Gmelin Handbuch der Anorganischen Chemie

Achte völlig neu bearbeitete Auflage
8th Edition

B
Boron Compounds

Formula Index

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GEGRÜNDET VON

Leopold Gmelin

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im Auftrage der Deutschen Chemischen Gesellschaft
von R. J. Meyer

FORTGEFÜHRT VON

E. H. E. Pietsch und A. Kotowski
Margot Becke-Goehring

HERAUSGEGEBEN VOM

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Preface

The present volume provides an alphabetical formula index for the boron compounds ("Borverbindungen") described in the 20 volumes that have been published within the framework of the New Supplement Series (Erg.-Werk) of the Gmelin Handbook. The index is preceded by a survey which is intended to facilitate locating certain topics of boron chemistry rather than individual compounds.

The coverage of boron compounds within the Gmelin Handbook will be continued in supplement volumes. In view of the different literature closing dates of the various boron volumes of the New Supplement Series, the literature will be updated through 1977 for all volumes in a forthcoming supplement. Thereafter, new supplements will be issued as mandated by further progress in boron chemistry.

Frankfurt am Main
Lexington, Kentucky (USA)

September 1979

Karl-Christian Buschbeck
Kurt Niedenzu

Boron and Boron Compounds in the Gmelin Handbook

"Bor" (Main Volume Syst.-No. 13)	Historical. Occurrence. The Element. Compounds of B with H, O, N, the Halogens, S, Se, and Te. Literature closing date: end of 1925.
"Bor" (Supplement Volume Syst.-No. 13)	Occurrence. The Element. Compounds of B with H, O, N, the Halogens, S, and C. Literature closing date: end of 1949.

New Supplement Series

"Borverbindungen" 1 (New Supplement Series Vol. 13)	Boron Nitride. B-N-C Heterocycles. Polymeric B-N Compounds. Literature coverage from 1950 up to 1972.
"Borverbindungen" 2 (New Supplement Series Vol. 15)	Carboranes, Part 1. Nomenclature and Types of Carboranes. Carboranes (without Hetero- and Metallocarboranes, and Higher Carboranes). Literature coverage from 1950 up to 1973 or 1970, respectively.
"Borverbindungen" 3 (New Supplement Series Vol. 19)	Compounds of B Containing Bonds to S, Se, Te, P, As, Sb, Si, and Metals. Literature coverage from 1950 to the end of 1973.
"Borverbindungen" 4 (New Supplement Series Vol. 22)	Compounds with Isolated Trigonal Boron Atoms and Covalent Boron-Nitrogen Bonding (Aminoboranes and B-N Heterocycles). Literature coverage from 1950 to the end of 1973.
"Borverbindungen" 5 (New Supplement Series Vol. 23)	Boron-Pyrazole Derivatives and Spectroscopic Studies on Trigonal B-N Compounds. Literature coverage from 1950 to the end of 1973.
"Borverbindungen" 6 (New Supplement Series Vol. 27)	Carboranes, Part 2. Hetero- and Metallocarboranes. Polymeric Carborane Derivatives. Electronic Properties. Literature coverage from 1950 up to 1974 or 1971, respectively.
"Borverbindungen" 7 (New Supplement Series Vol. 28)	Boron Oxides. Boric Acids. Borates. Literature coverage from 1950 to the end of 1973.
"Borverbindungen" 8 (New Supplement Series Vol. 33)	The Tetrahydroborate Ion and Its Derivatives. Literature coverage from 1950 to the end of 1974.
"Borverbindungen" 9 (New Supplement Series Vol. 34)	Boron-Halogen Compounds, Part 1. Literature coverage from 1950 to the end of 1974.
"Borverbindungen" 10 (New Supplement Series Vol. 37)	Boron Compounds with Coordination Number 4. Literature coverage from 1950 to the end of 1975.

"Borverbindungen" 11 (New Supplement Series Vol. 42)	Carboranes, Part 3. Dicarba-*closo*-dodecaboranes. Literature coverage from 1950 to the end of 1975.
"Borverbindungen" 12 (New Supplement Series Vol. 43)	Carboranes, Part 4. Dicarba-*closo*-dodecaboranes. Literature coverage from 1950 to the end of 1975.
"Borverbindungen" 13 (New Supplement Series Vol. 44)	Boron-Oxygen Compounds, Part 1. Literature coverage from 1950 to the end of 1975.
"Borverbindungen" 14 (New Supplement Series Vol. 45)	Boron-Hydrogen Compounds, Part 1. Literature coverage from 1950 to the end of 1975.
"Borverbindungen" 15 (New Supplement Series Vol. 46)	Amine-boranes. Literature coverage from 1950 to the end of 1975.
"Borverbindungen" 16 (New Supplement Series Vol. 48)	Boron-Oxygen Compounds, Part 2. Literature coverage from 1950 to the end of 1975.
"Borverbindungen" 17 (New Supplement Series Vol. 51	Borazine and Its Derivatives. Literature coverage from 1950 to the end of 1976.
"Borverbindungen" 18 (New Supplement Series Vol. 52)	Boron-Hydrogen Compounds, Part 2. Literature coverage from 1950 to the end of 1976.
"Borverbindungen" 19 (New Supplement Series Vol. 53)	Boron-Halogen Compounds, Part 2. Literature coverage from 1950 to the end of 1976.
"Borverbindungen" 20 (New Supplement Series Vol. 54)	Boron-Hydrogen Compounds, Part 3. Literature coverage from 1950 to the end of 1976.
"Boron Compounds"	Formula Index (present volume).

Boron Chemistry in the Gmelin Handbook

The main volume of the Gmelin Handbook dealing with boron and its compounds was published in 1926. It covered the literature through 1925 as based on the Gmelin principle of the last position (see the illustration on the inside of the backcover). In 1954 a first supplement volume was issued (literature coverage through 1949) in which, however, selected carbon-containing boron compounds were included. In 1973 an extensive presentation of boron chemistry was initiated within the framework of the New Supplement Series (Erg.-Werk) of the Gmelin Handbook. Within this series chemically coherent material was assembled in a total of 20 volumes dealing with boron compounds ("Borverbindungen") and the coverage was frequently extended beyond the Gmelin principle of the last position. A listing of the major contents of the individual volumes of the New Supplement Series dealing with boron compounds closely parallelling the Gmelin principle is given below.

The presentation of binary **boron-hydrogen compounds** begins in volume "Borverbindungen" 14 (Erg.-Werk Vol. 45), is continued in "Borverbindungen" 18 (Erg.-Werk Vol. 52), and concluded in "Borverbindungen" 20 (Erg.-Werk Vol. 54). Amine adducts of BH_3 and organic derivatives of B_2H_6 are discussed in "Borverbindungen" 14 (Erg.-Werk Vol. 45), the BH_4^- ion and derivatives thereof are presented in "Borverbindungen" 8 (Erg.-Werk Vol. 33). Boron oxides, boric acids, borates, and peroxoborates are summarized as representatives of **boron-oxygen compounds** in "Borverbindungen" 7 (Erg.-Werk Vol. 28), isolated borate-polyol and some related complexes are compiled in "Borverbindungen" 8 (Erg.-Werk Vol. 33), whereas systems in solution are found in "Borverbindungen" 13 (Erg.-Werk Vol. 44). This latter volume also described tris(organyloxy)boranes, $B(OR)_3$, and derivatives thereof including boroxines. Additional boron-oxygen derivatives are compiled in major chapters in "Borverbindungen" 16 (Erg.-Werk Vol. 48). The presentation of **boron-nitrogen compounds** begins with that of boron nitride in "Borverbindungen" 1 (Erg.-Werk Vol. 13), in which volume various B-N-C heterocyclic and polymeric species are also surveyed. "Borverbindungen" 4 (Erg.-Werk Vol. 22) deals with trigonal boron derivatives containing B-N bonds. A detailed presentation of borazine and its derivatives is given in "Borverbindungen" 17 (Erg.-Werk Vol. 51), and specialty chapters on boron-nitrogen compounds are found in "Borverbindungen" 5 (Erg.-Werk Vol. 23). Additional compounds containing B-N bonds and four-coordinate boron are found in "Borverbindungen" 14 (Erg.-Werk Vol. 45) and "Borverbindungen" 15 (Erg.-Werk Vol. 46). The presentation of **boron-halogen compounds** includes that of binary neutral and ionic species in "Borverbindungen" 19 (Erg.-Werk Vol. 53) as well as chapters in "Borverbindungen" 9 (Erg.-Werk Vol. 34) and "Borverbindungen" 10 (Erg.-Werk Vol. 37). The chemistry of **boron-sulfur compounds** is compiled in "Borverbindungen" 3 (Erg.-Werk Vol. 19), which also presents **boron-selenium** and **boron-tellurium** chemistry.

Carbon-containing derivatives are normally discussed with the major types of the cited compounds. However, the **carboranes** are compiled in four separate volumes. "Borverbindungen" 2 (Erg.-Werk Vol. 15) reports on the small and medium-sized carboranes, hetero- and polycarboranes are the topic of "Borverbindungen" 6 (Erg.-Werk Vol. 27), and the vast number of dicarba-*closo*-dodecaborane species are presented in "Borverbindungen" 11 and 12 (Erg.-Werk Vol. 42 and 43, respectively).

Elemental boron and **boron carbide** will be the topic of a separate supplement volume. Furthermore, the literature on boron compounds as presented in the New Supplement Series will be updated through 1977 for all volumes, although the coverage will be restricted to the Gmelin principle of the last position.

The following listing of chapters should expedite locating specific topics on boron compounds that have been presented within the New Supplement Series.

In using the Handbook the reader is also encouraged to inspect general and introductory chapters to specific areas where, as a rule, additional valuable information is summarized and references to related sections are given.

Alphabetical Formula Index to the Volumes "Borverbindungen" of the New Supplement Series

The first column of the subsequent formula index contains the empirical formulas of compounds discussed in any one or more of the volumes of the New Supplement Series. These formulas are arranged in strictly alphabetical order of the elemental symbols and by increasing number of atoms; for polymeric species the smallest possible entity is used whereas oligomeric species are usually listed separately.

The second column of the index presents descriptive structural formulas usually parallelling those used in the text. In cases of more complex structures a description for the general type of compound involved is given.

The third column gives the number of the volume in the New Supplement Series (EW) and, separated by a hyphen, the relevant page(s).

It should be noted that references to the main volume 13 "Bor" and the corresponding supplement volume can be found in the main Gmelin Index.