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

A Bibliography of Sources of Experimental Data Leading to Activity or Osmotic Coefficients for Polyvalent Electrolytes in Aqueous Solution

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A Bibliography of Sources of Experimental Data Leading to Activity or Osmotic Coefficients for Polyvalent Electrolytes in Aqueous Solution

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Foreword

The National Standard Reference Data System was established in 1963 for the purpose of promoting the critical evaluation and dissemination of numerical data of the physical sciences. The program is coordinated by the Office of Standard Reference Data of the National Bureau of Standards, but involves the efforts of many groups in universities, government laboratories, and private industry. The primary aim of the program is to provide compilations of critically evaluated physical and chemical property data. These tables are published in the *Journal of Physical and Chemical Reference Data*, in the NSRDS-NBS series of the National Bureau of Standards, and through other appropriate channels.

The task of critical evaluation is carried out in various data centers, each with a well-defined, technical scope. A necessary preliminary step to the critical evaluation process is the retrieval from the world scientific literature of all papers falling into the scope of the center. Each center, therefore, builds up a comprehensive, well-indexed bibliographical file which forms the base for the evaluation task. Bibliographies derived from these files are published when they appear to be of value to research workers and others interested in the particular technical or programmatic area.

The present bibliography covers experimental measurements that lead to activity and/or osmotic coefficients for polyvalent electrolytes in water. It forms part of the program whose ultimate objective is to provide compilations of reliable data on aqueous electrolytes for application to problems in water pollution, chemical process design, and other areas.

Further information on NSRDS and the publications which form the primary output of the program may be obtained by writing to the Office of Standard Reference Data, National Bureau of Standards, Washington, D.C. 20234.

David R. Lide, Jr., Chief
Office of Standard Reference Data

A Bibliography of Sources of Experimental Data Leading to Activity or Osmotic Coefficients for Polyvalent Electrolytes in Aqueous Solution

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Contained herein is a bibliography of sources of experimental data that can be used to calculate either activity or osmotic coefficients in water. The data types included are electromotive force measurements on cells with and without transference, vapor pressure data (relative and absolute), ultracentrifuge measurements, diffusion measurements, and other miscellaneous techniques. The compounds are given according to the standard thermochemical order of arrangement and references to the primary literature are included.

Key Words: Activity coefficients; aqueous systems; bibliography; electrochemistry; isopiestic; osmotic coefficients; thermochemistry; vapor pressure.

Introduction

The object of this bibliography is to locate in the scientific literature data from experimental measurements that lead to activity and/or osmotic coefficients for polyvalent electrolytes in water. Our motivation for undertaking this task arises from our need to locate these sources of data as a necessary step prior to subjecting the data to a more detailed analysis leading to evaluated activity and osmotic coefficients. We refer the reader to references [1,2,3] for a description of the evaluation procedures we have used.

The types of data with which we are concerned and the abbreviations we will use to designate them are as follows:

Data Type	Abbreviation
Isopiestic measurements	VI
Vapor pressure measurements - dynamic and static	VP
Freezing point depression measurements	FP
Boiling point elevation measurements	BP
Electrochemical cell measurements	
A. Without transference	E
B. With transference	ET
Diffusion measurements (on very dilute solutions only)	D
Ultracentrifuge measurements	U
Solvent extraction techniques	SE
Vapor pressure osmometry	VPO

We have arranged the various compounds according to the standard order of arrangement [4] (see fig. 1) and for each compound we list the appropriate references and the abbreviation for the data types to be found in that reference.

We have specifically excluded from this bibliographic coverage the following: (1) data on uni-univalent electrolytes; (2) data on mixed electrolyte systems; and (3) data on polymers. We refer the reader to the review of Hamer and Wu [5] for evaluated activity and osmotic coefficients for uni-univalent electrolytes and to the bibliography given in the book by Harned and Robinson [6] for sources of data on mixed electrolyte systems. The classic monographs of Harned and Owen [7] and of Robinson and Stokes [8] still remain useful sources of data; the recent evaluations of Pitzer and Mayorga [9, 10] are also of particular interest.

Our literature search encompassed the following: (1) a search of the files of the Chemical Thermodynamic and Electrolyte Data Centers at the National Bureau of Standards; (2) a computer search of Chemical Abstracts (from Volumes 76 to 85) and the National Technical Information Services (from 1964 to 1976); (3) a search of the annual indexes (from 1950 to 1976) of the list of journals given in Table 1; (4) a search of several pertinent reviews and compilations [11-19]; and (5) a search of the appropriate citations given in the papers located *via* procedures (1) to (4) above. The scientific literature is so very large and diverse that we probably have missed some data sources. We would appreciate it if any readers who find any citations missing or in error could bring such items to our attention.

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Table 1. Journals that have been searched for sources of relevant data.

J. Am. Chem. Soc.
J. Chem. Eng. Data
J. Chem. Soc.
J. Chem. Thermodyn.
J. Phys. Chem.
J. Solution Chem.
Russ. J. Phys. Chem. (English Translation of Zh. Fiz. Khim.)
Russ. J. Inorg. Chem. (English Translation of Zh. Neorg. Khim.)
Trans. Faraday Soc.

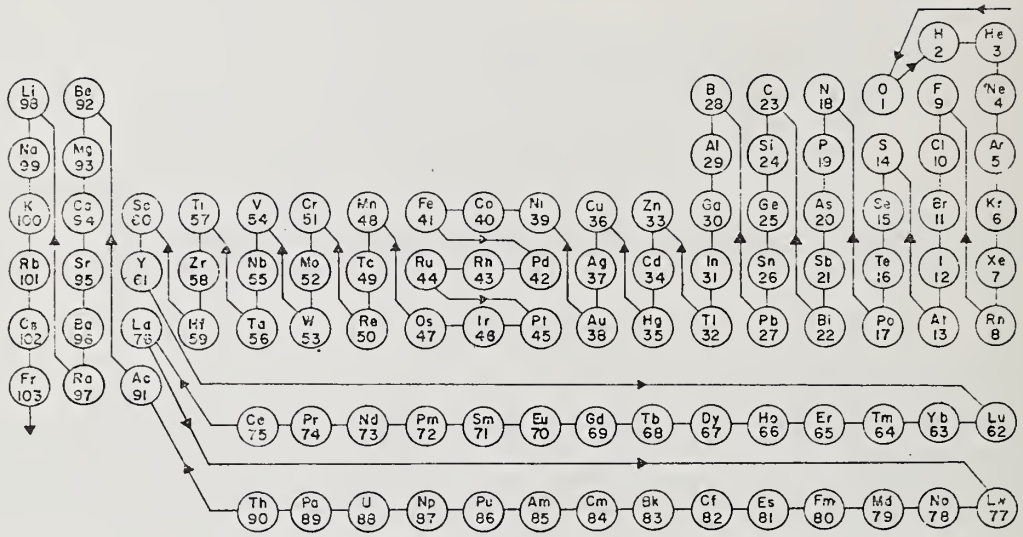

Figure 1. The compounds are entered according to the Standard Order of Arrangement [4] by the principle of latest position. In this scheme, a compound is listed under the element occurring latest in the list. Within the table for a given element will be found all of the compounds of that element with elements occurring earlier in the order. An exception occurs for carbon compounds which are divided into subgroups consisting of all compounds with one carbon atom, then all with two carbon atoms, etc.

H_2SO_4

$(NH_4)_2\ SO_4$

H_2PO_3

H_3PO_4

Biltz (1902) - FP
Chambers and Frazer (1900) - FP
Dieterici (1893) - VI
Elmore, Mason and Chritensen (1946) - VI
Jones (1893b) - FP
Jones and Getman (1903) - FP
Jones and Getman (1904) - FP
Jones et al. (1907) - FP
Kablukov and Zagwosdkin (1935) - VP
Kerker and Espenscheid (1958) - ET
Larson (1950) - E
Loomis (1893) - FP
Loomis (1894a) - FP
Loomis (1894b) - FP
Loomis (1896a) - FP
Loomis (1896b) - FP
Loomis (1897b) - FP
Loomis (1897a) - FP
Loomis (1897b) - FP
Mason and Blum (1947) - E
Mason and Culvern (1949) - ET
Platford (1975) - VI, FP
Platford (1976) - VI

$(NH_4)_2\ HPO_4$

Platford (1974) - VI

$H_2As_2O_4$

Roth and Schwartz (1926) - FP

$C_4H_4O_4$ (maleic acid)

Robinson, Smith and Smith (1942) - VI

$C_4H_6O_4$ (succinic acid)

Robinson, Smith and Smith (1942) - VI

$C_4H_6O_5$ (maleic acid)

Robinson, Smith and Smith (1942) - VI

$C_4H_6O_6$ (d-tartaric acid)

Robinson, Smith and Smith (1942) - VI

$C_4H_6O_6$ (meso-tartaric acid)

Robinson, Smith and Smith (1942) - VI

$C_6H_6O_6S_2$ (m-benzene disulfonic acid)

Bonner, Holland and Smith (1956) - VI
Bonner and Rogers (1961) - VPO

$(C_3N_2H_4)_2CO_3$ (guanadinium carbonate)

Bonner (1976) - VI

$(C_{16}H_{27}N_2)(C_6H_4S_2O_6)$ (ethylene bis (trimethylammonium m-benzene disulfonate)

Bonner and Kim (1969) - VPO

$(C_{16}H_{27}N_2)SO_4$ (ethylene bis (trimethylammonium) sulfate)

Bonner and Kim (1969) - VPO

$C_{14}H_8S_2O_8$ (anthraquinone 2,7 disulfonic acid)

Bonner, Rushing and Torres (1968) - VPO

$C_{14}H_{14}S_2O_6$ (bibenzyl 4,4'-disulfonic acid)

Bonner, Holland and Smith (1956) - VI
Bonner and Rogers (1961) - VPO

$(C_{30}H_{41}N_2S_2O_6)$ (ethylene bis(trimethylammonium) 4,4'-bibenzyl disulfonate)

Bonner and Kim (1969) - VPO

$C_{20}H_{26}S_2O_6$ (1,8-diphenyloctanedisulfonic acid)

Bonner and Rogers (1961) - VPO

$C_{21}H_{17}S_3O_9$ (1,2,3-triphenylpropanetrisulfonic acid)

Bonner and Overton (1963) - VI

$C_{23}H_{24}S_3O_9$ (1,3,5-triphenylpentane trisulfonic acid)

Bonner and Overton (1963) - VI

$C_{26}H_{38}S_2O_6$ (1,14-diphenyltetradecane disulfonic acid)

Bonner and Rogers (1961) - VPO

H_2GeO_3

Roth and Schwartz (1926) - FP

$SnCl_4$

Loomis (1897a) - FP
Loomis (1897b) - FP

SnI_2

Jones and Getman (1903) - FP

$PbCl_2$

Allmand and Hunter (1928) - E
Carmody (1929) - E
Garrels and Gucker (1949) - E
Hannan (1936) - E
Parton, Robinson and Metson (1939) - VI

$Pb(ClO_4)_2$

Biggs, Parton and Robinson (1955) - VI

$Pb(NO_3)_2$

Biggs, Parton and Robinson (1955) - VI
Conrad (1903) - ET
Hausrath (1902) - FP
Motornaya et al. (1969) - VI
Motornaya and Ben'yash (1973) - VI
Plake (1935) - BP
Randall and Vaneslow (1924) - FP
Ratner (1937) - VP

H_3BO_3

Kahlenberg (1901) - BP
Menzel (1923) - FP
Menzel (1927a) - FP
Platford (1969) - VI

$(NH_4)_2\ B_{10}H_{10}$

Wen and Chen (1975) - VI

$AlCl_3$

Fricke and Havestadt (1927) - VP
Jones et al. (1907) - FP
Jones and Pearce (1907) - FP
Jones and Getman (1904) - FP
Mason (1938) - VI
Villaseca and Herrera (1944) - ET

$Al(ClO_3)_3$

Roth (1923) - FP

$AlBr_3$

Biltz (1902) - VP

$Al_2(SO_4)_3$

Burge (1963) - VO
Jones et al. (1907) - FP
Jones and Getman (1904) - FP
Robinson (1937) - VI
Villaseca and Herrera (1944) - ET

$Al(NO_3)_3$

Jones et al. (1907) - FP
Jones and Getman (1904) - FP
Pearce (1936) - VP
Pearce and Blackman (1935) - VP

$Ga(ClO_4)_3$

Patterson, Tyree and Knox (1955) - VI
Patterson and Tyree (1957) - VI

$InCl_3$

Campbell (1974) - E
Campbell et al. (1974) - FP
Covington et al. (1963) - E

$In_2(SO_4)_3$

Covington, Hakeem and Wynne-Jones (1963) - E
Hattox and DeVries (1936) - E
Lietzke and Stoughton (1956) - E

Tl_2SO_4

Creeth (1960) - E
Drucker (1920) - FP

ZnF_2

Cook, Davies and Staveley (1971) - E

$ZnCl_2$

Brüll (1934) - E
Chambers and Frazer (1900) - FP
Egan and Partington (1943) - E
Foxton and Shutt (1927) - ET, E
Fricke and Havestadt (1927) - VP
Harris and Parton (1940) - E, ET
Horsch (1919) - E
Ishikawa and Takai (1937) - E
Jones (1893a) - FP
Jones et al. (1907) - FP
Jones and Getman (1903) - FP
Lehfeldt (1900) - E, ET
Lutfullah et al. (1976) - E
Masaki (1932) - ET
Pan (1966) - VI
Robinson and Stokes (1940b) - E
Scatchard and Tefft (1930) - E
Stokes (1948) - VI

$Zn(ClO_4)_2$

Libus and Sadowska (1970) - VI
Lilich et al. (1975) - VI
Sircar and Prasad (1954) - ET
Stokes and Levien (1946a) - VI

$ZnBr_2$

Acheson (1965) - VP
Egan and Partington (1943) - E
Ishikawa et al. (1936) - VP, E
Parton and Mitchell (1939) - E
Stokes and Stokes (1945) - ET
Stokes, Stokes and Robinson (1944) - VI

ZnI_2

Bates (1938) - E
Egan and Partington (1943) - E
Partington and Torto (1948) - E
Stokes (1945a) - VI
Stokes and Levien (1946b) - VI, ET

$Zn(NO_3)_2$

Dieterici (1923) - VP
Ewing and Fisher (1937) - VP
Jones et al. (1907) - FP
Motornaya et al. (1969) - VI
Stokes and Levien (1946a) - VI
Yakimov and Guzhavina (1971) - VP

$ZnSO_4$

Albright and Miller (1975) - D
Arvia (1955) - E
Bray (1927) - E
Brown and Prue (1955) - FP
Cowperthwaite and La Mer (1931) - E
Dieterici (1923) - VP
Hass and Jellinek (1932) - ET
Hausrath (1902) - FP
Herrera et al. (1944) - E
Jones et al. (1907) - FP
Kahlenberg (1901) - BP, FP
Kangro and Groeneveld (1962) - VP
Kielland (1936) - E
Klein and Svanberg (1920) - FP
Kopecky and Dymes (1972) - VPO
La Mer and Cowperthwaite (1933) - E
Lang and King (1954) - ET
Lehfeldt (1900) - E, ET
Masaki (1932) - E
Oikova et al. (1976) - VI
Ojkova et al. (1974) - VI
Plake (1935) - BP
Purser and Stokes (1951) - ET
Rassaiah (1965) - E
Robinson and Jones (1936) - VI
Tartar et al. (1941) - VP, E
Wolten and King (1949) - VP, E

$Zn\ C_6H_4S_2O_6$ (zinc m-benzene disulfonate)

Brubaker and Rasmussen (1963) - VI
Bonner, Rushing and Torres (1968) - VPO

$Zn\ (C_7H_7O_3S)_2$ (zinc p-toluene sulfonate)

Bonner, Breazeale and Rushing (1965) - VPO, VI

$Zn\ C_{14}H_6S_2O_8$ (zinc anthraquinone 2,7 disulfonic acid)

Bonner et al. (1968) - VPO

$Zn\ C_{14}H_{12}S_2O_6$ (zinc bibenzyl disulfonate)

Bonner, Breazeale and Rushing (1965) - VPO, VI

$CdCl_2$

Dieterici (1923) - VP
Filippov et al. (1971) - VP
Filippov, Yakimov and Tam (1973) - VP
Getman (1928a) - E
Getman (1929) - FP
Getman (1931) - E
Harned and Fitzgerald (1936) - E
Harris (1965) - E
Hass and Jellinek (1932) - ET
Herrera et al. (1944) - E
Horsch (1919) - E
Huang and Pan (1966) - FP
Ishikawa and Takai (1937) - VP
Jones (1893a) - FP
Jones and Chambers (1900) - FP
Jones et al. (1907) - FP
Jones and Getman (1903) - FP
Kertesz (1938) - ET
Leifer et al. (1962) - E
Lucasse (1929) - E
Pan and Ni (1968) - VI
Quintin (1935) - E
Quintin (1936) - E
Reilly and Stokes (1970) - E
Reilly and Stokes (1971) - D
Robinson (1940b) - VI
Shul'ts et al. (1971) - VI
Treumann and Ferris (1958) - E

$Cd(ClO_4)_2$

Jena and Prasad (1954) - ET
Lilich et al. (1975) - VI
Pan and Ni (1968) - VI
Reilly and Stokes (1971) - D

$CdBr_2$

Bates (1939) - E
Filippov et al. (1971) - V
Getman (1928a) - E
Getman (1929) - FP
Hass and Jellinek (1932) - ET
Ishikawa and Takai (1937) - VP
Jones (1893a) - FP
Jones et al. (1907) - FP
Jones and Chambers (1900) - FP
Jones and Getman (1903) - FP
Lucasse (1929) - E
Robinson (1940b) - VI
Shul'ts et al. (1971) - VI

CdI_2

Bates (1941) - E
Bates and Vosburgh (1937) - E
Bates and Vosburgh (1938) - E
Chambers and Frazer (1900) - FP
Filippov et al. (1971) - VP
Getman (1928b) - E
Getman (1929) - FP
Hass and Jellinek (1932) - ET

Ishikawa and Takai (1937) - VP
Johnson et al. (1954) - U
Jones (1893a) - FP
Jones et al. (1907) - FP
Jones and Getman (1903) - FP
Klein and Svanberg (1920) - FP
Robinson and Wilson (1940) - VI
Shul'ts et al. (1971) - VI

$CdSO_4$

Breck (1956) - ET
Dieterici (1923) - VP
Filippov, Makarevskii and Yakimov (1973) - VP
Getman (1928a) - E
Hausrath (1902) - FP
Herrera et al. (1944) - E
Jones et al. (1907) - FP
Jones and Caldwell (1901) - FP
Jones and Getman (1903) - FP
Kahlenberg (1901) - BP
La Mer and Parks (1931) - E
La Mer and Parks (1933) - E
Lang and King (1954) - ET
Plake (1935) - BP
Robinson and Jones (1936) - VI
Wolten and King (1949) - ET

$Cd(NO_2)_2$

Chekhunova et al. (1969) - VP

$Cd(NO_3)_2$

Dieterici (1923) - VP
Ewing and Guyer (1938) - VP
Jones (1893a) - FP
Jones et al. (1907) - FP
Kovyrzina et al. (1956) - VP
Motornaya et al. (1969) - VI
Motornaya and Ben'yash (1973) - VI
Robinson, Wilson and Ayling (1942) - VI

$Cd(CCl_3COO)_2$

Kertesz (1938) - ET

$Cd(C_6H_3OHCOOHSO_3)_2$

Kertesz (1938) - ET

$Cd(C_6H_4NH_2SO_3)_2$

Kertesz (1938) - ET

$Cd\ (C_7H_7O_3S)_2$ (cadmium p-toluene sulfonate)

Bonner, Breazeale and Rushing (1965) - VPO

$HgCl_2$

Kahlenberg (1901) - BP
Biltz (1902) - FP

Hg_2SO_4

Hass and Jellinek (1932) - ET
Sircar et al. (1961) - ET

$Hg(CN)_2$

Jones and Caldwell (1901) - FP

$CuCl_2$

Biltz (1902) - FP
Downes and Pitzer (1976) - VI
Herrera (1946) - ET
Huang and Pan (1966) - FP
Isaachsen (1891) - FP and BP
Jones et al. (1907) - FP
Jones and Getman (1904) - FP
Jones and Pearce (1907) - FP
Robinson and Stokes (1940c) - VI

$Cu(ClO_4)_2$

Libus and Sadowska (1969) - VI
Lilich and Andreev (1968) - VP

$CuBr_2$

Biltz (1902) - FP

$CuSO_4$

Bedford (1909) - FP
Brown and Prue (1955) - FP
Chambers and Frazer (1900) - FP
Downes and Pitzer (1976) - VI
Getman (1930) - E
Hausrath (1902) - FP
Herrera et al. (1944) - E
Hovorka and Rodebush (1925) - FP
Jones et al. (1907) - FP
Jones and Getman (1903) - FP
Jones and Getman (1904) - FP
Kahlenberg (1901) - FP, BP
Klein and Svanberg (1920) - FP
Kopecky and Dymes (1972) - VPO
Lebettre (1934) - E
Lewis and Lacey (1914) - E
Nielsen and Brown (1927) - E
Öholm (1919) - E
Plake (1935) - BP
Quintin (1933a) - E
Quintin (1933b) - E
Quintin (1934) - E
Quintin and Lebettre (1934) - E
Rivett (1912) - FP
Robinson and Jones (1936) - VI
Wetmore and Gordon (1937) - E

$Cu(NO_3)_2$

Jones et al. (1907) - FP
Jones and Getman (1904) - FP
Jones and Pearce (1907) - FP
Robinson, Wilson and Ayling (1942) - VI
Yakimov and Guzhavina (1971) - VP

$[Cu(C_2H_8N_2)_2]\ SO_4$

Isono (1970) - FP

$Cu(C_7H_7O_3S)_2$ (copper p-toluene sulfonate)

Bonner, Breazeale and Rushing (1965) - VPO

$Cu\ C_6H_4S_2O_6$ (copper m-benzene disulfonate)

Brubaker and Rasmussen (1963) - VI
Bonner, Rushing and Torres (1968) - VPO

$Cu\ C_{14}H_6S_2O_8$ (copper anthraquinone 2,7 disulfonic acid)

Bonner, Rushing and Torres (1968) - VPO

$Cu\ C_{14}H_{12}S_2O_6$ (copper bibenzyl disulfonate)

Bonner, Breazeale and Rushing (1965) - VPO, VI

$Cu_3(C_{21}H_{17}S_3O_9)_2$ (copper 1,2,3-triphenylpropane-trisulfonate)

Bonner, Breazeale and Rushing (1965) - VPO, VI

$NiCl_2$

Biltz (1902) - FP
Dieterici (1923) - VP
Hass and Jellinek (1932) - ET
Jones et al. (1907) - FP
Pearce and Eckstrom (1937a) - V
Plake (1935) - VP
Robinson and Stokes (1940c) - VI
Shul'ts et al. (1962) - VI
Stokes (1948) - VI

$Ni(ClO_4)_2$

Libus and Sadowska (1969) - VI
Libus and Sadowska (1970) - VI
Lilich and Andreev (1968) - VP

$NiSO_4$

Brown and Prue (1955) - FP
Dieterici (1923) - VP
Hass and Jellinek (1932) - ET
Hausrath (1902) - FP
Isono (1971) - FP
Jones et al. (1907) - FP
Kahlenberg (1901) - FP, BP
King et al. (1932) - FP
Ojkova (1974) - VI
Plake (1935) - BP
Robinson and Jones (1936) - VI

$Ni(NO_3)_2$

Dieterici (1923) - VP
Jones et al. (1907) - FP
Jones and Pearce (1907) - FP
King et al. (1932) - FP
Ryubov et al. (1972) - VI
Yakimov and Guzhavina (1971) - VP

$[Ni(NH_3)_6](NO_3)_2$

King et al. (1932) - FP

$[Ni(NH_3)_5]SO_4$

King et al. (1932) - FP

$Ni\ C_6H_4S_2O_6$ (nickel - m-benzene disulfonate)

Bonner, Rushing and Torres (1968) - VPO

$Ni\ C_{14}H_6S_2O_8$ (nickel anthraquinone 2,7 disulfonic acid)

Bonner, Rushing and Torres (1968) - VPO

$Ni\ C_{14}H_{12}S_2O_6$ (nickel bibenzyl disulfonate)

Bonner, Breazeale and Rushing (1965) - VPO, VI

$[Ni(C_6H_5N)](NO_3)_2$

King et al. (1932) - FP

$CoCl_2$

Biltz (1902) - FP
Downes (1975) - VI
Hall and Harkins (1916) - FP
Hass and Jellinek (1932) - ET
Jones et al. (1907) - FP
Jones and Getman (1904) - FP
Jones and Pearce (1907) - FP
Robinson (1938) - VI
Robinson and Brown (1948) - VI
Robinson and Stokes (1940c) - VI

$Co(ClO_4)_2$

Libus and Sadowska (1969) - VI
Libus and Sadowska (1970) - VI
Lilich and Andreev (1968) - VP

$CoBr_2$

Isaachsen (1891) - FP, BP
Robinson, McCoach and Lim (1950) - VI

CoI_2

Robinson, McCoach and Lim (1950) - VI

$CoSO_4$

Brown and Prue (1955) - FP
Jones et al. (1907) - FP
Jones and Getman (1904) - FP
Kahlenberg (1901) - FP, BP
Oikova et al. (1976) - VI

$Co(NO_3)_2$

Frolov et al. (1974) - VI
Jones et al. (1907) - FP
Jones and Getman (1904) - FP
Jones and Pearce (1907) - FP
Robinson and Brown (1948) - VI
Robinson, Wilson and Ayling (1942) - VI

$[Co(NH_3)_3](NO_2)_3$

Harkins et al. (1916) - FP

$[Co(NH_3)_5NO_2]Cl_2$

Harkins, Hall and Roberts (1916) - FP
Masterton and Scola (1964) - VPO

$[Co(NH_3)_5F]Cl_2$

Masterton and Scola (1964) - VPO

$[Co(NH_3)_5Cl]Cl_2$

Harkins, Hall and Roberts (1916) - FP

$[Co(NH_3)_5Cl](ClO_4)_2$

Masterton and Scola (1964) - VPO

$[Co(NH_3)_6]Cl_3$

Harkins, Hall and Roberts (1916) - FP
Mori and Tsuchiya (1958) - ET

$Co(C_2H_8N_2)_3Cl_3$

Kard and Dye (1962) - ET

$Co(C_2H_8N_2)_3(ClO_4)_3$

Brubaker and Hass (1961) - VI

$[Co(C_3H_9N_2)_3](ClO_4)_3$

Wynveen et al. (1960) - VI

$[Co\ (C_2H_8N_2)_2]\ (SO_4)_3$

Wynveen et al. (1960) - VI

$[Co(NH_3)_5\ CH_3CH_2COO]X_2$, X = NO_3, I, Br, Cl

Berka and Masterton (1966) - VPO

$[Co(NH_3)_5\ CH_3COO]X_2$, X = NO_3, I, Br, Cl

Berka and Masterton (1966) - VPO

$[Co(NH_3)_5\ (CH_3)_2CHCOO]X_2$, X = NO_3, I, Br, Cl

Berka and Masterton (1966) - VPO

cis- and trans- $[Co(C_2H_8N_2)NH_3NO]X_2$,
X = NO_3, I, Br, Cl

Masterton et al. (1967) - VPO

$FeCl_2$

Biltz (1902) - FP
Kangro and Groeneveld (1962) - VP
Stokes and Robinson (1941) - VI

$FeCl_3$

Jones et al. (1907) - FP
Kangro and Groeneveld (1962) - VP
Villaseca and Herrera (1944) - ET

$FeSO_4$

Kahlenberg (1901) - FP, BP

$Fe(NO_3)_3$

Jones et al. (1907) - FP

$Ru\ C_{14}H_{42}SO_4$ (tris(1, 10-phenanthroline) ruthenium (II) sulfate)

Yokoyama and Yamatera (1975) - VPO

$[Pt(C_2H_8N_2)_3]Cl_4$

Brubaker (1956) - VI

$Pt(C_3H_9N_2)_3Cl_4$

Groves et al. (1960) - VI

$Pt(C_2H_8N_2)_3(ClO_4)_4$

Brubaker (1957) - VI

$MnCl_2$

Biltz (1902) - FP
Downes (1973) - VI
Hass and Jellinek (1932) - ET
Jones et al. (1907) - FP
Perreau (1935b) - VP
Robinson and Stokes (1940c) - VI
Stokes (1948) - VI

$Mn(ClO_4)_2$

Libus and Sadowska (1969) - VI
Lilich and Andreev (1968) - VP

$Mn(NO_3)_2$

Ewing, Glick and Rasmussen (1942) - VP
Jones et al. (1907) - FP

$MnSO_4$

Jones et al. (1907) - FP
Kahlenberg (1901) - FP, BP
Plake (1935) - BP
Robinson and Jones (1936) - VI
Yokoyama and Yamatera (1975) - VPO

MnS_2O_6

Christoffersen and Prue (1970) - FP

Mn $C_6H_4S_2O_6$ (manganese-m benzene disulfonate)

Brubaker and Rasmussen (1963) - VI

$H_2Cr_2O_7$

Jones et al. (1907) - FP

$CrCl_2$

Jones et al. (1907) - FP

$CrCl_3$

Smith (1947) - VI
Villaseca and Herrera (1944) - ET

$Cr_2(SO_4)_3$

Smith (1947) - VI

(NH_4) Cr $(SO_4)_2$

Smith (1947) - VI

$Cr(NO_3)_3$

Jones et al. (1907) - FP
Smith (1947) - VI

$[N(CH_3)_4]_4$ $Mo(CN)_8$

Groves et al. (1960) - VI
Miller and Porter (1967) - VI

$(NH_4)_3AlMo_6O_{24}H_6$

Meyer and Huckfeldt (1970) - VPO

$(NH_4)_3\ Cr\ Mo_6\ O_{24}\ H_6$

Meyer and Hackfeldt (1970) - VPO

$H_4W_{12}SiO_{40}$

Tyree et al. (1966) - VI

$ScCl_3$

Mason (1938) - VI

YCl_3

Mason (1938) - VI
Petheram and Spedding (1963) - VI
Spedding, Weber, et al. (1976) - VI

$LuCl_3$

Spedding, Weber, et al. (1976) - VI

$Lu(ClO_4)_3$

Rard, Weber and Spedding (1977) - VI

$YbCl_3$

Dye and Spedding (1953) - ET
Spedding, Porter and Wright (1952) - ET
Spedding, Weber, et al. (1976) - VI
Spedding and Wright (1951) - ET

$Yb(ClO_4)_3$

Rard, Weber and Spedding (1977) - VI

$Yb(NO_3)_3$

Heiser (1957) - VI
Rard, Shiers, et al. (1977) - VI

$TmCl_3$

Dye and Spedding (1953) - ET
Spedding, Weber, et al. (1976) - VI
Spedding and Dye (1954) - ET

$Tm(ClO_4)_3$

Rard, Weber and Spedding (1977) - VI

$Tm(NO_3)_3$

Rard, Shiers, et al. (1977) - VI

$ErCl_3$

Dye and Spedding (1953) - ET
Petheram and Spedding (1963) - ET
Spedding, Porter and Wright (1952) - ET
Spedding, Weber, et al. (1976) - VI

$Er(ClO_4)_3$

Rard, Weber and Spedding (1977) - VI

$ErBr_3$

Spedding and Yaffe (1952) - ET
Yaffe and Spedding (1952) - ET

$Er(NO_3)_3$

Heiser (1957) - VI
Rard, Shiers, et al. (1977) - VI

$HoCl_3$

Dye and Spedding (1953) - ET
Spedding, Weber, et al. (1976) - VI
Spedding and Dye (1954) - ET

$Ho(ClO_4)_3$

Rard, Weber and Spedding (1977) - VI

$HoBr_3$

Spedding and Yaffe (1952) - ET

$Ho(NO_3)_3$

Heiser (1957) - VI

$DyCl_3$

Dye and Spedding (1953) - ET
Saegar (1960) - VI
Spedding, Weber, et al. (1976) - VI
Spedding and Dye (1954) - ET

$Dy(ClO_4)_3$

Rard, Weber and Spedding (1977) - VI

$TbCl_3$

Nelson (1960) - ET
Spedding, Nelson and Rard (1974) - ET
Spedding, Weber, et al. (1976) - VI

$Tb(ClO_4)_3$

Rard, Weber and Spedding (1977) - VI

$TbBr_3$

Nelson (1960) - ET
Spedding, Nelson and Rard (1974) - ET

$Tb(NO_3)_3$

Rard, Shiers, et al. (1977) - VI

$GdCl_3$

Saeger (1960) - VI
Spedding, Weber, et al. (1976) - VI
Spedding and Yaffe (1952) - ET
Yaffe and Spedding (1952) - ET

$Gd(ClO_4)_3$

Rard, Weber and Spedding (1977) - VI

$GdBr_3$

Spedding and Yaffe (1952) - ET
Yaffe and Spedding (1952) - ET

$Gd(NO_3)_3$

Rard, Shiers, et al. (1977) - VI

$EuCl_3$

Mason (1941) - VI
Spedding, Weber, et al. (1976) - VI
Spedding, Porter and Wright (1952) - ET
Spedding and Wright (1951) - ET

$SmCl_3$

Mason (1941) - VI
Saeger (1960) - VI
Spedding et al. (1952) - ET
Spedding, Weber, et al. (1976) - VI
Spedding and Wright (1951) - ET

$Sm(ClO_4)_3$

Rard, Weber and Spedding (1977) - VI

$Sm(NO_3)_3$

Heiser (1957) - VI
Rard, Shiers, et al. (1977) - VI

$NdCl_3$

Bodlander (1915) - FP
Dye and Spedding (1953) - ET
Mason (1938) - VI
Saegar (1960) - VI
Spedding, Weber, et al. (1976) - VI
Spedding and Porter (1951) - ET
Spedding, Porter and Wright (1952) - ET

$Nd(ClO_4)_3$

Rard, Weber and Spedding (1977) - VI

$NdBr_3$

Spedding and Yaffe (1952) - ET
Yaffe and Spedding (1952) - ET

$Nd_2(SO_4)_3$

Bodlander (1915) - FP

$Nd(NO_3)_3$

O'Brien (1974) - VP

$PrCl_3$

Mason (1938) - VI
Spedding, Porter and Wright (1952) - ET
Spedding, Weber, et al. (1976) - VI
Spedding and Porter (1951) - ET

$Pr(ClO_4)_3$

Rard, Weber and Spedding (1977) - VI

$PrBr_3$

Spedding and Yaffe (1952) - ET
Yaffe and Spedding (1952) - ET

$Pr(NO_3)_3$

Jones and Getman (1903) - FP

$CeCl_3$

Mason (1938) - VI
Spedding, Porter and Wright (1952) - ET
Spedding and Porter (1951) - ET

$Ce(NO_3)_3$

Yakimov and Guzhavina (1971) - VP

$LaCl_3$

Bodlander (1915) - FP
Gibbard and Wilson (1976) - ET
Harned (1959) - D
Harned and Blake (1951b) - D
Kirgintsev and Luk'yanov (1965) - VI
Mason and Ernst (1936) - VI; Shedlovsky (1950) - ET
Robinson (1937) - VI
Robinson (1939) - VI
Saegar (1960) - VI
Scatchard, Vonnegut and Beaumont (1960) - FP
Shedlovsky (1950)
Shedlovsky and MacInnes (1939) - ET
Spedding, Porter and Wright (1952) - ET
Spedding, Weber, et al. (1976) - VI
Spedding and Porter (1951) - ET
Spedding and Wright (1951) - ET

$La(ClO_4)_3$

Rard, Weber and Spedding (1977) - VI

$LaBr_3$

Spedding and Yaffe (1952) - ET
Yaffe and Spedding (1952) - ET

$La_2(SO_4)_3$

Hovorka and Rodebush (1925) - FP
Noyes and Johnston (1909) - FP

$La(NO_3)_3$

Hall and Harkins (1916) - FP
Kingintsev and Luk'yanov (1965) - VI
Noyes and Johnston (1909) - FP
O'Brien (1974) - VP
Rard, Shiers, et al. (1977) - VI
Yakimov and Guzhavina (1971) - VP

UO_2F_2

Johnson et al. (1954) - U
Johnson and Kraus (1952) - VI

UO_2Cl_2

Dittrich (1899) - FP
Robinson and Lim (1951) - VI

$UO_2(ClO_4)_2$

Robinson and Lim (1951) - VI
Rush and Johnson (1971) - VI
Schwabe et al. (1968) - SE

UO_2SO_4

Dittrich (1899) - FP
Patterson et al. (1960) - VI
Robinson (1952) - VI
Soldano and Meek (1963) - VI
Soldano and Patterson (1962) - VI

$UO_2(NO_3)_2$

Dittrich (1899) - BP
Glueckauf, McKay and Mathieson (1949) - SE
Mikhailov and Torgov (1964) - SE
Robinson and Lim (1951) - VI
Robinson, Wilson and Ayling (1942) - VI

$UO_2C_4H_4O_6$

Dittrich (1899) - FP

$UO_2(C_2H_3O_2)_2$

Dittrich (1899) - FP

$ThCl_4$

Robinson (1955) - VI

$Th(NO_3)_4$

Apelblat et al. (1973a) - FP
Apelblat et al. (1973b) - VPO
Fricke and Havestadt (1927) - VP
Kirgintsev and Luk'yanov (1965) - VI
Robinson and Levien (1936) - VI

$BeSO_4$

Fricke and Havestadt (1927) - VP
Robinson (1952) - VI

BeC_2O_4

Sidgwick and Lewis (1926) - FP

$MgCl_2$

Acheson (1963) - VP
Fricke and Havestadt (1927) - VP
Frolov et al. (1971) - VI
Gibbard and Gosman (1974) - FP
Gregor et al. (1963) - ET
Harned (1959) - D
Harned and Polestra (1954) - D
Jones and Chambers (1900) - FP
Jones and Getman (1903) - FP
Jones and Pearce (1907) - FP
Kahlenberg (1901) - BP
Kirgintsev and Luk'yanov (1966) - VI
Longhi et al. (1973) - E
Loomis (1896a) - FP
Loomis (1896b) - FP
Masaki (1932) - E
Menzel (1927c) - FP
Petit (1965) - VP
Platford (1968b) - VI
Platford (1971) - VI
Rivett (1912) - FP
Robinson and Bower (1966) - VI
Robinson and Stokes (1940a) - VI
Saad et al. (1975) - VI
Serowy and Soika (1965) - U
Stokes (1945c) - VI
Wexler and Hasegawa - VP
Wu, Rush and Scatchard (1968) - VI
Wu, Rush and Scatchard (1969) - VI

$Mg(ClO_4)_2$

Galkin et al. (1973) - VP
Nicholson and Felsing (1950) - FP
Stokes and Levien (1946a) - VI

$MgBr_2$

Hass and Jellinek (1932) - ET
Jones et al. (1907) - FP
Jones and Chambers (1900) - FP
Jones and Getman (1903) - FP
Robinson and Stokes (1940a) - VI
Stokes (1948) - VI

MgI_2

Robinson and Stokes (1940a) - VI
Stokes (1948) - VI

$MgSO_4$

Bedford (1909) - FP
Brown and Prue (1955) - FP
Childs and Platford (1971) - VI
Hall and Harkins (1916) - FP
Hausrath (1902) - FP
Hass and Jellinek (1932) - ET
Hovorka and Rodebush (1925) - FP
Isono (1971) - FP
Jones (1893a) - FP
Kahlenberg (1901) - FP, BP
Kangro and Groeneveld (1962) - VP
Kopecky and Dymes (1972) - VPO
Loomis (1893) - FP
Loomis (1894a) - FP
Loomis (1894b) - FP
Oikova et al. (1976) - VI
Patterson et al. (1960)
Plake (1935) - BP
Platford (1967) - VI
Robinson and Jones (1936) - VI
Soldano and Bien (1966) - VI
Soldano and Meek (1963) - VI
Soldano and Patterson (1962) - VI
Yokoyama and Yamatera (1975) - VPO
Wu, Rush and Scatchard (1968) - VI
Wu, Rush and Scatchard (1969) - VI

MgS_2O_6

Christoffersen and Prue (1970) - FP

$Mg(NO_2)_2$

Chekhunova and Protsenko (1967) - VP

$Mg(NO_3)_2$

Acheson (1963) - VP
Biggs, Parton and Robinson (1955) - VI
Ewing, Klinger and Brander (1934) - VP
Jones et al. (1907) - FP
Jones and Pearce (1907) - FP
Platford (1971) - VI
Rivett (1912) - FP
Robinson, Wilson and Ayling (1942) - VI
Wexler and Hasegawa (1954) - VP
Yakimov and Guzhavina (1971) - VP

$Mg(C_2H_3O_2)_2$

Stokes (1953) - VI

$MgCl_2CHCO_2$

Prue et al. (1974) - FP

$MgCl_3CCO_2$

Prue et al. (1974) - FP

$MgCH_3SO_4$

Prue et al. (1974) - FP

$MgC_{14}H_6S_2O_8$
(magnesium anthraquinone 2,7 disulfonic acid)

Bonner, Rushing and Torres (1968) - VPO

$Ca(OH)_2$

Fosbinder (1929) - ET

$CaCl_2$

Acheson (1963) - VP
Bechtold and Newton (1940) - VP
Biltz (1902) - VP
Briggs and Lilley (1974) - E
Cachaza and Casal (1973)
Childs and Platford (1971) - VI
Dieterici (1893) - VP
Dieterici (1897) - VP
Drucker and Luft (1926) - ET
Fosbinder (1929) - ET
Gibbard and Fong (1975) - FP
Harned (1959) - D
Harned and Parker (1955) - D
Hepburn (1932a) - VP
Hepburn (1932b) - VP
Huston and Butler (1969) - ET
Jakli, et al. (1975) - VP
Jakli and VanHook (1972) - VP
Jones et al. (1907) - FP
Jones and Getman (1902) - FP
Jones and Chambers (1900) - FP
Jones and Getman (1903) - FP
Jones and Getman (1904) - FP
Jones and Pearce (1907) - FP
Kirgintsev and Luk'yanov (1965) - VI
Kirginstev and Luk'yanov (1966) - VI
Klein and Svanberg (1920) - FP
Loomis (1897a) - FP
Loomis (1897b) - FP
Lucusse (1925) - E, ET
Masaki (1932) - ET
McLeod and Gordon (1945) - ET
Mussini and Pagella (1971) - E
Plake (1935) - BP

Platford (1971) - VI
Platford (1973) - VI
Ponsot (1897) - FP
Rard and Spedding (1977) - VI
Robinson (1940a) - VI
Shedlovsky (1950) - ET
Shedlovsky and MacInnes (1937) - ET
Stokes (1945b) - VI
Stokes (1947) - VP
Tamele (1924) - E

$Ca(ClO_4)_2$

Galkin et al. (1973) - VP
Lilich and Shelygin (1966) - VP
Nicholson and Felsing (1950) - FP
Robinson, Lim and Ang (1953) - VI

$CaBr_2$

Hass and Jellinck (1932) - ET
Jones et al. (1907) - FP
Jones and Chambers (1900) - FP
Jones and Getman (1903) - FP
Meyer (1902) - FP
Robinson (1942) - VI
Robinson and McCoach (1947) - VI

CaI_2

Dieterici (1893) - VP
Hass and Jellinck (1932) - ET
Jones et al. (1907) - FP
Meyer (1902) - FP
Robinson (1942) - VI

$Ca(NO_2)_2$

Chekhunova et al. (1969) - VP

$Ca(NO_3)_2$

Braunstein and Braunstein (1971) - VI
Jones et al. (1907) - FP
Jones and Pearce (1907) - FP
Kirgintsev and Luk'yanov (1965) - VI
Noyes and Johnston (1909) - FP
Pearce (1936) - VP
Pearce and Blackman (1935) - VP
Plake (1935) - BP
Platford (1971) - VI
Robinson (1940c) - VI
Stokes and Robinson (1948) - VI

$CaSO_4$

Brown and Prue (1955) - FP
Fosbinder (1929) - ET
Lilley and Briggs (1976) - E
Yokoyama and Yamatera (1975) - VPO

CaS_2O_3

Bichowsky (1923) - FP

CaS_2O_6

Christoffersen and Prue (1970) - FP

$CaCH_3SO_4$

Prue et al. (1974) - FP

$Ca(CH_3COO)_2$

Fosbinder (1929) - ET
Plake (1935) - BP

$CaCl_2CHCO_2$

Prue et al. (1974) - FP

$CaCl_3CCO_2$

Prue et al. (1974) - FP

$Ca(C_3H_5O_3)_2$(calcium lactate)

Fosbinder (1929) - ET.

Ca $C_{14}H_{12}S_2O_6$ (calcium bibenzyl disulfonate)

Bonner, Breazeale and Rushing (1965) - VPO, VI

$Ca(C_7H_7O_3S)_2$ (calcium p-toluene sulfonate)

Bonner, Breazeale and Rushing (1965) - VPO

$Ca_2Fe(CN)_6$

Berkeley, Hartley and Burton (1909) - VPO
Berkeley, Hartley and Burton (1919) - VPO
Noyes and Johnston (1909) - FP

$SrCl_2$

Acheson (1963) - VP
Biltz (1902) - FP
Downes (1974) - VI
Gregor et al. (1963) - ET
Harned (1959) - D
Hepburn (1932a) - V
Hepburn (1932b) - V
Jones et al. (1907) - FP
Jones and Chambers (1900) - FP
Jones and Getman (1902) - FP
Jones and Getman (1903) - FP
Jones and Getman (1904) - FP
Jones and Pearce (1907) - FP
Klein and Svanberg (1920) - FP
Longhi et al. (1975) - E
Loomis (1897a) - FP
Loomis (1897b) - FP
Lucasse (1925) - E, ET
Masaki (1932) - ET
Phillips et al. (1942) - VI
Robinson (1940a) - VI
Stokes (1948) - VI

$Sr(ClO_4)_2$

Galkin et al. (1973) - VP
Nicholson and Felsing (1950) - FP
Robinson, Lim and Ang (1953) - VI

$SrBr_2$

Jones et al. (1907) - FP
Jones and Chambers (1900) - FP
Meyer (1902) - FP
Robinson (1942) - VI

SrI_2

Chambers and Frazer (1900) - FP
Jones et al. (1907) - FP
Meyer (1902) - FP
Robinson (1942) - VI

$Sr(NO_2)_2$

Chekhunova et al. (1969) - VP

$Sr(NO_3)_2$

Acheson (1963) - VP
Jones et al. (1907) - FP
Jones and Pearce (1907) - FP
Klein and Svanberg (1920) - FP
Robinson, Wilson and Ayling (1942) - VI

$Ba(OH)_2$

Harned and Mason (1932) - E

$BaCl_2$

Acheson (1963) - VP
Ardizzone et al. (1976) - E
Bechtold and Newton (1940) - VP
Bedford (1909) - FP
Berestnewa and Kargin (1935) - ET
Biltz (1902) - VP
Drucker (1913) - ET
Gibbard and Fong (1975) - FP
Hall and Harkins (1916) - FP
Harned (1959) - D
Harned and Polestra (1954) - D
Hass and Jellinek (1932) - ET
Hellams et al. (1965) - VI
Hepburn (1932a) - VP
Hepburn (1932b) - VP
Jablczynski and Legat (1935) - FP
Jones and Dole (1929) - ET
Jones (1893a) - FP
Jones et al. (1907) - FP
Jones and Chambers (1900) - FP
Jones and Getman (1902) - FP
Jones and Getman (1903) - FP
Jones and Getman (1904) - FP
Jones and Pearce (1907) - FP
Kahlenberg (1901) - BP
Klein and Svanberg (1920) - FP
Loomis (1896a) - FP
Loomis (1896b) - FP
Lucasse (1925) - E, ET
Masaki (1932) - ET
Moore et al. (1972) - VI
Newton and Tippetts (1936) - VP
Pan (1966) - VI
Patterson et al. (1960) - VI
Pearce and Gelbach (1925) - E, ET
Perreau (1935b) - VP
Phillips et al. (1942) - VI
Ponsot (1897) - FP
Robinson (1937) - VI
Robinson (1940a) - VI
Robinson (1945) - VI
Robinson and Bower (1965) - VI
Rush and Johnson (1964) - U
Soldano and Bien (1966) - VI
Soldano and Meek (1963) - VI
Soldano and Patterson (1962) - VI
Tippetts and Newton (1934) - E

$Ba(ClO_4)_2$

Galkin et al. (1973) - VP
Nicholson and Felsing (1950) - FP
Robinson, Lim and Ang (1953) - VI

$BaBr_2$

Drucker (1913) - ET
Gelbach and Huppke (1926) - E, ET
Jones et al. (1907) - FP
Jones and Chambers (1900) - FP
Jones and Getman (1902) - FP
Klein and Svanberg (1920) - FP
Meyer (1902) - FP
Rivett (1912) - FP
Robinson (1941) - VI

BaI_2

Jones et al. (1907) - FP
Meyer (1902) - FP
Robinson (1942) - VI

BaS_2O_6

Christoffersen and Prue (1970) - FP

$Ba(N_3)_2$

Torkar and Stern (1972) - E

$Ba(NO_2)_2$

Chekhunova et al. (1969) - VP

$Ba(NO_3)_2$

Hausrath (1902) - FP
Hovorka and Rodebush (1925) - FP
Jones and Pearce (1907) - FP
Randall and Scott (1927) - FP
Ratner (1937) - VP
Rivett (1912) - FP
Robinson, Wilson and Ayling (1942) - VI

$BaC_2H_3O_2$

Stokes (1953) - VI

Li_2SO_4

Äkerlof (1926) - E
Appleby et al. (1934) - VP
Harned (1959) - D
Harned and Blake (1951a) - D
Harned and Äkerlof (1936) - E
Indelli (1953) - FP
Kangro and Groeneveld (1962) - VP
Pearce and Eckstrom (1937b) - VP
Robinson, Wilson and Stokes (1941) - VI
Sircar et al. (1961) - ET

$Li_2Si_5O_{11}$

Kahlenberg and Lincoln (1898) - FP

Li_2SiO_3

Kahlenberg and Lincoln (1898) - FP

$Li_2B_4O_7$

Menzel (1927b) - FP

$Li_2C_6H_4S_2O_6$ (lithium m-benzene disulfonate)

Bonner and Rogers (1961) - VPO

$Li_2C_{14}H_{12}S_2O_6$ (lithium bibenzyl 4,4'-disulfonate)

Bonner and Rogers (1961) - VPO

$Li_2C_{20}H_{24}S_2O_6$ (lithium 1,8-diphenylocate disulfonate)

Bonner and Rogers (1961) - VPO

$Li_3C_{21}H_{17}S_2O_9$ (lithium 1,2,3-triphenyl propane trisulfonate)

Bonner and Overton (1963) - VI

$Li_3C_{23}H_{21}S_3O_9$ (lithium 1,3,5-triphenyl pentane trisulfonate)

Bonner and Overton (1963) - VI

Na_2S

Jellinek and Czerwinski (1922) - FP
Khvorostin, Raskina and Filippov (1975) - VI

Na_2SO_3

Lantzke et al. (1973) - VI
Morgan (1961) - VI

Na_2SO_4

Äkerlof (1926) - E
Archibald (1903) - FP
Burge (1963) - VPO
Childs and Platford (1971) - VI
Cudd and Felsing (1942) - VI
de Coppet (1904) - FP
Downes and Pitzer (1976) - VI
Foote et al. (1932) - VP
Gibson and Adams (1933) - VP
Harkins and Roberts (1916) - FP
Harned and Äkerlof (1936) - E
Harned and Blake (1951a) - D
Harned (1959) - D
Harned and Hecker (1934) - E
Hass and Jellinek (1932) - ET
Hellams et al. (1965) - VI
Humphries et al. (1968) - VI
Indelli (1953) - FP
Jakli et al. (1975) - VP
Jones et al. (1907) - FP
Jones and Getman (1904) - FP
Kangro and Groeneveld (1962) - VP
Klein and Svanberg (1920) - FP
Kopecky and Dymes (1972) - VPO
Leopold and Johnston (1927) - VP
Loomis (1896a) - FP
Loomis (1897b) - FP
Moore et al. (1972) - VI
Patterson et al. (1960) - VI
Pearce and Eckstrom (1937b) - V
Perreau (1935a) - VP
Plake (1935) - BP
Platford (1968a) - VI
Platford (1973) - VI
Randall and Scott (1927) - FP
Shibata et al. (1930) - E
Shibata and Murata (1931a) - E
Shibata and Murata (1931b) - E
Sircar et al. (1961) - ET
Soldano and Bien (1966) - VI
Soldano and Meek (1963) - VI
Soldano and Patterson (1962) - VI
Wu, Rush and Scatchard (1968) - VI
Wu, Rush and Scatchard (1969) - VI

$Na_2S_2O_3$

Perreau (1935b) - VP
Plake (1935) - BP
Richards and Faber (1899) - FP
Robinson, Wilson and Stokes (1941) - VI

$Na_2S_2O_6$

Lantzke et al. (1973) - VI

Na_2HPO_4

Jones et al. (1909) - FP
Loomis (1897a) - FP
Loomis (1897b) - FP
Nylen and Stelling (1928) - FP
Platford (1974) - VI
Scatchard and Breckenridge (1954) - VI

Na_3PO_4

Loomis (1897a) - FP
Loomis (1897b) - FP

$Na_4P_2O_7$

Husain (1928) - FP
Miller and Porter (1967) - VI

Na_2HASO_4

Scatchard and Breckenridge (1954) - VI

Na_2CO_3

Biltz (1902) - FP
Ender (1937) - FP
Jones (1893b) - FP
Jones et al. (1907) - FP
Jones and Getman (1904) - FP
Khvorostin, Filippov and Reshetova (1975) - VI
Loomis (1896a) - FP
Loomis (1896b) - FP
Perreau (1935a) - VP
Saegusa (1950) - E
Taylor (1955) - E, VP

$Na_2C_6H_4S_2O_6$ (sodium - m-benzene disulfonate)

Bonner and Rogers (1961) - VPO

$Na_3C_{21}H_{17}S_3O_9$ (sodium 1,2,3-triphenyl propanetrisulfonate)

Bonner and Overton (1963) - VI
Bonner, Breazeale and Rushing (1965) - VPO, VI

$Na_3C_{23}H_{21}S_3O_9$ (sodium 1,3,5-triphenylpentanetrisulfonate)

Bonner and Overton (1963) - VI

$Na_2C_{14}H_{12}S_2O_6$ (sodium bibenzyl 4,4'-disulfonate

Bonner and Rogers (1961) - VPO

$Na_2C_2H_4S_2O_6$ (1,2 ethane disulfonate)

Bonner, Rushing, and Torres (1968) - VPO

$Na_2C_{14}H_{10}S_2O_8$ (sodium anthraquinone 2,7 disulfonate

Bonner, Rushing, and Torres (1968) - VPO

Na_2SiO_3

Bennett (1927) - VP
Cann and Cheek (1925) - BP
Harman (1927) - VP
Kahlenberg and Lincoln (1898) - FP
Loomis (1897a) - FP
Loomis (1897b) - FP

Na_2SiO_5

Kahlenberg and Lincoln (1898) - FP

$Na_2Si_5O_{11}$

Kahlenberg and Lincoln (1898) - FP

Na_2GeO_3

Pugh (1932) - FP

$Na_2B_4O_7$

Menzel (1927b) - FP

$Na_2B_{12}H_{12}$

Wen and Chen (1975) - VI

Na_2CrO_4

Carr and Harris (1949) - VP
Jones et al. (1907) - FP
Stokes (1948) - VI

$Na_4Fe(CN)_6$

Silvester and Rock (1973) - E

$Na_2Cr_2O_7$

Carr and Harris (1949) - VP
Jones et al. (1907) - FP
Wexler and Hasegawa (1954) - VP

$Na_2MO\ O_4$

Zhidikova et al. (1973) - VI

$Na_6[H_2W_{12}O_{40}]$

Stock and Plewinsky (1972) - FP, II

K_2SO_4

Abegg (1896) - FP
Äkerlof (1926) - E
Archibald (1903) - FP
Filippov, Makarevskii and Yakimov (1973) - VP
Foote et al. (1932) - VP
Frolov and Nasonova (1974) - VI
Hall and Harkins (1916) - FP
Harkins and Roberts (1916) - FP
Harned and Äkerlof (1936) - FP
Hovorka and Rodebush (1925) - FP
Indelli (1953) - FP
Jones (1893a) - FP
Jones et al. (1907) - FP
Jones and Getman (1904) - FP
Leopold and Johnston (1927) - VP
Loomis (1896a) - FP
Loomis (1896b) - FP
Murata (1932) - E
Osaka (1902) - FP
Pearce and Eckstrom (1937b) - VP
Ponsot (1897) - FP
Plake (1935) - BP
Rivett (1912) - FP
Robinson, Wilson and Stokes (1941) - VI
Shibata et al. (1930) - E
Shibata and Murata (1931a) - E
Shibata and Murata (1931b) - E
Sircar, Jena and Prasad (1961) - ET
Wexler and Hasegawa (1954) - VI

K_2HPO_4

Burge (1963) - VPO
Scatchard and Breckenridge (1954) - VI

$K_4P_2O_7$

Miller and Porter (1967) - VI

K_2HASO_4

Scatchard and Breckenridge (1954) - VI

K_2CO_3

Biltz (1902) - FP
de Coppet (1904) - FP
Ender (1937) - FP
Jones (1893b) - FP
Jones et al. (1907) - FP
Jones and Getman (1904) - FP
Loomis (1896a) - FP
Loomis (1896b) - FP

$K_2C_2O_4$

Klein and Svanberg (1920) - FP
Noyes and Johnston (1909) - FP
Plake (1935) - BP

K_2SiO_3

Kahlenberg and Lincoln (1898) - FP

$K_2B_4O_7$

Menzel (1927b) - FP
Platford (1969) - VI

$K_3CO(CN)_6$

Robertson and La Mer (1931) - FP
Wynveen et al. (1960) - VI

$K_3Fe(CN)_6$

Bedford (1909) - FP
Jones et al. (1907) - FP
Robertson and La Mer (1931) - FP
Robinson and Levien (1946) - VI

$K_4Fe(CN)_6$

Harned (1959) - D
Harned and Hudson (1951) - D
Jones et al. (1907) - FP
Miller and Porter (1967) - VI
Noyes and Johnston (1909) - FP
Robinson (1937) - VI

$K_4Mo(CN)_8$

Brubaker (1956) - VI
Miller and Porter (1967) - VI

$K_2Pt(CN)_4$

Groves et al. (1960) - VI

$K_4W(CN)_8$

Groves et al. (1960) - VI
Miller and Porter (1967) - VI

$K_6[H_2W_{12}O_{40}]$

Stock and Plewinsky (1972) - FP, U

K_2CrO_4

Stokes, Wilson and Robinson (1941) - VI

$K_2Cr_2O_7$

Bedford (1909) - FP
Leopold and Johnston (1927) - VP
Stokes, Wilson and Robinson (1941) - VI

Rb_2SO_4

Cudd and Felsing (1942) - VI
Frolov and Nasanova (1974) - VI

Rb_2SiO_3

Kahlenberg and Lincoln (1898) - FP

Cs_2SO_4

Cudd and Felsing (1942) - VI
Frolov and Nasonova (1974) - VI
Harned (1959) - D
Harned and Blake (1951c) - D

Cs_2SiO_3

Kahlenberg and Lincoln (1898) - FP

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