text{CuCl}_2(800\text{H}_2\text{O}) + 4 \text{H}_2\text{O}(1)$		$\Delta H = 39.50$	0.42	-.201	a	23BOU/CHA
SAME DATA AS 23BOU/CHA							
	<u>LISTED FOR INFORMATION ONLY.</u>						
330	$\text{Rb}_2\text{SO}_4 \cdot \text{CuSO}_4 \cdot 6\text{H}_2\text{O}(\text{cr}) = \text{Rb}_2\text{SO}_4 \cdot \text{CuSO}_4 \cdot 2\text{H}_2\text{O}(\text{cr}) + 4 \text{H}_2\text{O}(\text{g})$		$\Delta H = 248.5$	5.0			22CAV/FER
DECOMPOSITION PRESSURES 20-70°C							
	<u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>						
331	$\text{Rb}_2\text{SO}_4 \cdot \text{CuSO}_4 \cdot 6\text{H}_2\text{O}(\text{cr}) = \text{Rb}_2\text{SO}_4 \cdot \text{CuSO}_4 \cdot 2\text{H}_2\text{O}(\text{cr}) + 4 \text{H}_2\text{O}(\text{g})$		$\Delta G = 48.4$	2.5			22CAV/FER
At 0.1 MPa.							
DECOMPOSITION PRESSURES 20-70°C							
	<u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>						
332	$\text{Rb}_2\text{SeO}_4 \cdot \text{CuSeO}_4 \cdot 6\text{H}_2\text{O}(\text{cr}) = \text{Rb}_2\text{SeO}_4 \cdot \text{CuSeO}_4 \cdot 2\text{H}_2\text{O}(\text{cr}) + 4 \text{H}_2\text{O}(\text{g})$		$\Delta G = 45.1$	2.5			25FER
At 0.1 MPa.							
DECOMPOSITION PRESSURES 25-75°C							
	<u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>						

Table 2. The Catalog of Thermochemical Measurements at 298.15 K - Continued

NO.	REACTION OR SUBSTANCE	PROP. MEAS.	OBSV'D. VALUE	INIT. UNC.	RESID. OBS-CALC	EST. REL.	REF.
kJ/mol or J/(mol K)							
333	Rb <sub>2</sub> SeO <sub>4</sub> :CuSeO <sub>4</sub> :6H <sub>2</sub> O(cr) = Rb <sub>2</sub> SeO <sub>4</sub> :CuSeO <sub>4</sub> :2H <sub>2</sub> O(cr) ΔH= 219.2 + 4 H <sub>2</sub> O(g) DECOMPOSITION PRESSURES 25-75°C <u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>			5.0			25FER
ΔH= 17.092±0.01 KCAL/MOL, Cp = 68.24±0.05 CAL/(MOL K) CORRECTED TO ALLOW FOR ZERO POINT ENTROPY							
334	RbAg <sub>4</sub> I <sub>5</sub> (cr)	S=	623.	4.	.000	a	69J08/WIE
H-H(0 K) = 17.092±0.01 KCAL/MOL, Cp = 68.24±0.05 CAL/(MOL K) CORRECTED TO ALLOW FOR ZERO POINT ENTROPY							
335	RbI(cr) + 4 AgI(cr) = RbAg <sub>4</sub> I <sub>5</sub> (cr) FROM SOLID ELECTROLYTE CELLS	ΔS=	38.5	5.4	-4.602	a	68TOP/OWE
336	RbI(cr) + 4 AgI(cr) = RbAg <sub>4</sub> I <sub>5</sub> (cr) FROM SOLID ELECTROLYTE CELL	ΔG=	-4.632	0.628	.054	a	68TOP/OWE
337	3.5 AgI(cr) + 0.5 Rb <sub>2</sub> AgI <sub>3</sub> (cr) = RbAg <sub>4</sub> I <sub>5</sub> (cr) SOLID STATE CELL	ΔG=	0.075	0.209	.201	0.4	68TOP/OWE
338	3.5 AgI(cr) + 0.5 Rb <sub>2</sub> AgI <sub>3</sub> (cr) = RbAg <sub>4</sub> I <sub>5</sub> (cr) SOLID STATE CELLS	ΔS=	41.4	4.2	.000	a	68TOP/OWE
339	RbNiCl <sub>3</sub> (cr) = RbCl(ai) + NiCl <sub>2</sub> (cr) ADDING HEATS OF SOLN. OF COMPOUND AND NiCl <sub>2</sub>	ΔH=	41.0	0.4	-3.531	0.6	70EFI/KUD
340	RbCl(cr) + NiCl <sub>2</sub> (cr) = RbNiCl <sub>3</sub> (cr) COMBINING ENTHALPIES OF SOLUTION IN 0.1N HCl	ΔH=	-27.49	0.59	.016	0.6	75WEE/KOE
341	Rb <sub>2</sub> SO <sub>4</sub> :NiSO <sub>4</sub> :6H <sub>2</sub> O(cr) = Rb <sub>2</sub> SO <sub>4</sub> :NiSO <sub>4</sub> :2H <sub>2</sub> O(cr) + 4 H <sub>2</sub> O(g) DECOMPOSITION PRESSURES 32-75°C <u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>	ΔH=	245.6	5.0			24CAV/FER
342	Rb <sub>2</sub> SO <sub>4</sub> :NiSO <sub>4</sub> :6H <sub>2</sub> O(cr) = Rb <sub>2</sub> SO <sub>4</sub> :NiSO <sub>4</sub> :2H <sub>2</sub> O(cr) + 4 H <sub>2</sub> O(g) At 0.1 MPa. DECOMPOSITION PRESSURES 32-75°C <u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>	ΔG=	60.5	2.5			24CAV/FER
343	Rb <sub>2</sub> SeO <sub>4</sub> :NiSeO <sub>4</sub> :6H <sub>2</sub> O(cr) = Rb <sub>2</sub> SeO <sub>4</sub> :NiSeO <sub>4</sub> :2H <sub>2</sub> O(cr) ΔH= 246.9 + 4 H <sub>2</sub> O(g) DECOMPOSITION PRESSURES 30-70°C <u>NO SOLUTION FOR VARIABLE OR DATA MISSING</u>			5.0			25FER
344	Rb <sub>2</sub> SeO <sub>4</sub> :NiSeO <sub>4</sub> :6H <sub>2</sub> O(cr) = Rb <sub>2</sub> SeO <sub>4</sub> :NiSeO <sub>4</sub> :2H <sub>2</sub> O(cr) ΔG= 65.1 + 4 H <sub>2</sub> O(g) At 0.1 MPa. DECOMPOSITION PRESSURES 30-76°C <u>NO SOLUTION FOR VARIABLE OR DATA MISSING</u>			2.5			25FER
345	RbCoCl <sub>3</sub> (cr) = RbCl(ai) + CoCl <sub>2</sub> (cr) ADDING HEATS OF SOLN OF COMPOUND AND CoCl <sub>2</sub>	ΔH=	41.0	0.8	.335	a	70EFI/KUD

# THERMOCHEMICAL MEASUREMENTS ON RUBIDIUM COMPOUNDS

43

Table 2. The Catalog of Thermochemical Measurements at 298.15 K - Continued

NO.	REACTION OR SUBSTANCE	PROP. MEAS.	OBSV.D.	INIT.	RESID.	EST.	REF.
			VALUE	UNC.	OBS-CALC	REL.	
kJ/mol or J/(mol K)							
346	Rb <sub>2</sub> CoCl <sub>4</sub> (cr) = 2 RbCl(ai) + CoCl <sub>2</sub> (cr) ADDING HEATS OF SOLUTION OF COMPOUND AND CoCl <sub>2</sub>	ΔH=	58.6	0.8	1.088	0.5	70EFI/KUD
347	Rb <sub>2</sub> CoCl <sub>4</sub> (cr) = 2 RbCl(1000H <sub>2</sub> O) + CoCl <sub>2</sub> (2000H <sub>2</sub> O)	ΔH=	-21.09	0.29	-.226	0.5	64PAO/VAC
348	Rb <sub>3</sub> CoCl <sub>5</sub> (cr) = 3 RbCl(ai) + CoCl <sub>2</sub> (cr) ADDING HEATS OF SOLUTION OF COMPOUND AND CoCl <sub>2</sub>	ΔH=	80.96	1.05	-.042	a	70EFI/KUD
349	Rb <sub>2</sub> SO <sub>4</sub> :CoSO <sub>4</sub> :6H <sub>2</sub> O(cr) = Rb <sub>2</sub> SO <sub>4</sub> :CoSO <sub>4</sub> :2H <sub>2</sub> O(cr) + 4 H <sub>2</sub> O(g) DECOMPOSITION PRESSURES 27-76°C <u>NO SOLUTION FOR VARIABLE OR DATA MISSING</u>	ΔH=	238.5	5.0			24CAV/FER
350	Rb <sub>2</sub> SO <sub>4</sub> :CoSO <sub>4</sub> :6H <sub>2</sub> O(cr) = Rb <sub>2</sub> SO <sub>4</sub> :CoSO <sub>4</sub> :2H <sub>2</sub> O(cr) + 4 H <sub>2</sub> O(g) At 0.1 MPa. DECOMPOSITION PRESSURES 27-76°C <u>NO SOLUTION FOR VARIABLE OR DATA MISSING</u>	ΔG=	53.4	2.5			24CAV/FER
351	RbFeCl <sub>3</sub> (cr) = RbCl(1000H <sub>2</sub> O) + FeCl <sub>2</sub> (1000H <sub>2</sub> O)	ΔH=	-39.7	0.4	.013	a	68SOR/TRO
352	Rb <sub>2</sub> FeCl <sub>4</sub> (cr) = FeCl <sub>2</sub> (1000H <sub>2</sub> O) + 2 RbCl(1000H <sub>2</sub> O)	ΔH=	-23.4	0.8	.100	a	68SOR/TRO
353	Rb <sub>2</sub> PtCl <sub>6</sub> (cr) = 2 Rb+(ao) + PtCl <sub>6</sub> -2(ao)	ΔH=	63.05	0.42	.126	a	65PAL/KUZ
354	Rb <sub>2</sub> PtCl <sub>6</sub> (cr) = 2 Rb+(ao) + PtCl <sub>6</sub> -2(ao) SOLUBILITY AS FUNCTION OF TEMPERATURE	ΔH=	74.9	6.3	-.167	a	25ARC/HAL
355	Rb <sub>2</sub> PtCl <sub>6</sub> (cr) = 2 Rb+(ao) + PtCl <sub>6</sub> -2(ao) FROM SOLUBILITY	ΔG=	58.83	1.26	.000	a	25ARC/HAL
356	RbPtNH <sub>3</sub> Cl <sub>3</sub> (cr) = Rb+(ao) + PtNH <sub>3</sub> Cl <sub>3</sub> -(ao)	ΔH=	45.31	0.63	-.167	a	65PAL/KUZ
357	Rb <sub>2</sub> IrCl <sub>6</sub> (cr) = 2 RbCl(cr) + Ir(cr) + 2 Cl <sub>2</sub> (g) DECOMPOSITION PRESSURES 619-880°C REDUCED (2ND LAW) TO 25°C	ΔH=	309.6	12.6	.418	a	38PUC
358	RbMnCl <sub>3</sub> (cr) = RbCl(cr) + MnCl <sub>2</sub> (cr) COMBINING HEATS OF SOLN. OF PRODUCT AND REACTANTS	ΔH=	25.98	0.25	-.042	a	65EHR/KOK
359	Rb <sub>2</sub> SO <sub>4</sub> :MnSO <sub>4</sub> :6H <sub>2</sub> O(cr) = Rb <sub>2</sub> SO <sub>4</sub> :MnSO <sub>4</sub> :2H <sub>2</sub> O(cr) + 4 H <sub>2</sub> O(g) DECOMPOSITION PRESSURE 27-90°C <u>NO SOLUTION FOR VARIABLE OR DATA MISSING</u>	ΔH=	205.0	8.4			24CAV/FER
360	Rb <sub>2</sub> SO <sub>4</sub> :MnSO <sub>4</sub> :6H <sub>2</sub> O(cr) = Rb <sub>2</sub> SO <sub>4</sub> :MnSO <sub>4</sub> :2H <sub>2</sub> O(cr) + 4 H <sub>2</sub> O(g) At 0.1 MPa. DECOMPOSITION PRESSURE 27-90°C <u>NO SOLUTION FOR VARIABLE OR DATA MISSING</u>	ΔG=	38.4	4.2			24CAV/FER
361	RbReO <sub>4</sub> (cr) = RbReO <sub>4</sub> (ai) FROM SOLUBILITY AS FUNCTION OF TEMPERATURE	ΔH=	64.27	2.09	-.167	a	48SMI/LON

Table 2. The Catalog of Thermochemical Measurements at 298.15 K - Continued

NO.	REACTION OR SUBSTANCE	PROP. MEAS.	OBSV.D.	INIT.	RESID.	EST.	REF.
			VALUE	UNC.	OBS-CALC	REL.	
							kJ/mol or J/(mol K)
362	RbReO <sub>4</sub> (cr) = RbReO <sub>4</sub> (ai) USING GAMMA AS 0.79, SOLUBILITY AS 0.0380M	ΔG=	17.36	1.26	-.200	a	48SMI/LON
363	Rb <sub>2</sub> CrO <sub>4</sub> (cr) + RbF(cr) = Rb <sub>3</sub> CrO <sub>4</sub> F(cr) FROM HEATS OF SOLN. OF COMPOUND AND MIXTURE OF SALTS	ΔH=	-3.26	0.63	.084	a	51SCH/WEE
364	Rb <sub>2</sub> CrO <sub>4</sub> (cr) = 2 Rb+(ao) + CrO <sub>4</sub> -2(ao) ESTIMATED FROM SOLN. OF MIXTURE OF RbF AND Rb <sub>2</sub> CrO <sub>4</sub>	ΔH=	30.5	0.8	-.167	a	51SCH/WEE
365	Rb <sub>3</sub> CrCl <sub>6</sub> (cr) = 3 RbCl(cr) + CrCl <sub>3</sub> (cr) COMBINED WITH HEATS OF SOLUTION FROM 66SHC/VAS FOR COMPONENTS	ΔH=	69.0	2.5	1.883	1.3	69VAS/EPI
366	3 RbCl(cr) + 2 CrCl <sub>3</sub> (cr) = Rb <sub>3</sub> Cr <sub>2</sub> Cl <sub>9</sub> (cr) COMBINING HEATS OF SOLN. INTO 0.12N HCl	ΔH=	-107.9	2.5	.209	a	66SHC/VAS
367	3 RbCl(cr) + CrCl <sub>3</sub> (cr) = Rb <sub>3</sub> CrCl <sub>6</sub> (cr) COMBINING HEATS OF SOLN. INTO 0.12N HCl	ΔH=	-66.9	1.7	.208	b	66SHC/VAS
368	2 RbWF <sub>6</sub> (cr) + ClO-(ao) + 14 OH-(ao) = RbCl(ai)    ΔH=-1010. + 2 HO <sub>4</sub> -2(ao) + (12F:Rb:7H <sub>2</sub> O)-11(aq)			18.	.164	a	74BUR/HAI
369	(12F:Rb:7H <sub>2</sub> O)-11(aq) = 11 F-(ao) + RbF(ai) + 7 H <sub>2</sub> O(1) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔH=	0.	0.	.000		74BUR/HAI
370	2 RbMoF <sub>6</sub> (cr) + ClO-(ao) + 14 OH-(ao) = RbCl(ai)    ΔH=-1154. + 2 MoO <sub>4</sub> -2(ao) + (12F:Rb:7H <sub>2</sub> O)-11(aq)			16.	.094	a	74BUR/HAI
371	(12F:Rb:7H <sub>2</sub> O)-11(aq) = 11 F-(ao) + RbF(ai) + 7 H <sub>2</sub> O(1) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔH=	0.	0.	.000		74BUR/HAI
372	Rb <sub>3</sub> VC <sub>16</sub> (cr) = 3 RbCl(1000H <sub>2</sub> O) + VC <sub>13</sub> (cr) USING HEAT OF REACTION WITH KOH(+H <sub>2</sub> O <sub>2</sub> ) PLUS VC <sub>13</sub> WITH SAME SOLN. FROM 62SHC/VAS	ΔH=	135.1	3.3	-.130	a	65VAS/PER
373	Rb <sub>3</sub> VC <sub>21</sub> (cr) = 3 RbCl(1000H <sub>2</sub> O) + 2 VC <sub>13</sub> (cr) USING HEAT OF REACTION WITH KOH(+H <sub>2</sub> O <sub>2</sub> ) AND VC <sub>13</sub> WITH SAME SOLN. FROM 62SHC/VAS	ΔH=	164.0	4.2	-.130	a	65VAS/PER
374	RbNbO <sub>3</sub> (cr) = Rb+(ao) + NbO <sub>3</sub> -(ao) FROM SOLUBILITY	ΔG=	45.2	1.3	-.126	a	55LAP/SII
375	RbNbO <sub>3</sub> (cr) = Rb+(ao) + NbO <sub>3</sub> -(ao) SOLUBILITY 20-30°C <u>NO SOLUTION FOR VARIABLE OR DATA MISSING</u>	ΔH=	38.9	2.1			60LAP/STR
376	RbNbCl <sub>6</sub> (cr) = RbCl(cr) + NbCl <sub>5</sub> (cr) COMBINED WITH HEATS OF SOLN OF RbCl AND NbCl <sub>5</sub> FROM 60SHC/ORA AND 60SHC/SAM	ΔH=	52.3	2.9	.209	a	64SMI/VAS
377	2 Rb <sub>2</sub> NbCl <sub>6</sub> (cr) = 2 RbCl(cr) + Rb <sub>2</sub> NbCl <sub>5</sub> (cr) + NbCl <sub>5</sub> (g) DECOMPOSITION PRESSURES 540-590°C <u>NO SOLUTION FOR VARIABLE OR DATA MISSING</u>	ΔH=	236.4	25.1			65SAF/KOR

# THERMOCHEMICAL MEASUREMENTS ON RUBIDIUM COMPOUNDS

45

Table 2. The Catalog of Thermochemical Measurements at 298.15 K - Continued

NO.	REACTION OR SUBSTANCE	PROP. MEAS.	OBSVD. VALUE	INIT. UNC.	RESID. OBS-CALC	EST. REL.	REF.
							kJ/mol or J/(mol K)
378	Rb <sub>2</sub> NbOCl <sub>5</sub> (cr) = 2 RbCl(cr) + NbOCl <sub>3</sub> (g) DECOMPOSITION PRESSURE 515-740°C (MP 570°C), REDUCED TO 25°C		ΔH= 151.	21.	-23.849	6.7	63MOR/KRO
379	NbOCl <sub>3</sub> (cr) + 2 RbCl(ai) = Rb <sub>2</sub> NbOCl <sub>5</sub> (cr) COMBINING HEATS OF SOLUTION		ΔH= -81.6	2.5	-.251	2.5	69VAS/SMI
380	RbTaO <sub>3</sub> (cr) = Rb+(ao) + TaO <sub>3</sub> -(ao) SOLUBILITY 20-30°C <u>NO SOLUTION FOR VARIABLE OR DATA MISSING</u>		ΔG= 50.6	0.8			60LAP/STR
381	RbTaO <sub>3</sub> (cr) = Rb+(ao) + TaO <sub>3</sub> -(ao) SOLUBILITY 20-30°C <u>NO SOLUTION FOR VARIABLE OR DATA MISSING</u>		ΔH= 51.5	2.1			60LAP/STR
382	8 RbTaO <sub>2</sub> Cl <sub>2</sub> (cr) = RbTa <sub>2</sub> OCl <sub>9</sub> (g) + 3 Ta <sub>2</sub> O <sub>5</sub> (cr) + 7 RbCl(cr) REDUCED FROM 715°C WITH ΔC <sub>p</sub> = -20 CAL/(MOL K) <u>NO SOLUTION FOR VARIABLE OR DATA MISSING</u>		ΔH= 162.3	29.3			74MOR
383	Rb <sub>2</sub> TiF <sub>6</sub> (cr) + H <sub>2</sub> O(g) = Rb <sub>2</sub> TiOF <sub>4</sub> (cr) + 2 HF(g) EQUILIBRIUM 350-500°C, REDUCED (2ND LAW) TO 25°C <u>NO SOLUTION FOR VARIABLE OR DATA MISSING</u>		ΔH= 143.1	4.2			71SKL/MIK
384	RbTiCl <sub>3</sub> (cr) = RbCl(cr) + TiCl <sub>2</sub> (cr) FROM COMBINING HEATS OF SOLUTION IN HCl-FeCl <sub>3</sub>		ΔH= 97.1	3.3	-.209	a	67KOR/ZAK
385	Rb <sub>2</sub> TiCl <sub>4</sub> (cr) = 2 RbCl(cr) + TiCl <sub>2</sub> (cr) FROM COMBINING HEATS OF SOLUTION IN HCl-FeCl <sub>3</sub>		ΔH= 113.4	5.4	.000	a	67KOR/ZAK
386	RbTaCl <sub>6</sub> (cr) = RbCl(cr) + TaCl <sub>5</sub> (cr) COMBINED WITH HEATS OF SOLN OF RbCl AND TaCl <sub>5</sub> FROM 60SHC/ORA AND 60SHC/SMI		ΔH= 73.2	2.9	-.209	a	64SMI/VAS
387	Rb <sub>2</sub> TiCl <sub>6</sub> (cr) = 2 RbCl(cr) + TiCl <sub>4</sub> (g) FROM THEIR EQUATION, CORR. TO 25°C		ΔH= 156.9	10.5	12.552	10.0	54EHR/FRA
388	Rb <sub>2</sub> TiCl <sub>6</sub> (cr) = 2 RbCl(cr) + TiCl <sub>4</sub> (g) DECOMP. PRESS. 400-600°C, CORR. TO 25°C		ΔH= 151.0	6.3	6.694	b	60MOR/TOP
389	TiCl <sub>2</sub> (cr) + FeCl <sub>3</sub> (1500H <sub>2</sub> O:54HCl) + HCl(25H <sub>2</sub> O) + 2 RbCl(cr) = FeCl <sub>2</sub> (1000H <sub>2</sub> O) + Rb <sub>2</sub> TiCl <sub>6</sub> (cr) + 0.5 H <sub>2</sub> (g) COMBINING THREE HEATS OF SOLN.		ΔH= -123.4	6.3	8.795	10.5	67KOR/ZAK
390	Rb <sub>2</sub> TiBr <sub>6</sub> (cr) = 2 RbBr(cr) + TiBr <sub>4</sub> (cr) COMBINING HEATS SOLN. REACTANT AND PRODUCTS IN HCl-FeCl <sub>3</sub> SOLN.		ΔH= 99.2	1.7	.084	a	64SHC/VAS
391	3 RbBr(cr) + TiBr <sub>3</sub> (cr) = Rb <sub>3</sub> TiBr <sub>6</sub> (cr) COMBINING HEATS OF SOLN. OF REACTANTS AND PRODUCT IN HCl-FeCl <sub>3</sub> SOLN.		ΔH= -49.58	2.09	.084	a	64SHC/VAS

Table 2. The Catalog of Thermochemical Measurements at 298.15 K - Continued

NO.	REACTION OR SUBSTANCE	PROP. MEAS.	OBSV'D. VALUE	INIT. UNC.	RESID. OBS-CALC	EST. REL.	REF.
kJ/mol or J/(mol K)							
392	$3 \text{RbBr}(\text{cr}) + 2 \text{TiBr}_3(\text{cr}) = \text{Rb}_3\text{Ti}_2\text{Br}_9(\text{cr})$ COMBINING HEATS OF SOLN. OF REACTANTS AND PRODUCT IN HCl-FeCl <sub>3</sub> SOLN.	$\Delta H^\circ =$	-76.78	2.51	.084	a	64SHC/VAS
393	$\text{RbGd}(\text{Fe}(\text{CN})_6)(\text{cr}) = \text{Rb}^+(\text{ao}) + \text{Gd}^{+3}(\text{ao}) + \text{Fe}(\text{CN})_6^{-4}(\text{ao})$ FROM SOLUBILITY	$\Delta G^\circ =$	67.15	2.09	-.293	a	61GLU/PET
394	$\text{RbCe}(\text{Fe}(\text{CN})_6):2\text{H}_2\text{O}(\text{cr}) = 2 \text{H}_2\text{O}(\text{l}) + \text{Rb}^+(\text{ao}) + \text{Ce}^{+3}(\text{ao}) + \text{Fe}(\text{CN})_6^{-4}(\text{ao})$ SOLUBILITY	$\Delta G^\circ =$	71.1	2.1	-.192	a	56TAN/SEI
395	$\text{UCl}_4(\text{cr}) + 0.5 \text{H}_2\text{O}_2(50\text{H}_2\text{O}) + 5 \text{KF}(\text{cr}) + \text{RbF}(\text{cr}) = \text{KOH}(100\text{H}_2\text{O}) + \text{RbUF}_6(\text{cr}) + 4 \text{KCl}(\text{cr})$ COMBINING HEATS OF SOLUTION AND OF REACTION WITH K <sub>2</sub> CO <sub>3</sub> (AQ)	$\Delta H^\circ =$	-444.3	4.2	.044	a	78KUD/SUG2
396	$\text{RbF}(\text{cr}) + 2 \text{UO}_2\text{F}_2(\text{cr}) = \text{Rb}(\text{UO}_2)_2\text{F}_5(\text{cr})$ COMBINING HEATS OF SOLUTION IN 2M HCl	$\Delta H^\circ =$	-97.40	2.59	.084	a	74SUP/SEL
397	$3 \text{RbF}(\text{cr}) + \text{UO}_2\text{F}_2(\text{cr}) = \text{Rb}_3\text{UO}_2\text{F}_5(\text{cr})$ COMBINING HEATS OF SOLUTION IN 2N HCl	$\Delta H^\circ =$	-137.86	1.84	.209	a	74MUK/SUP
398	$5 \text{RbF}(\text{cr}) + 2 \text{UO}_2\text{F}_2(\text{cr}) = \text{Rb}_5(\text{UO}_2)_2\text{F}_9(\text{cr})$ COMBINING HEATS OF SOLUTION IN 2N HCl	$\Delta H^\circ =$	-265.18	6.23	.084	a	74MUK/SEL
399	$\text{RbCl}(\text{cr}) + \text{UCl}_4(\text{cr}) = \text{RbUCl}_5(\text{cr})$ COMBINING HEATS OF SOLUTION IN HCl	$\Delta H^\circ =$	-43.9	3.3	.209	a	74VDO/VOL
400	$\text{UCl}_4(\text{cr}) + \text{FeCl}_3(\text{cr}) + \text{RbCl}(\text{cr}) = \text{RbUCl}_6(\text{cr}) + \text{FeCl}_2(\text{cr})$ COMBINING HEATS OF SOLUTION	$\Delta H^\circ =$	-42.7	1.7	-.167	a	78KUD/SUG
401	$2 \text{RbCl}(\text{cr}) + \text{UCl}_4(\text{cr}) = \text{Rb}_2\text{UCl}_6(\text{cr})$ COMBINING HEATS OF SOLUTION IN HCl	$\Delta H^\circ =$	-67.8	2.5	.000	a	74VDO/VOL
402	$4 \text{RbCl}(\text{cr}) + \text{UCl}_4(\text{cr}) = \text{Rb}_4\text{UCl}_8(\text{cr})$ COMBINING HEATS OF SOLUTION IN HCl	$\Delta H^\circ =$	-68.6	3.3	.000	a	74VDO/VOL
403	$2 \text{RbBr}(\text{cr}) + \text{UBr}_4(\text{cr}) = \text{Rb}_2\text{UBr}_6(\text{cr})$ COMBINING HEATS OF SOLUTION	$\Delta H^\circ =$	-62.17	0.63	.084	a	73VDO/SUG
404	$\text{Rb}_2\text{ThCl}_6(\text{cr}) = 2 \text{RbCl}(\text{cr}) + \text{ThCl}_4(\text{cr})$ COMBINING HEATS OF SOLN., USING CHAUVENET'S VALUE FOR ThCl <sub>4</sub> . CONVERTED FROM 15°C WITH ΔCP = 0 CAL/(MOL K)	$\Delta H^\circ =$	84.5	3.3	.000	a	11CHA
405	$\text{Rb}_2\text{ThCl}_6:9\text{H}_2\text{O}(\text{cr}) = 9 \text{H}_2\text{O}(\text{l}) + 2 \text{RbCl}(\text{cr}) + \text{ThCl}_4(\text{cr})$ COMBINING HEATS OF SOLN., USING CHAUVENET'S VALUE FOR ThCl <sub>4</sub> . CONVERTED FROM 15°C WITH ΔCP = 90 CAL/(MOL K)	$\Delta H^\circ =$	200.8	6.3	.146	a	11CHA

# THERMOCHEMICAL MEASUREMENTS ON RUBIDIUM COMPOUNDS

47

Table 2. The Catalog of Thermochemical Measurements at 298.15 K - Continued

NO.	REACTION OR SUBSTANCE	PROP. MEAS.	OBSVD.	INIT.	RESID.	EST.	REF.
			VALUE	UNC.	OBS-CALC	REL.	
							kJ/mol or J/(mol K)
406	Rb <sub>4</sub> ThCl <sub>8</sub> (cr) = 4 RbCl(cr) + ThCl <sub>4</sub> (cr)		ΔH= 117.2	4.2	-.418	a	11CHA
	COMBINING HEATS OF SOLN., USING CHAUVENET'S VALUE FOR ThCl <sub>4</sub>						
407	Rb <sub>2</sub> SO <sub>4</sub> :MgSO <sub>4</sub> :6H <sub>2</sub> O(cr) = Rb <sub>2</sub> SO <sub>4</sub> :MgSO <sub>4</sub> :4H <sub>2</sub> O(cr) + 2 H <sub>2</sub> O(g)		ΔH= 106.7	5.0			24CAV/FER.
	DECOMPOSITION PRESSURES 29-67°C						
	<u>NO SOLUTION FOR VARIABLE OR DATA MISSING</u>						
408	Rb <sub>2</sub> SO <sub>4</sub> :MgSO <sub>4</sub> :6H <sub>2</sub> O(cr) = Rb <sub>2</sub> SO <sub>4</sub> :MgSO <sub>4</sub> :4H <sub>2</sub> O(cr) + 2 H <sub>2</sub> O(g)		ΔG= 22.1	2.5			24CAV/FER
	At 0.1 MPa.						
	DECOMPOSITION PRESSURES 29-67°C						
	<u>NO SOLUTION FOR VARIABLE OR DATA MISSING</u>						
409	2 Pb(NO <sub>3</sub> ) <sub>2</sub> (3200H <sub>2</sub> O) + Rb <sub>2</sub> Mg(SeO <sub>4</sub> ) <sub>2</sub> :6H <sub>2</sub> O(cr) -- 2 PbSeO <sub>4</sub> (cr) + 2 RbNO <sub>3</sub> (3200H <sub>2</sub> O) + Mg(NO <sub>3</sub> ) <sub>2</sub> (6400 H <sub>2</sub> O) + 6 H <sub>2</sub> O(l)		ΔH= 81.75	0.00	1.309 0.00	71PRY/SEL	
	REACTION REWRITTEN, SEE OTHER REACTION.						
	<u>FOR INFORMATION ONLY.</u>						
410	Rb <sub>2</sub> Mg(SeO <sub>4</sub> ) <sub>2</sub> :6H <sub>2</sub> O(cr) + 4 HNO <sub>3</sub> (500H <sub>2</sub> O) = H <sub>2</sub> SeO <sub>4</sub> (7.85H <sub>2</sub> O) + 2 RbNO <sub>3</sub> (3200H <sub>2</sub> O) + Mg(NO <sub>3</sub> ) <sub>2</sub> (6400H <sub>2</sub> O) + 6 H <sub>2</sub> O(l)		ΔH= 113.55	0.29	.042 0.30	71PRY/SEL	
	USING Pb(NO <sub>3</sub> ) <sub>2</sub> + H <sub>2</sub> SeO <sub>4</sub> FROM 58SEL/KAP						
411	Rb <sub>2</sub> Mg(SeO <sub>4</sub> ) <sub>2</sub> :6H <sub>2</sub> O(cr) = Rb <sub>2</sub> Mg(SeO <sub>4</sub> ) <sub>2</sub> (6400H <sub>2</sub> O) + 6 H <sub>2</sub> O(l)		ΔH= 43.22	0.25	.084 0.30	71PRY/SEL	
412	RbCaCl <sub>3</sub> (cr) = RbCl(1000H <sub>2</sub> O) + CaCl <sub>2</sub> (1000H <sub>2</sub> O)		ΔH= 40.0	0.4	-.073	a	70SOR/SMI
413	RbNO <sub>2</sub> :2Ba(NO <sub>2</sub> ) <sub>2</sub> (cr) = RbNO <sub>2</sub> (cr) + 2 Ba(NO <sub>2</sub> ) <sub>2</sub> (cr)	ΔH= -6.812	0.209				62PRO/AND
	COMBINING HEATS OF SOLUTION OF COMPOUND AND MIXTURE						
	SEE COMMENTS ON ΔsolnH OF RbNO <sub>2</sub> (cr)						
	<u>FOR INFORMATION ONLY.</u> ALSO, VARIABLE NOT SOLVED OR DATA MISSING.						
414	Ba(NO <sub>2</sub> ) <sub>2</sub> :2RbNO <sub>2</sub> (cr) = Ba(NO <sub>2</sub> ) <sub>2</sub> (cr) + 2 RbNO <sub>2</sub> (cr)	ΔH= 28.639	0.209				62PRO/AND
	COMBINING HEATS OF SOLN. OF MIXTURE AND COMPOUND						
	SEE COMMENTS ON ΔsolnH OF RbNO <sub>2</sub> (cr)						
	<u>FOR INFORMATION ONLY.</u> ALSO, VARIABLE NOT SOLVED OR DATA MISSING.						
415	Ba(NO <sub>2</sub> ) <sub>2</sub> :2RbNO <sub>2</sub> (cr) = Ba(NO <sub>2</sub> ) <sub>2</sub> (ai) + 2 RbNO <sub>2</sub> (ai)	ΔH= 74.5	1.7	.000	a	62FRO/AND	
416	RbNO <sub>2</sub> :2Ba(NO <sub>2</sub> ) <sub>2</sub> (cr) = RbNO <sub>2</sub> (ai) + 2 Ba(NO <sub>2</sub> ) <sub>2</sub> (ai)	ΔH= 54.0	1.7	.000	a	62FRO/AND	
417	RbBr(g) + NaBr(g) = RbNaBr <sub>2</sub> (g)	ΔH= -230.1	41.8	-.335	a	68GUI/HEN	
	FROM MASS SPECTRAL STUDIES AT 1300-1400 K OVER MIXTURES						
418	3 NaCl(cr) + CrCl <sub>3</sub> (cr) + 2 Rb <sub>3</sub> CrCl <sub>6</sub> (cr) = 3 NaRb <sub>2</sub> CrCl <sub>6</sub> (cr)	ΔH= -80.3	4.2	.402	a	69VAS/EFI	
	HEATS OF SOLUTION COMBINED WITH DATA FROM 66SHC/VAS						
419	RbCl(cr) + KCl(cr) = RbKC <sub>2</sub> (cr)	ΔH= -1.849	0.033	-.029 0.20		49FON/HOV	
	FROM HEATS OF SOLN.						

Table 2. The Catalog of Thermochemical Measurements at 298.15 K - Continued

NO.	REACTION OR SUBSTANCE	PROP. MEAS.	OBSV.D.	INIT.	RESID.	EST.	REF.
			VALUE	UNC.	OBS-CALC	REL.	
							kJ/mol or J/(mol K)
420	RbCl(cr) + KCl(cr) = RbKCl2(cr) FROM HEATS OF SOLN.	$\Delta H =$	-1.695	0.042	.126	b	39FON
421	RbKCl2(g) = KCl(g) + RbCl(g)	$\Delta H =$	167.	25.	-.084	a	64KUZ/NOV
422	Rb+(ao) + OH-(ao) = RbOH(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	$\Delta H =$	0.	0.	.000		.DEFINED
423	Rb+(ao) + OH-(ao) = RbOH(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	$\Delta G =$	0.	0.	-.017		.DEFINED
424	Rb+(ao) + OH-(ao) = RbOH(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	$\Delta S =$	0.	0.	.000		.DEFINED
425	RbF(ai) = Rb+(ao) + F-(ao) <u>CONSTRAINT - SOLVED EXACTLY.</u>	$\Delta H =$	0.	0.	.000		.DEFINED
426	RbF(ai) = Rb+(ao) + F-(ao) <u>CONSTRAINT - SOLVED EXACTLY.</u>	$\Delta G =$	0.	0.	.000		.DEFINED
427	RbF(ai) = Rb+(ao) + F-(ao) <u>CONSTRAINT - SOLVED EXACTLY.</u>	$\Delta S =$	0.	0.	-.167		.DEFINED
428	Rb+(ao) + Cl-(ao) = RbCl(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	$\Delta H =$	0.	0.	-.008		.DEFINED
429	Rb+(ao) + Cl-(ao) = RbCl(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	$\Delta G =$	0.	0.	-.008		.DEFINED
430	Rb+(ao) + Cl-(ao) = RbCl(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	$\Delta S =$	0.	0.	.000		.DEFINED
431	Rb+(ao) + ClO <sub>3</sub> -(ao) = RbClO <sub>3</sub> (ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	$\Delta H =$	0.	0.	.000		.DEFINED
432	Rb+(ao) + ClO <sub>3</sub> -(ao) = RbClO <sub>3</sub> (ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	$\Delta G =$	0.	0.	.000		.DEFINED
433	Rb+(ao) + ClO <sub>3</sub> -(ao) = RbClO <sub>3</sub> (ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	$\Delta S =$	0.	0.	.167		.DEFINED
434	Rb+(ao) + ClO <sub>4</sub> -(ao) = RbClO <sub>4</sub> (ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	$\Delta H =$	0.	0.	.000		.DEFINED
435	Rb+(ao) + ClO <sub>4</sub> -(ao) = RbClO <sub>4</sub> (ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	$\Delta G =$	0.	0.	.000		.DEFINED
436	RbClO <sub>4</sub> (ai) = Rb+(ao) + ClO <sub>4</sub> -(ao) <u>CONSTRAINT - SOLVED EXACTLY.</u>	$\Delta S =$	0.	0.	-.167		.DEFINED
437	Rb+(ao) + Br-(ao) = RbBr(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	$\Delta H =$	0.	0.	.000		.DEFINED

# THERMOCHEMICAL MEASUREMENTS ON RUBIDIUM COMPOUNDS

49

Table 2. The Catalog of Thermochemical Measurements at 298.15 K - Continued

NO.	REACTION OR SUBSTANCE		PROP.	OBSVd.	INIT.	RESID.	EST.	REF.
			MEAS.	VALUE	UNC.	OBS-CALC	REL.	
kJ/mol or J/(mol K)								
438	Rb+(ao) + Br-(ao) = RbBr(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>		ΔG=	0.	0.	.000	.DEFINED	
439	Rb+(ao) + Br-(ao) = RbBr(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>		ΔS=	0.	0.	.000	.DEFINED	
440	RbBrO3(ai) = Rb+(ao) + BrO3-(ao) <u>CONSTRAINT - SOLVED EXACTLY.</u>		ΔH=	0.	0.	.000	.DEFINED	
441	RbBrO3(ai) = Rb+(ao) + BrO3-(ao) <u>CONSTRAINT - SOLVED EXACTLY.</u>		ΔG=	0.	0.	.000	.DEFINED	
442	Rb+(ao) + BrO3-(ao) = RbBrO3(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>		ΔS=	0.	0.	.000	.DEFINED	
443	Rb+(ao) + I-(ao) = RbI(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>		ΔH=	0.	0.	.000	.DEFINED	
444	Rb+(ao) + I-(ao) = RbI(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>		ΔG=	0.	0.	.000	.DEFINED	
445	Rb+(ao) + I-(ao) = RbI(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>		ΔS=	0.	0.	.167	.DEFINED	
446	Rb+(ao) + IO3-(ao) = RbIO3(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>		ΔH=	0.	0.	-.126	.DEFINED	
447	Rb+(ao) + IO3-(ao) = RbIO3(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>		ΔG=	0.	0.	.126	.DEFINED	
448	RbIO3(ai) = Rb+(ao) + IO3-(ao) <u>CONSTRAINT - SOLVED EXACTLY.</u>		ΔS=	0.	0.	-.167	.DEFINED	
449	Rb2S(ai) = 2 Rb+(ao) + S-2(ao) <u>CONSTRAINT - SOLVED EXACTLY.</u>		ΔH=	0.	0.	-.167	.DEFINED	
450	Rb2S(ai) = 2 Rb+(ao) + S-2(ao) <u>CONSTRAINT - SOLVED EXACTLY.</u>		ΔS=	0.	0.	.084	.DEFINED	
451	2 Rb+(ao) + S-2(ao) = Rb2S(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>		ΔG=	0.	0.	-.167	.DEFINED	
452	Rb2SO4(ai) = 2 Rb+(ao) + SO4-2(ao) <u>CONSTRAINT - SOLVED EXACTLY.</u>		ΔH=	0.	0.	.000	.DEFINED	
453	Rb2SO4(ai) = 2 Rb+(ao) + SO4-2(ao) <u>CONSTRAINT - SOLVED EXACTLY.</u>		ΔG=	0.	0.	.000	.DEFINED	
454	Rb2SO4(ai) = 2 Rb+(ao) + SO4-2(ao) <u>CONSTRAINT - SOLVED EXACTLY.</u>		ΔS=	0.	0.	.084	.DEFINED	
455	Rb+(ao) + HSe-(ao) = RbHSe(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>		ΔH=	0.	0.	-.126	.DEFINED	

Table 2. The Catalog of Thermochemical Measurements at 298.15 K - Continued

NO.	REACTION OR SUBSTANCE	PROP. MEAS.	OBSV.D.	INIT.	RESID.	EST.	REF.
			VALUE	UNC.	OBS-CALC	REL.	
							kJ/mol or J/(mol K)
456	RbN3(ai) = Rb+(ao) + N3-(ao) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔH=	0.	0.	.000	.DEFINED	
457	RbNO2(ai) = Rb+(ao) + NO2-(ao) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔH=	0.	0.	.126	.DEFINED	
458	RbNO2(ai) = Rb+(ao) + NO2-(ao) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔG=	0.	0.	-.126	.DEFINED	
459	RbNO2(ai) = Rb+(ao) + NO2-(ao) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔS=	0.	0.	-.167	.DEFINED	
460	RbNO3(ai) = Rb+(ao) + NO3-(ao) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔH=	0.	0.	.000	.DEFINED	
461	RbNO3(ai) = Rb+(ao) + NO3-(ao) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔG=	0.	0.	.000	.DEFINED	
462	RbNO3(ai) = Rb+(ao) + NO3-(ao) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔS=	0.	0.	-.167	.DEFINED	
463	Rb2CO3(ai) = 2 Rb+(ao) + CO3-2(ao) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔH=	0.	0.	.000	DEFINED	
464	Rb2CO3(ai) = 2 Rb+(ao) + CO3-2(ao) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔG=	0.	0.	.000	.DEFINED	
465	Rb2CO3(ai) = 2 Rb+(ao) + CO3-2(ao) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔS=	0.	0.	.084	.DEFINED	
466	RbHCO3(ai) = Rb+(ao) + HCO3-(ao) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔH=	0.	0.	.000	.DEFINED	
467	RbHCO3(ai) = Rb+(ao) + HCO3-(ao) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔG=	0.	0.	.000	.DEFINED	
468	RbHCO3(ai) = Rb+(ao) + HCO3-(ao) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔS=	0.	0.	.000	.DEFINED	
469	Rb+(ao) + ReO4-(ao) = RbReO4(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔH=	0.	0.	-.126	.DEFINED	
470	Rb+(ao) + ReO4-(ao) = RbReO4(ai) <u>CONSTRAINT - SOLVED EXACTLY.</u>	ΔG=	0.	0.	.126	.DEFINED	
471	RbNbO3(ai) = Rb+(ao) + NbO3-(ao) <u>NO SOLUTION FOR VARIABLE OR DATA MISSING</u>	ΔH=	0.0	0.0			76NBS
472	RbNbO3(ai) = Rb+(ao) + NbO3-(ao) <u>NO SOLUTION FOR VARIABLE OR DATA MISSING</u>	ΔS=	0.0	0.0			76NBS

# THERMOCHEMICAL MEASUREMENTS ON RUBIDIUM COMPOUNDS

51

Table 2. The Catalog of Thermochemical Measurements at 298.15 K - Continued

NO.	REACTION OR SUBSTANCE	PROP. MEAS.	OBSV'D.	INIT.	RESID.	EST.	REF.
			VALUE	UNC.	OBS-CALC	REL.	
473	RbNbO <sub>3</sub> (ai) = Rb+(ao) + NbO <sub>3</sub> -(ao)	ΔG=	0.0	0.0	-.126	.76NBS	
	<u>CONSTRAINT - SOLVED EXACTLY.</u>						
474	Rb(cr) = Rb(cr)	ΔG=	0.0	0.0	.000	.76NBS	
	<u>CONSTRAINT - SOLVED EXACTLY.</u>						
475	Rb(cr) = Rb(cr)	ΔS=	0.0	0.0	.000	.76NBS	
	<u>CONSTRAINT - SOLVED EXACTLY.</u>						
476	Rb(cr) = Rb(cr)	ΔH=	0.0	0.0	.000	.76NBS	
	<u>CONSTRAINT - SOLVED EXACTLY.</u>						
477	Rb(cr) = Rb(g)	HGS=	0.000	0.000	.000		
	<u>CONSTRAINT - SOLVED EXACTLY.</u>						
478	Rb(cr) = Rb+(ao)	HGS=	0.000	0.000	.000		
	<u>CONSTRAINT - SOLVED EXACTLY.</u>						
479	Rb(cr) + 0.5 F <sub>2</sub> (g) = RbF(g)	HGS=	0.000	0.000	.000		
	<u>CONSTRAINT - SOLVED EXACTLY.</u>						
480	2 Rb(cr) + F <sub>2</sub> (g) = Rb <sub>2</sub> F <sub>2</sub> (g)	HGS=	0.000	0.000	.000		
	<u>CONSTRAINT - SOLVED EXACTLY.</u>						
481	Rb(cr) + F <sub>2</sub> (g) + 0.5 H <sub>2</sub> (g) = RbHF <sub>2</sub> (cr)	HGS=	0.000	0.000	.000		
	<u>CONSTRAINT - SOLVED EXACTLY.</u>						
482	Rb(cr) + 0.5 Cl <sub>2</sub> (g) = RbCl(cr)	HGS=	0.000	0.000	.000		
	<u>CONSTRAINT - SOLVED EXACTLY.</u>						
483	Rb(cr) + 0.5 Cl <sub>2</sub> (g) = RbCl(g)	HGS=	0.000	0.000	.000		
	<u>CONSTRAINT - SOLVED EXACTLY.</u>						
484	2 Rb(cr) + Cl <sub>2</sub> (g) = Rb <sub>2</sub> Cl <sub>2</sub> (g)	HGS=	0.000	0.000	.000		
	<u>CONSTRAINT - SOLVED EXACTLY.</u>						
485	Rb(cr) + 0.5 Cl <sub>2</sub> (g) + 1.5 O <sub>2</sub> (g) = RbClO <sub>3</sub> (cr)	HGS=	0.000	0.000	.000		
	<u>CONSTRAINT - SOLVED EXACTLY.</u>						
486	Rb(cr) + 0.5 Cl <sub>2</sub> (g) + 2 O <sub>2</sub> (g) = RbClO <sub>4</sub> (cr)	HGS=	0.000	0.000	.000		
	<u>CONSTRAINT - SOLVED EXACTLY.</u>						
487	Rb(cr) + 0.5 Br <sub>2</sub> (l) = RbBr(cr)	HGS=	0.000	0.000	.000		
	<u>CONSTRAINT - SOLVED EXACTLY.</u>						
488	Rb(cr) + 0.5 Br <sub>2</sub> (l) = RbBr(g)	HGS=	0.000	0.000	.000		
	<u>CONSTRAINT - SOLVED EXACTLY.</u>						
489	Rb(cr) + 1.5 Br <sub>2</sub> (l) = RbBr <sub>3</sub> (cr)	HGS=	0.000	0.000	.		
	<u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>						
490	Rb(cr) + 0.5 Br <sub>2</sub> (l) + 1.5 O <sub>2</sub> (g) = RbBrO <sub>3</sub> (cr)	HGS=	0.000	0.000	.000		
	<u>CONSTRAINT - SOLVED EXACTLY.</u>						

Table 2. The Catalog of Thermochemical Measurements at 298.15 K - Continued

NO.	REACTION OR SUBSTANCE	PROP. MEAS.	OBSV.D. VALUE	INIT. UNC.	RESID. OBS-CALC	EST. REL.	REF.
491	Rb(cr) + 0.5 Br2(l) + Cl2(g) = RbBrCl2(cr)	HGS=	0.000	0.000			
	<u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>						
492	Rb(cr) + Br2(l) + 0.5 Cl2(g) = RbBr2Cl(cr)	HGS=	0.000	0.000			
	<u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>						
493	Rb(cr) + 0.5 I2(cr) = RbI(cr)	HGS=	0.000	0.000	.000		
	<u>CONSTRAINT - SOLVED EXACTLY.</u>						
494	Rb(cr) + 0.5 I2(cr) = RbI(g)	HGS=	0.000	0.000	.000		
	<u>CONSTRAINT - SOLVED EXACTLY.</u>						
495	Rb(cr) + 1.5 I2(cr) = RbI3(cr)	HGS=	0.000	0.000	.000		
	<u>CONSTRAINT - SOLVED EXACTLY.</u>						
496	Rb(cr) + 0.5 I2(cr) + 1.5 O2(g) = RbIO3(cr)	HGS=	0.000	0.000			
	<u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>						
497	Rb(cr) + 0.5 I2(cr) + 2 Cl2(g) = RbICl4(cr)	HGS=	0.000	0.000			
	<u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>						
498	Rb(cr) + 0.5 I2(cr) + Br2(l) = RbIBr2(cr)	HGS=	0.000	0.000			
	<u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>						
499	Rb(cr) + 2 S(cr) + 4 O2(g) = RbS2O8-(ao)	HGS=	0.000	0.000	.000		
	<u>CONSTRAINT - SOLVED EXACTLY.</u>						
500	2 Rb(cr) + S(cr) + 2 O2(g) = Rb2SO4(cr)	HGS=	0.000	0.000	.000		
	<u>CONSTRAINT - SOLVED EXACTLY.</u>						
501	Rb(cr) + 0.5 N2(g) + O2(g) = RbNO2(cr)	HGS=	0.000	0.000			
	<u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>						
502	Rb(cr) + 0.5 N2(g) + 1.5 O2(g) = RbNO3(cr)	HGS=	0.000	0.000	.000		
	<u>CONSTRAINT - SOLVED EXACTLY.</u>						
503	Rb(cr) + F(cr) + 3 F2(g) = RbPF6(cr)	HGS=	0.000	0.000	.000		
	<u>CONSTRAINT - SOLVED EXACTLY.</u>						
504	2 Rb(cr) + C(cr) + 1.5 O2(g) = Rb2CO3(cr)	HGS=	0.000	0.000	.000		
	<u>CONSTRAINT - SOLVED EXACTLY.</u>						
505	Rb(cr) + C(cr) + 0.5 H2(g) + 1.5 O2(g) = RbHCO3(cr)	HGS=	0.000	0.000	.000		
	<u>CONSTRAINT - SOLVED EXACTLY.</u>						
506	2 Rb(cr) + Ge(cr) + 3 Cl2(g) = Rb2GeCl6(cr)	HGS=	0.000	0.000	.000		
	<u>CONSTRAINT - SOLVED EXACTLY.</u>						
507	2 Rb(cr) + Sn(cr) + 3 Cl2(g) = Rb2SnCl6(cr)	HGS=	0.000	0.000	.000		
	<u>CONSTRAINT - SOLVED EXACTLY.</u>						

# THERMOCHEMICAL MEASUREMENTS ON RUBIDIUM COMPOUNDS

53

Table 2. The Catalog of Thermochemical Measurements at 298.15 K - Continued

NO.	REACTION OR SUBSTANCE	PROP. MEAS.	OBSV.D. VALUE	INIT. UNC.	RESID. OBS-CALC	EST. REL.	REF.
							kJ/mol or J/(mol K)
508	Rb(cr) + B(cr) + O <sub>2</sub> (g) = RbBO <sub>2</sub> (cr) <u>CONSTRAINT - SOLVED EXACTLY.</u>	HGS=	0.000	0.000	.000		
509	Rb(cr) + B(cr) + O <sub>2</sub> (g) = RbBO <sub>2</sub> (g) <u>CONSTRAINT - SOLVED EXACTLY.</u>	HGS=	0.000	0.000	.000		
510	2 Rb(cr) + Zn(cr) + 2 S(cr) + 6 H <sub>2</sub> (g) + 7 O <sub>2</sub> (g) = Rb <sub>2</sub> SO <sub>4</sub> :ZnSO <sub>4</sub> :6H <sub>2</sub> O(cr) <u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>	HGS=	0.000	0.000			
511	2 Rb(cr) + Zn(cr) + 2 S(cr) + 2 H <sub>2</sub> (g) + 5 O <sub>2</sub> (g) = Rb <sub>2</sub> SO <sub>4</sub> :ZnSO <sub>4</sub> :2H <sub>2</sub> O(cr) <u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>	HGS=	0.000	0.000			
512	2 Rb(cr) + Cd(cr) + 2 S(cr) + 6 H <sub>2</sub> (g) + 7 O <sub>2</sub> (g) = Rb <sub>2</sub> SO <sub>4</sub> :CdSO <sub>4</sub> :6H <sub>2</sub> O(cr) <u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>	HGS=	0.000	0.000			
513	2 Rb(cr) + Cd(cr) + 2 S(cr) + 2 H <sub>2</sub> (g) + 5 O <sub>2</sub> (g) = Rb <sub>2</sub> SO <sub>4</sub> :CdSO <sub>4</sub> :2H <sub>2</sub> O(cr) <u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>	HGS=	0.000	0.000			
514	2 Rb(cr) + Cu(cr) + 2 S(cr) + 6 H <sub>2</sub> (g) + 7 O <sub>2</sub> (g) = Rb <sub>2</sub> SO <sub>4</sub> :CuSO <sub>4</sub> :6H <sub>2</sub> O(cr) <u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>	HGS=	0.000	0.000			
515	2 Rb(cr) + Cu(cr) + 2 S(cr) + 2 H <sub>2</sub> (g) + 5 O <sub>2</sub> (g) = Rb <sub>2</sub> SO <sub>4</sub> :CuSO <sub>4</sub> :2H <sub>2</sub> O(cr) <u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>	HGS=	0.000	0.000			
516	2 Rb(cr) + Cu(cr) + 2 Se(cr) + 6 H <sub>2</sub> (g) + 7 O <sub>2</sub> (g) = Rb <sub>2</sub> SeO <sub>4</sub> :CuSeO <sub>4</sub> :6H <sub>2</sub> O(cr) <u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>	HGS=	0.000	0.000			
517	2 Rb(cr) + Cu(cr) + 2 Se(cr) + 2 H <sub>2</sub> (g) + 5 O <sub>2</sub> (g) = Rb <sub>2</sub> SeO <sub>4</sub> :CuSeO <sub>4</sub> :2H <sub>2</sub> O(cr) <u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>	HGS=	0.000	0.000			
518	Rb(cr) + 4 Ag(cr) + 2.5 I <sub>2</sub> (cr) = RbAg <sub>4</sub> I <sub>5</sub> (cr) <u>CONSTRAINT - SOLVED EXACTLY.</u>	HGS=	0.000	0.000	.000		
519	2 Rb(cr) + Ag(cr) + 1.5 I <sub>2</sub> (cr) = Rb <sub>2</sub> AgI <sub>3</sub> (cr) <u>CONSTRAINT - SOLVED EXACTLY.</u>	HGS=	0.000	0.000	.000		
520	2 Rb(cr) + Ni(cr) + 2 S(cr) + 6 H <sub>2</sub> (g) + 7 O <sub>2</sub> (g) = Rb <sub>2</sub> SO <sub>4</sub> :NiSO <sub>4</sub> :6H <sub>2</sub> O(cr) <u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>	HGS=	0.000	0.000			
521	2 Rb(cr) + Ni(cr) + 2 S(cr) + 2 H <sub>2</sub> (g) + 5 O <sub>2</sub> (g) = Rb <sub>2</sub> SO <sub>4</sub> :NiSO <sub>4</sub> :2H <sub>2</sub> O(cr) <u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>	HGS=	0.000	0.000			
522	2 Rb(cr) + Ni(cr) + 2 Se(cr) + 6 H <sub>2</sub> (g) + 7 O <sub>2</sub> (g) = Rb <sub>2</sub> SeO <sub>4</sub> :NiSeO <sub>4</sub> :6H <sub>2</sub> O(cr) <u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>	HGS=	0.000	0.000			

Table 2. The Catalog of Thermochemical Measurements at 298.15 K - Continued

NO.	REACTION OR SUBSTANCE	PROP. MEAS.	OBSV.D.	INIT.	RESID.	EST.	REF.
			VALUE	UNC.	OBS-CALC	REL.	
							kJ/mol or J/(mol K)
523	$2 \text{Rb(cr)} + \text{Ni(cr)} + 2 \text{Se(cr)} + 2 \text{H}_2(\text{g}) + 5 \text{O}_2(\text{g}) = \text{Rb}_2\text{SeO}_4:\text{NiSeO}_4:2\text{H}_2\text{O(cr)}$	HGS=	0.000	0.000			
	<u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>						
524	$2 \text{Rb(cr)} + \text{Co(cr)} + 2 \text{S(cr)} + 6 \text{H}_2(\text{g}) + 7 \text{O}_2(\text{g}) = \text{Rb}_2\text{SO}_4:\text{CoSO}_4:6\text{H}_2\text{O(cr)}$	HGS=	0.000	0.000			
	<u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>						
525	$2 \text{Rb(cr)} + \text{Co(cr)} + 2 \text{S(cr)} + 2 \text{H}_2(\text{g}) + 5 \text{O}_2(\text{g}) = \text{Rb}_2\text{SO}_4:\text{CoSO}_4:2\text{H}_2\text{O(cr)}$	HGS=	0.000	0.000			
	<u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>						
526	$2 \text{Rb(cr)} + \text{Pt(cr)} + 3 \text{Cl}_2(\text{g}) = \text{Rb}_2\text{PtCl}_6(\text{cr})$	HGS=	0.000	0.000	.000		
	<u>CONSTRAINT - SOLVED EXACTLY.</u>						
527	$2 \text{Rb(cr)} + \text{Mn(cr)} + 2 \text{S(cr)} + 6 \text{H}_2(\text{g}) + 7 \text{O}_2(\text{g}) = \text{Rb}_2\text{SO}_4:\text{MnSO}_4:6\text{H}_2\text{O(cr)}$	HGS=	0.000	0.000			
	<u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>						
528	$2 \text{Rb(cr)} + \text{Mn(cr)} + 2 \text{S(cr)} + 2 \text{H}_2(\text{g}) + 5 \text{O}_2(\text{g}) = \text{Rb}_2\text{SO}_4:\text{MnSO}_4:2\text{H}_2\text{O(cr)}$	HGS=	0.000	0.000			
	<u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>						
529	$\text{Rb(cr)} + \text{Re(cr)} + 2 \text{O}_2(\text{g}) = \text{RbReO}_4(\text{cr})$	HGS=	0.000	0.000	.000		
	<u>CONSTRAINT - SOLVED EXACTLY.</u>						
530	$\text{Rb(cr)} + \text{Re(cr)} + 2 \text{O}_2(\text{g}) = \text{RbReO}_4(\text{ai})$	HGS=	0.000	0.000	.000		
	<u>CONSTRAINT - SOLVED EXACTLY.</u>						
531	$\text{Rb(cr)} + \text{Nb(cr)} + 1.5 \text{O}_2(\text{g}) = \text{RbNbO}_3(\text{cr})$	HGS=	0.000	0.000			
	<u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>						
532	$\text{Rb(cr)} + \text{Ta(cr)} + 1.5 \text{O}_2(\text{g}) = \text{RbTaO}_3(\text{cr})$	HGS=	0.000	0.000			
	<u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>						
533	$2 \text{Rb(cr)} + \text{Mg(cr)} + 2 \text{S(cr)} + 6 \text{H}_2(\text{g}) + 7 \text{O}_2(\text{g}) = \text{Rb}_2\text{SO}_4:\text{MgSO}_4:6\text{H}_2\text{O(cr)}$	HGS=	0.000	0.000			
	<u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>						
534	$2 \text{Rb(cr)} + \text{Mg(cr)} + 2 \text{S(cr)} + 4 \text{H}_2(\text{g}) + 6 \text{O}_2(\text{g}) = \text{Rb}_2\text{SO}_4:\text{MgSO}_4:4\text{H}_2\text{O(cr)}$	HGS=	0.000	0.000			
	<u>NO SOLUTION FOR VARIABLE OR DATA MISSING.</u>						

# THERMOCHEMICAL MEASUREMENTS ON RUBIDIUM COMPOUNDS

55

TABLE 3. Revisions and additions to the NBS Tables for rubidium compounds in SI units

Compound	Molar mass g/mol	$\Delta_f H^\circ$ kJ/mol	$\Delta_f G^\circ$ kJ/mol	$S^\circ$ J/(mol K)
Rb <sub>2</sub> S <sub>2</sub> O <sub>8</sub> -(ao)	277.5910	-1590.3	-1405.7	406.3
Rb <sub>2</sub> SeO <sub>3</sub> (cr)	297.8938	-972.78		
RbKCl <sub>2</sub> (g)	195.4758	-610.4		

TABLE 4. Auxiliary data used in the calculations interpolated from the NBS Tables

Compound	Molar mass g/mol	$\Delta_f H^\circ$ kJ/mol	$\Delta_f G^\circ$ kJ/mol	$S^\circ$ J/(mol K)
HCl(2500H <sub>2</sub> O)	36.4610	-166.879		
H <sub>2</sub> SO <sub>4</sub> (1100H <sub>2</sub> O)	98.0776	-892.615		
HNO <sub>3</sub> (4000H <sub>2</sub> O)	63.0129	-207.167		
Pb(NO <sub>3</sub> ) <sub>2</sub> (265H <sub>2</sub> O)	331.1998	-422.6		
Pb(NO <sub>3</sub> ) <sub>2</sub> (3200H <sub>2</sub> O)	331.1998	-419.2		
Al <sub>2</sub> (SeO <sub>4</sub> ) <sub>3</sub> (aq)	482.8358	-2860.2		
ZnCl <sub>2</sub> (2000H <sub>2</sub> O)	136.2760	-486.39		
FeCl <sub>3</sub> (1500H <sub>2</sub> O:54HCl)	162.2060	-517.1		
Mg(NO <sub>3</sub> ) <sub>2</sub> (6400H <sub>2</sub> O)	148.3218	-880.799		
NaOH(550H <sub>2</sub> O)	39.9972	-169.692		

## 10. Reference Codes and References for the Tables

(18)90BEK	Beketoff, N.; Bull. Acad. Sci. St. Peter.; <b>33</b> , 173 (1890)	34CEN/BLU	Centnerszwer, M.; Blumenthal, M.; IX Cong. Inter. Quim. Pura Y Aplicada; <b>3a</b> , 201 (1935)
(18)94ETA	Etard, A.; Ann. Chim. Phys.; [7] <b>2</b> , 503 (1894)	37JUZ/FAS	Juza, R.; Fasold, K.; Haerberle, C.; Z. Anorg. Allgem. Chem.; <b>234</b> , 75 (1937)
(18)97MOS	Mosnier, A.; Ann. Chim. Phys.; [7] <b>12</b> , 374 (1897)	37LAN/MAR	Lange, E.; Martin, W.; Z. Physik. Chem. A; <b>180</b> , 233 (1937)
(19)04BER	Berkeley, Earl of; Phil. Trans. Roy. Soc. (London); <b>A</b> <b>203</b> , 189 (1904)	38KAN/WIE	Kangro, W.; Wieking, H. W.; Z. Physik. Chem. A; <b>183</b> , 199 (1938)
06FOR	de Forcrand, R.; Compt. rend.; <b>142</b> , 1252 (1906)	38MAY/WIN	Mayer, J. E.; Wintner, I. H.; J. Chem. Phys.; <b>6</b> , 301 (1938)
06FOR2	de Forcrand, R.; Compt. rend.; <b>143</b> , 98 (1906)	38NIW	Niwa, K.; J. Fac. Sci. Imp. Univ. Hokkaido III; <b>2</b> , 201 (1938)
08FOO/CHA	Foote, H. W.; Chalker, W. C.; Am. Chem. J.; <b>39</b> , 561 (1908)	38NIW2	Niwa, K.; J. Chem. Soc. Japan; <b>59</b> , 637 (1938)
08FOR	de Forcrand, R.; Compt. rend.; <b>146</b> , 511 (1908)	38PIT	Pitzer, K. S.; J. Am. Chem. Soc.; <b>60</b> , 1828 (1938)
08REN	Rengade, E.; Ann. Chim. Phys.; [8] <b>14</b> , 540 (1908)	38PUC	Puche, F.; Ann. Chem.; [11] <b>9</b> , 233 (1938)
09FOR	de Forcrand, R.; Compt. rend.; <b>149</b> , 1341 (1909)	39FON	Fontell, N.; Soc. Sci. Fennicae Commentationes Phys.-Math.; <b>10</b> , No 6, 9p (1939)
09FOR2	de Forcrand, R.; Compt. rend.; <b>149</b> , 97 (1909)	41BRI/CON	Briggs, T. R.; Conrad, C. C.; Gregg, C. C.; Reed, W. H.; J. Phys. Chem.; <b>45</b> , 614 (1941)
09FOR3	de Forcrand, R.; Compt. rend.; <b>149</b> , 825 (1909)	41TEI	Teichert, W.; Z. Anorg. Allgem. Chem.; <b>247</b> , 113 (1941)
09FOR4	de Forcrand, R.; Compt. rend.; <b>149</b> , 719 (1909)	41TEI/KLE	Teichert, W.; Klemm, W.; Z. Anorg. Allgem. Chem.; <b>246</b> , 3 (1941)
10ZEM/RAM	Zemczuzny, S.; Rambach, F.; Z. Anorg. Allgem. Chem.; <b>65</b> , 403 (1910)	45CAI	Caillat, R.; Ann. Chim.; [11] <b>20</b> , 367 (1945)
11CHA	Chauvenet, E.; Ann. Chim. Phys.; [8] <b>23</b> , 425 (1911)	48SMI/LON	Smith, W. T., Jr.; Long, S. H.; J. Am. Chem. Soc.; <b>70</b> , 354 (1948)
11FOR	de Forcrand, R.; Ann. Chim. Phys.; [8] <b>24</b> , 256 (1911)	49CLU/GOL	Clusius, K.; Goldmann, J.; Perlick, A.; Z. Naturforsch.; <b>4a</b> , 424 (1949)
11FOR2	de Forcrand, R.; Compt. rend.; <b>152</b> , 1208 (1911)	49FON/HOV	Fontell, N.; Hovi, V.; Hyvoenen, L.; Ann. Acad. Sci. Fennicae [A]; I. Math. Phys.; No. 65, 7p (1949)
11FOR3	de Forcrand, R.; Compt. rend.; <b>152</b> , 1556 (1911)	51HER	Herold, A.; Ann. Chim.; [12] <b>6</b> , 536 (1951)
12CAL	Calzolari, F.; Gazz. Chim. Ital.; <b>42II</b> , 85 (1912)	51SCH/WEE	Schmitz-Dumont, O.; Weeg, A.; Z. Anorg. Allgem. Chem.; <b>265</b> , 139 (1951)
12HAI	Haigh, F. L.; J. Am. Chem. Soc.; <b>34</b> , 1137 (1912)	52CAL/SIM	Calvo, C.; Simons, E. L.; J. Am. Chem. Soc.; <b>74</b> , 1202 (1952)
14CAV/SAN	Caven, R. M.; Sand, H. J. S.; J. Chem. Soc. (London); <b>105</b> , 2752 (1914)	52LAR/REN	Larson, W. D.; Renier, J. J.; J. Am. Chem. Soc.; <b>74</b> , 3184 (1952)
14REN/COS	Rengade, E.; Costeanu, N.; Bull. Soc. Chim. France; [4] <b>15</b> , 717 (1914)	53DUR/ROC	Durham, G. S.; Rock, E. J.; Frayn, J. S.; J. Am. Chem. Soc.; <b>75</b> , 5792 (1953)
15LEW/ARG	Lewis, G. N.; Argo, W. L.; J. Am. Chem. Soc.; <b>37</b> , 1983 (1915)	53TRE/WER	Treadwell, W. D.; Werner, W.; Helv. Chim. Acta; <b>36</b> , 1436 (1953)
16EPH/KOR	Ephraim, F.; Kornblum, J.; Ber.; <b>49</b> , 2007 (1916)	54EHR/FRA	Ehrlich, P.; Framm, E.; Z. Naturforsch.; <b>9b</b> , 326 (1954)
17EPH	Ephraim, F.; Ber.; <b>50</b> , 1069 (1917)	55LAP SHI	Lapitskii, A. V.; Shishkina, L. N.; Pchelkina, M. A.; Stepanov, B. A.; Zhur. Obshch. Khim.; <b>25</b> , 1862 (1955)
19FOR/TAB	de Forcrand, R.; Taboury, F.; Compt. rend.; <b>169</b> , 162 (1919)	55LAP/STE	Lapitskii, A. V.; Stepanov, B. A.; Pchelkina, M. A.; Zhur. Obshch. Khim.; <b>25</b> , 1866 (1955)
21BUE/MCC	Buell, H. D.; McCrosky, C. R.; J. Am. Chem. Soc.; <b>43</b> , 2031 (1921)	55VOS/PAT	Voskresenskaya, N. K.; Patsukova, N. N.; Izvest. Sektora Fiz.-Khim. Ana. Inst. Obshch. i Neorg. Khim. Akad. Nauk SSSR; <b>26</b> , 117 (1955)
21RUF/MUG	Ruff, O.; Mugdan, S.; Z. Anorg. Allgem. Chem.; <b>117</b> , 147 (1921)	56FRI/SCH	Friedman, H. L.; Schug, K.; J. Am. Chem. Soc.; <b>78</b> , 3881 (1956)
21WAR/SCH	von Wartenberg, H.; Schulz, H.; Z. Elektrochem.; <b>27</b> , 568 (1921)	56GRA/WAD	Gray, P.; Waddington, T. C.; Proc. Roy. Soc. (London). A <b>235</b> , 106 (1956)
22CAV/FER	Caven, R. M.; Ferguson, J.; J. Chem. Soc. (London); <b>121</b> , 1406 (1922)	56SAM	Samoilov, O. Ya.; Izv. Akad. Nauk SSSR, Otdel. Khim. Nauk; (1956) 1415
22RUF/SCH	Ruff, O.; Schmidt, G.; Mugdan, S.; Z. Anorg. Allgem. Chem.; <b>123</b> , 83 (1922)	56TAN/SEI	Tananaev, I. V.; Seifer, G. B.; Zhur. Neorg. Khim.; <b>1</b> , 53 (1956)
23BOU/CHA	Bouzat, A.; Chauvenet, E.; Compt. rend.; <b>177</b> , 1293 (1923)	57NES/SAZ	Nesmeyanov, A. N.; Sazonov, L. A.; Zhur. Neorg. Khim.; <b>2</b> , 94 (1957)
24CAV/FER	Caven, R. M.; Ferguson, J.; J. Chem. Soc. (London); <b>125</b> , 1307 (1924)	58BRI	Bridgers, H. E.; Diss. Absts.; <b>18</b> , 822 (1958)
24SCO	Scott, D. H.; Phil. Mag.; [6] <b>47</b> , 32 (1924)	58EIS/ROT	Eisenstadt, M.; Rothberg, G. M.; Kusch, P.; J. Chem. Phys.; <b>29</b> , 797 (1958)
25ARC/HAL	Archibald, E. H.; Hallett, L. T.; J. Am. Chem. Soc.; <b>47</b> , 1314 (1925)	58MAK/EVS	Makarov, L. L.; Evstrop'ev, K. K.; Vlasov, Yu. G.; Zhur. Fiz. Khim.; <b>32</b> , 1618 (1958)
25FER	Ferguson, J.; J. Chem. Soc. (London); <b>127</b> , 2096 (1925)	58MUS	Mustajoki, A.; Ann. Acad. Sci. Fennicae [A]; VI, No. 9, 16p (1958)
25HUT/SCH	Huttig, G. F.; Schliessmann, O.; Z. Anorg. Allgem. Chem.; <b>148</b> , 87 (1925)	58PUG/BAR	Pugh, A. C. P.; Barrow, R. F.; Trans. Faraday Soc.; <b>54</b> , 671 (1958)
26KIL	Killian, T. J.; Phys. Rev.; <b>27</b> , 578 (1926)		
29BOU/CHA	Bouzat, A.; Chauvenet, E.; Bull. Soc. Chim. France; [4] <b>45</b> , 913 (1929)		
31CRE/DUN	Cremer, H. W.; Duncan, D. R.; J. Chem. Soc. (London); (1931) 2243		
31FAJ/KAR	Fajans, K.; Karagunis, G.; Unpublished data cited in Meyer, K. H.; Dunkel, M.; Z. Physik. Chem.; Bodensteinfestband, 553 (1931)		
31FOO/FLE	Foote, H. W.; Fleischer, J.; J. Am. Chem. Soc.; <b>53</b> , 1752 (1931)		
31LAN/STR	Lange, E.; Streeck, H.; Z. Physik. Chem. A; <b>157</b> , 1 (1931)		

58RAT/MAK	Ratner, A. P.; Makarov, L. L.; Zhur. Fiz. Khim.; <b>32</b> , 1809 (1958)	63STA/GRE	Staveley, L. A. K.; Grey, N. R.; Layzell, M. J.; Z. Naturforsch.; <b>18a</b> , 148 (1963)
58SEN/STO	Sense, K. A.; Stone, R. W.; J. Phys. Chem.; <b>62</b> , 1411 (1958)	64KOT/IVA	Kotlyarova, G. P.; Ivanova, E. F.; Zhur. Fiz. Khim.; <b>38</b> , 423 (1964)
58SMY/CUT	Smyth, D. M.; Cutler, M. E.; J. Am. Chem. Soc.; <b>80</b> , 4462 (1958)	64KUZ/NOV	Kuz'menko, A. L.; Novikov, G. I.; Vestn. Leningrad. Univ.; <b>19</b> , No 22, Ser. Fiz. Khim. No 4, 102 (1964)
59AKI/RAM	Akishin, P. A.; Rambidi, N. G.; Zhur. Neorg. Khim.; <b>4</b> , 718 (1959)	64LEB/ALE	Lebed, V. I.; Aleksandrov, V. V.; Zhur. Fiz. Khim.; <b>38</b> , 2608 (1964)
59MAK/POP	Makarov, L. L.; Popov, G. S.; Doklady Akad. Nauk SSSR; <b>129</b> , 854 (1959)	64MAK/VLA	Makarov, L. L.; Vlasov, Yu. G.; Kopunets, R.; Zhur. Fiz. Khim.; <b>38</b> , 1938 (1964)
59ROB/STO	Robinson, R. A.; Stokes, R. H.; "Electrolyte solutions", 2nd Ed., Butterworths, London; (1959)	64PAO/VAC	Paoletti, P.; Vacca, A.; Trans. Faraday Soc.; <b>60</b> , 50 (1964)
59SCH/POR	Schoonmaker, R. C.; Porter, R. F.; J. Chem. Phys.; <b>30</b> , 283 (1959)	64SAE	Saebr, D.; Bull. Soc. Chim. France; (1964) 1287
59SCH/POR2	Schoonmaker, R. C.; Porter, R. F.; J. Chem. Phys.; <b>31</b> , 830 (1959)	64SHC/VAS	Shchukarev, S. A.; Vasil'kova, I. V.; Korol'kov, D. V.; Zhur. Neorg. Khim.; <b>9</b> , 1810 (1964)
59SEL/KAP	Selivanova, N. M.; Kapustinskii, A. F.; Zubova, G. A.; Izvest. Akad. Nauk SSSR, Otdel. Khim. Nauk; 1959, 187	64SMI/VAS	Smirnova, E. K.; Vasil'kova, I. V.; Kudryashova, N. F.; Zhur. Neorg. Khim.; <b>9</b> , 489 (1964)
60DWO/BRE	Dworkin, A. S.; Bredig, M. A.; J. Phys. Chem.; <b>64</b> , 269 (1960)	65BUC/PAU	Buck, U.; Pauly, H.; Z. Physik. Chem. [NF]; <b>44</b> , 345 (1965)
60LAP/STR	Lapitskii, A. V.; Strizkov, B. V.; Vlasov, L. G.; Vestn. Mosk. Univ. Ser. II, Khim.; No. 4, 25 (1960)	65D'O/WOO	D'Orazio, L. A.; Wood, R. H.; J. Phys. Chem.; <b>69</b> , 2550 (1965)
60MII/KIE	Milne, T. A.; Klein, H. M.; J. Chem. Phys.; <b>33</b> , 1628 (1960)	65EHR/KOK	Ehrlich, P.; Koknat, F. W.; Seifert, H. J.; Z. Anorg. Allgem. Chem.; <b>341</b> , 281 (1965)
60MOR/STA	Morfee, R. G. S.; Staveley, L. A. K.; Walters, S. T.; Wigley, D. L.; Phys. Chem. Solids; <b>13</b> , 132 (1960)	65LAW/PIL	Lawton, E. A.; Pilipovich, D.; Wilson, R. D.; Inorg. Chem.; <b>4</b> , 118 (1965)
60MOR/TOP	Morozov, I. S.; Toptygin, D. Ya.; Zhur. Neorg. Khim.; <b>5</b> , 88 (1960)	65PAL/KUZ	Palkin, V. A.; Kuz'mina, N. N.; Chernyaev, I. I.; Zhur. Neorg. Khim.; <b>10</b> , 1792 (1965)
60SAM/BUS	Samoilov, O. Ya.; Buslaeva, M. N.; Stroenie Veshchestva I Spektroskopiya, Akad. Nauk SSSR; <b>1960</b> , 102	65PAO	Paoletti, P.; Trans. Faraday Soc.; <b>61</b> , 219 (1965)
60SHC/ORA	Shchukarev, S. A.; Oranskaya, M. A.; Shemyakina, T. S.; Zhur. Neorg. Khim.; <b>5</b> , 2135 (1960)	65PAR	Parker, V. B.; Nat. Bur. Stand. (U.S.) NSRDS-NBS 2, 66 pp. (1965)
60SHC/SMI	Shchukarev, S. A.; Smirnova, E. K.; Vasil'kova, I. V.; Lappo, L. I.; Vestn. Leningrad. Univ.; <b>15</b> , No. 16, Ser. Fiz. Khim. No 3, 113 (1960)	65SAF/KOR	Safonov, V. V.; Korshunov, B. G.; Izvest. Akad. Nauk SSSR, Neorg. Mater.; <b>1</b> , 604 (1965)
61BUR/WES	Burney, G. A.; Westrum, E. F., Jr.; J. Phys. Chem.; <b>65</b> , 349 (1961)	65STE/BAB	Stepin, B. D.; Babkov, A. V.; Sas, T. M.; Zhur. Neorg. Khim.; <b>10</b> , 1603 (1965)
61DAT/SMI	Datz, S.; Smith, W. T., Jr.; Taylor, E. H.; J. Chem. Phys.; <b>34</b> , 558 (1961)	65SOM/COO	Somsen, G.; Coops, J.; Rec. Trav. Chim.; <b>84</b> , 985 (1965)
61GLU/PET	Glushikova, M. A.; Petushkova, S. M.; Zhur. Neorg. Khim.; <b>6</b> , 349 (1961)	65VAS/PER	Vasil'kova, I. V.; Perfilova, I. L.; Zhur. Neorg. Khim.; <b>10</b> , 2296 (1965)
61KEL/KIN	Kelley, K. K.; King, E. G.; US Bur. Mines Bull.; <b>592</b> , 149p (1961)	65VOR/IBR	Vorob'ev, A. F.; Ibragim, N. A.; Skuratov, S. M.; Vestn. Mosk. Univ. Ser. II, Khim.; No. 5, 3 (1965)
61MAK/STU	Makarov, L. L.; Stupin, D. Yu.; Zhur. Fiz. Khim.; <b>35</b> , 605 (1961)	66BEL/LE	Belyaev, I. N.; Le T'yk; Zhur. Neorg. Khim.; <b>11</b> , 1919 (1966)
61SMI/KAY	Smith, D. F.; Kaylor, C. E.; Walden, G. E.; Taylor, A. R., Jr.; Gayle, J. B.; US Bur. Mines Rept. Invest.; <b>5832</b> , 20p (1961)	66FEA/SMI	Feekins, D.; Smith, B. C.; Thakur, L.; J. Chem. Soc. A; (1966) 714
62BOY/VAL	Boyd, G. E.; Valsow, F.; J. Chem. Eng. Data; <b>7</b> , 237 (1962)	66JEN/PAD	Jensen, D. E.; Padley, P. J.; Trans. Faraday Soc.; <b>62</b> , 2132 (1966)
62KRA/PET	Kraus, D. L.; Petrocelli, A. W.; J. Phys. Chem.; <b>66</b> , 1225 (1962)	66NOR/STA	Norman, J. H.; Staley, H. G.; USAEC Rept; GA7247, 12p (1966)
62PRO/AND	Protsenko, P. I.; Andreeva, T. A.; Zhur. Neorg. Khim.; <b>7</b> , 66 (1962)	66SAL/ARO	Salzano, F. J.; Aronson, S.; J. Chem. Phys.; <b>45</b> , 4551 (1966)
62SEL/LES	Selivanova, N. M.; Leshchinskaya, Z. L.; Tr. Mosk. Khim. Tekhnol. Inst.; No. 38, 37 (1962)	66SEE/BOU	Seel, F.; Boudier, J.; Z. Anorg. Allgem. Chem.; <b>342</b> , 173 (1966)
62SHC/VAS	Shchukarev, S. A.; Vasil'kova, I. V.; Chernykh, I. I.; Zhur. Neorg. Khim.; <b>7</b> , 1509 (1962)	66SHC/VAS	Shchukarev, S. A.; Vasil'kova, I. V.; Efimov, A. I.; Pitirimov, B. Z.; Zhur. Neorg. Khim.; <b>11</b> , 493 (1966)
63KLA	Klanberg, F.; Z. Naturforsch.; <b>18b</b> , 845 (1963)	66VLA/STE	Vlasova, I. V.; Stepina, S. B.; Stancheva, L. T.; Plyushchev, V. E.; Zhur. Neorg. Khim.; <b>11</b> , 1424 (1966)
63MOR/KRO	Morozov, I. S.; Krokhin, V. A.; Zhur. Neorg. Khim.; <b>8</b> , 2376 (1963)	66VOR/IBR	Vorob'ev, A. F.; Ibragim, N. A.; Skuratov, S. M.; Zhur. Neorg. Khim.; <b>11</b> , 25 (1966)
63MOR/LI	Morozov, I. S.; Li, C.-fa.; Zhur. Neorg. Khim.; <b>8</b> , 651 (1963)	66WU/FRI	Wu, Y. C.; Friedman, H. L.; J. Phys. Chem.; <b>70</b> , 501 (1966)
63SEL/LES	Selivanova, N. M.; Leshchinskaya, Z. L.; Strel'tsov, I. S.; Zhur. Fiz. Khim.; <b>37</b> , 668 (1963)	67BOU/REM	Bousquet, J.; Remy, J. C.; Bull. Soc. Chim. France; (1967) 3430
63SEL/SAZ	Selivanova, N. M.; Sazykina, T. A.; Izvest. Vysshikh Uchebn. Zavedenii, Khim. Khim. Tekhnol.; <b>6</b> , 531 (1963)	67GUN	Gunn, S. R.; J. Phys. Chem.; <b>71</b> , 1386 (1967)
		67KOR/ZAK	Korol'kov, D. V.; Zakharzhevskaya, V. O.; Zhur. Neorg. Khim.; <b>12</b> , 2951 (1967)
		67KRE/EGO	Krestov, G. A.; Egorova, I. V.; Theor. Exper. Chem.; <b>3</b> , 71 (1967) [Eng. Trans. Teor. Eksp. Khim.; <b>3</b> , 128 (1967)]

- 67NAK Nakayama, H.; Bull. Chem. Soc. Japan; **40**, 1592 (1967)
- 67WEE/SOM Weeda, L.; Somsen, G.; Rec. Trav. Chim.; **86**, 893 (1967)
- 67WEE/SOM2 Weeda, L.; Somsen, G.; Rec. Trav. Chim.; **86**, 263 (1967)
- 68BAB/STE Babkov, A. V.; Stepin, B. D.; Zhur. Neorg. Khim.; **13**, 11 (1968)
- 68BLO/HAS Bloom, H.; Hastie, J. W.; J. Phys. Chem.; **72**, 2706 (1968)
- 68GUI/HEN Guion, J.; Hengstenberg, D.; Blander, M.; J. Phys. Chem.; **72**, 4620 (1968)
- 68HID/ORR Hidalgo, A. F.; Orr, C., Jr.; J. Chem. Eng. Data; **13**, 49 (1968)
- 68MAK/STU Makarov, L. L.; Stupin, D. Yu.; Zhur. Fiz. Khim. **42**, 1508 (1968)
- 68PAU/LAV Paukov, I. E.; Lavrent'eva, M. N.; Zhur. Fiz. Khim.; **42**, 1842 (1968)
- 68SMI/VAS Smirnova, E. K.; Vasil'kova, I. V.; Krasnogira, K. N.; Zhur. Neorg. Khim.; **13**, 1514 (1968)
- 68SOR/TRO Sorokin, O. S.; Tronia, E. M.; Smirnova, E. K.; Vasil'kova, I. V.; Zhur. Neorg. Khim.; **13**, 3199 (1968)
- 68STE/PLY Stepin, B. D.; Plyushchcheva, V. E.; Selivanova, N. M.; Serebrennikova, G. M.; Zhur. Fiz. Khim.; **42**, 2330 (1968)
- 68SUG/MAT Sugisaki, M.; Matsuo, T.; Suga, H.; Seki, S.; Bull. Chem. Soc. Japan; **41**, 1747 (1968)
- 68TOP Topol, L. E.; Inorg. Chem.; **7**, 451 (1968)
- 68THA/CHI Thakker, M. T.; Chi, C. W.; Peck, R. E.; Wasan, D. T.; J. Chem. Eng. Data; **13**, 553 (1968)
- 68TOP/OWE Topol, L. E.; Owens, B. B.; J. Phys. Chem.; **72**, 2106 (1968)
- 69CHO/BEN Choux, G.; Benoit, R. L.; J. Am. Chem. Soc.; **91**, 6221 (1969)
- 69CHE/PRO Chekhunova, N. P.; Protsenko, P. I.; Ven'evorskaya, L. N.; Zhur. Fiz. Khim.; **43**, 2070 (1969)
- 69GUE Guenther, W. B.; J. Am. Chem. Soc.; **91**, 7619 (1969)
- 69GER/VOR Gerassimov, J. I.; Voronin, G. F.; Nguen Thak Shiu; J. Chem. Thermodynam.; **1**, 425 (1969)
- 69HAS/SWI Hastie, J. W.; Swingler, D. L.; High Temp. Sci.; **1**, 46 (1969)
- 69JOH/WIE Johnston, W. V.; Wiedersich, M.; Lindberg, G. W.; J. Chem. Phys.; **51**, 3739 (1969)
- 69KHA/SAM Khachaturyan, T. A.; Samplavskaya, K. K.; Karapet'yants, M. Kh.; Zhur. Neorg. Khim.; **14**, 1695 (1969)
- 69KLU/SEL Klushina, T. V.; Selivanova, N. M.; Lapin, V. V.; Fedyainov, N. V.; Zhur. Fiz. Khim.; **43**, 1398 (1969)
- 69PAU/KHR Paukov, I. E.; Khraplovich, L. M.; Zhur. Fiz. Khim.; **43**, 2678 (1969)
- 69SCH/GOD Schmidt, F. C.; Godovsky, S.; Ault, F. K.; Huffman, J. C.; J. Chem. Eng. Data; **14**, 71 (1969)
- 69SES/NIM Seshadri, K. S.; Nimon, L. A.; White, D.; J. Mol. Spectroscopy; **30**, 128 (1969)
- 69STE/ALL Stepin, B. D.; Altakhvendov, G. P.; Serebrennikova, G. M.; Zhur. Fiz. Khim.; **43**, 2452 (1969)
- 69TSV/RAB Tsvetkov, V. G.; Rabinovich, I. B.; Zhur. Fiz. Khim.; **43**, 1213 (1969)
- 69VAS/EFI Vasil'kova, I. V.; Efimov, A. I.; Shapkin, P. S.; Veshnyakov, A. A.; Zhur. Neorg. Khim.; **14**, 429 (1969)
- 69VAS/POD Vasil'kova, I. V.; Veshnyakov, A. A.; Shapkin, P. S.; Efimov, A. I.; Zhur. Neorg. Khim.; **14**, 429 (1969)
- 69VAS/SMI Vasil'kova, I. V.; Smirnova, E. K.; Smirnova, E. D.; Vestn. Leningrad. Univ.; No. 16, Fiz. Khim. No. 3, 107 (1969)
- 70BIK/KUZ Biktimoirov, R. S.; Kuzovkina, L. A.; Zhur. Neorg. Khim.; **15**, 240 (1970)
- 70DWO/BRE Dworkin, A. S.; Bredig, M. A.; J. Chem. Eng. Data; **15**, 505 (1970)
- 70EFI/KUD Efimov, A. I.; Kudryashova, Z. P.; Zhur. Neorg. Khim.; **15**, 255 (1970)
- 70MOO Moore, C.; Natl. Bur. Stand. (U.S.) NSRDS-NBS **34**, 8 pp. (1970)
- 70ROS Rosen, B.; "Donnees Spectroscopiques Relatives aux Molecules Diatomiques" Pergamon Press, Oxford; (1970)
- 70SOR/SMI Sorokina, V. V.; Smirnova, E. K.; Vasil'kova, I. V.; Zhur. Neorg. Khim.; **15**, 577 (1970)
- 70SHP/YAK Shpil'rain, E. E.; Yakimovich, K. A.; Totskii, E. E.; Timrot, D. L.; Fomin, V. A.; "Teplofizicheskie Svoistva Shchelochnykh" Metallov'isdatel. Standartov, Moskva; (1970)
- 71BOL/ZAL Bol'shakova, N. K.; Zalogina, E. A.; Selivanova, N. M.; Zhur. Neorg. Khim.; **16**, 378 (1971)
- 71CHL/LIS Chlebek, R. W.; Lister, M. W.; Can. J. Chem.; **49**, 2943 (1971)
- 71CUB Cubicciotti, D.; High Temp. Sci.; **3**, 349 (1971)
- 71GOR/GUS Gorokhov, L. N.; Gusarov, A. V.; Makarov, A. V.; Nikitin, O. T.; Teplofiz. Vysokikh Temp.; **9**, 1173 (1971)
- 71KAR/DOG Karpenko, N. V.; Dogadina, G. V.; Zhur. Neorg. Khim.; **16**, 818 (1971)
- 71KRI/FRI Krishnan, C. V.; Friedman, H. L.; J. Phys. Chem.; **75**, 3606 (1971)
- 71KRI/FRI2 Krishnan, C. V.; Friedman, H. L.; J. Phys. Chem.; **75**, 388 (1971)
- 71KEL/PAD Kelly, R.; Padley, P. J.; Trans. Faraday Soc.; **67**, 740 (1971)
- 71KRE/ZVE Krestov, G. A.; Zverev, V. A.; Izvest. Vysshikh Ucheb. Zavedenii Khim. Khim. Tekhnol.; **14**, 528 (1971)
- 71PAU/KHR Paukov, I. E.; Khraplovich, L. M.; Luk'yanova, I. G.; Zhur. Fiz. Khim.; **45**, 2451 (1971)
- 71PAU/KHR2 Paukov, I. E.; Khraplovich, L. M.; Popov, A. P.; Zhur. Fiz. Khim.; **45**, 1295 (1971)
- 71PRY/SEL Prymova, L. A.; Selivanova, N. M.; Zhur. Fiz. Khim.; **45**, 2393 (1971)
- 71RAF/MY Raffelini, F.; My le Van; Compt. rend. C; **273**, 92 (1971)
- 71SKL/MIK Sklyadnev, Yu. N.; Mikhailov, M. A.; J. Less Common Metals; **25**, 336 (1971)
- 72EHL/HSI Ehlert, T. C.; Hsia, M. -m.; J. Chem. Eng. Data; **17**, 18 (1972)
- 72EMO/BRA Emons, H. H.; Brautigam, G.; Kogler, D.; Z. Chem.; **12**, 223 (1972)
- 72GIL/SIN Gill, D. S.; Singla, J. P.; Paul, R. C.; Narula, S. P.; J. Chem. Soc. Dalton Trans.; (1972) 522
- 72HAM/WU Hamer, W. J.; Wu, Y. C.; J. Phys. Chem. Ref. Data; **1**, 1047 (1972)
- 72KUT Kutek, F.; Sb. Vys. Sk. Chem.-technol. Praze. Anorg. Chem. Technol.; B14, 77 (1972) : CA 79-35721
- 72REA/EPS Reader, J.; Epstein, G. L.; Ekberg, J. O.; J. Opt. Soc. Am.; **62**, 273 (1972)
- 72TOP Topor, L.; J. Chem. Thermodynam.; **4**, 739 (1972)
- 72VOR/MON Vorob'ev, A. F.; Monaenkova, A. S.; Vestn. Mosk. Univ. Ser II, Khim.; **13**, 182 (1972)
- 73ABR Abraham, M. H.; J. Chem. Soc. Faraday Trans. I; **69**, 1375 (1973)
- 73BRU/KAR Brumer, P.; Karplus, M.; J. Chem. Phys.; **58**, 3903 (1973)
- 73EZH/KOM Ezhov, Yu. S.; Komarov, S. A.; Tolmachev, S. M.; "Khimiya Paroobrozykh Neorganicheskikh Soedinenii i Protsessov Paroobrazovaniya (Materialy Vsesoyuznoi Konferentsii, 24-26 May, 1973)" Minsk; (1973) 81

73FUG/BRO	Fuger, J.; Brown, D.; J. Chem. Soc. Dalton Trans.; (1973) 428	74MUK/SUP	Mukhametshina, Z. B.; Suponitskii, Yu. L.; Seleznev, V. P.; Bodrov, V. G.; Karapet'yants, M. Kh.; Sudarikov, B. N.; Zhur. Neorg. Khim.; <b>19</b> , 474 (1974)
73HUL/DES	Hultgren, R.; Desai, P. D.; Hawkins, D. T.; Gleiser, M.; Kelley, K. K.; Wagman, D. D.; "Selected Values of the Thermodynamic Properties of the Elements" Amer. Soc. Metals, Metals Park, OH; (1973)	74SUP/SEL	Suponitskii, Yu. L.; Seleznev, V. P.; Mukhametshina, Z. B.; Bodrov, V. G.; Karapet'yants, M. Kh.; Sudarikov, B. N.; Radiokhimiya; <b>16</b> , 88 (1974)
73KRI/BAB	Kravtsov, N. V.; Babaeva, V. P.; Rosolovskii, V. Ya.; Zhur. Neorg. Khim.; <b>18</b> , 353 (1973)	74VDO/VOL	Vdovenko, V. B.; Volkov, V. A.; Suglobova, I. G.; Radiokhimiya; <b>16</b> , 363 (1974)
73KRI/TIT	Kravtsov, N. V.; Titova, K. V.; Rosolovskii, V. Ya.; Zhur. Neorg. Khim.; <b>18</b> , 347 (1973)	74VOR/MON	Vorob'ev, A. F.; Monaenkova, A. S.; Mishchenko, A. V.; Izvest. Vysshikh Uchebn. Zaveenii Khim. Khim. Tekhnol.; <b>17</b> , 673 (1974)
73MAC	MacLeod, A. C.; J. Chem. Soc. Faraday Trans. I; <b>69</b> , 2026 (1973)	75FIN/GAR	Finch, A.; Gardner, P. J.; Hill, N.; Roberts, N.; J. Chem. Soc. Dalton Trans.; (1975) 357
73RUD/YAG	Rud'ko, P. K.; Yaglov, V. N.; "Khimiya Paroobraznykh Neorganicheskikh Soedinenii i Protsessov Raroobrazovaniya (Materialy Vsesoyuznoi Konferentsii, 24- 26 May, 1973)" Minsk; (1973) 170	75JOR/TOR	Jorne, J.; Tobias, C. W.; J. Electrochem. Soc.; <b>122</b> , 1485 (1975)
73RUD/YAG2	Rud'ko, P. K.; Yaglov, V. N.; Novikov, G. I.; Sixth All Union Conf. Calorimetry, Tbilisi; (1973) 77	75PAU/BAN	Paul, R. C.; Banait, J. S.; Narula, S. P.; J. Electroanal. Chem.; Interfacial Electrochem.; <b>66</b> , 111 (1975)
73VDO/SUG	Vdovenko, V. M.; Suglobova, I. G.; Chirkst, D. E.; Radiokhimiya; <b>15</b> , 58 (1973)	75WEE/KOE	Weenk, J. W.; Koekoek, F. R. J.; Broers, G. H. J.; J. Chem. Thermodyn.; <b>7</b> , 473 (1975)
74BUR/HAI	Burgess, J.; Haigh, I.; Peacock, R. D.; Taylor, P.; J. Chem. Soc. Dalton Trans.; (1974) 1064	76BOU/BLA	Bousquet, J.; Blanchard, J.; Claudy, P.; Letoffe, J.; Mathurin, D.; Thermochim. Acta; <b>15</b> , 315 (1976)
74LON/MUS	Longhi, P.; Mussini, T.; Osimani, C.; J. Chem. Thermodyn.; <b>6</b> , 227 (1974)	76WEL/LAZ	Welch, D. O.; Lazareth, O. W.; Dienes, G. J.; Hatcher, R. D.; J. Chem. Phys.; <b>64</b> , 835 (1976)
74MAK/NIK	Makarov, A. V.; Nikitin, O. T.; Vestn. Mosk. Univ. Khim.; <b>29</b> , 533 (1974)	77FIN/GAT	Finch, A.; Gates, P. N.; Peake, S. J.; J. Inorg. Nuclear Chem.; <b>39</b> , 2135 (1977)
74MOR	Morozov, A. I.; Zhur. Neorg. Khim.; <b>19</b> , 1514 (1974)	77MAK/WES	Makhija, F.; Westland, A. D.; J. Chem. Soc. Dalton Trans.; (1977) 1707
74MUK/SEL	Mukhametshina, Z. B.; Seleznev, V. P.; Suponitskii, Yu. L.; Bodrov, V. G.; Karapet'yants, M. Kh.; Sudarikov, B. N.; Zhur. Fiz. Khim.; <b>48</b> , 495 (1974)	78KUD/SUG	Kudryashov, V. L.; Suglobova, I. G.; Chirkst, D. E.; Radiokhimiya; <b>20</b> , 366 (1978)
		78KUD/SUG2	Kudryashov, V. L.; Suglobova, I. G.; Chirkst, D. E.; Radiokhimiya; <b>20</b> , 373 (1978)