Gmelin Handbuch

der Anorganischen Chemie

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8th Edition

Sb
Organoantimony Compounds

Part 1

Compounds of Trivalent Antimony with Three Sb-C Bonds

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Organometallic Compounds in the Gmelin Handbook

The following listing indicates in which volumes these compounds are discussed or are referred to:

Ag	Silber B 5 (1975)
Au	Organogold Compounds* (1980)
Bi	Bismut-Organische Verbindungen (Erg.-Werk, Bd. 47, 1977)
Co	Kobalt-Organische Verbindungen 1 (Erg.-Werk, Bd. 5, 1973) und 2 (Erg.-Werk, Bd. 6, 1973) sowie Kobalt Erg.-Bd. A (1961), B 1 (1963) und B 2 (1964)
Cr	Chrom-Organische Verbindungen (Erg.-Werk, Bd. 3, 1971)
Fe	Eisen-Organische Verbindungen A 1 (Erg.-Werk, Bd. 14, 1974), A 2 (Erg.-Werk, Bd. 49, 1977), A 3 (Erg.-Werk, Bd. 50, 1978), A 4 (1980), A 6 (Erg.-Werk, Bd. 41, 1977), A 7 (1980), B 1° (Erg.-Werk, Bd. 36, 1976), B 2* (1978), B 3° (1979), B 4 (1978), B 5 (1978), C 1 (1979), C 2 (1979), C 3* (1980) und Eisen B (1929–1932)
Hf	Organohafnium Compounds* (Erg.-Werk, Bd. 11, 1973)
Nb	Niob B 4 (1973)
Ni	Nickel-Organische Verbindungen 1 (Erg.-Werk, Bd. 16, 1975), 2 (Erg.-Werk, Bd. 17, 1974), Register (Erg.-Werk, Bd. 18, 1975) und Nickel B 3 (1966) und C (1968–1969)
Np, Pu	Transurane C° (Erg.-Werk, Bd. 4, 1972)
Pt	Platin C (1939) und D (1957)
Ru	Ruthenium Erg.-Bd. (1970)
Sb	Organoantimony Compounds 1* (1981) (present volume)
Sn	Zinn-Organische Verbindungen 1 (Erg.-Werk, Bd. 26, 1975), 2 (Erg.-Werk, Bd. 29, 1975), 3 (Erg.-Werk, Bd. 30, 1976), 4 (Erg.-Werk, Bd. 35, 1976), 5 (1978), 6 (1979), 7* (1980)
Ta	Tantal B 2 (1971)
Ti	Titan-Organische Verbindungen 1 (Erg.-Werk, Bd. 40, 1977), 2 (1980)
V	Vanadium-Organische Verbindungen (Erg.-Werk, Bd. 2, 1971), Vanadium B (1967)
Zr	Organozirconium Compounds

* Completely or ° part in English

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Preface

Organometallic chemistry has grown over the years and become more and more significant. The organometallic chemistry of antimony has shared in this growth, starting in 1850 with the discovery of triethylstibine by Löwig and Schweizer. The results today are 1200 publications and 400 patents on the organoantimony compounds as well as 500 publications on organoantimony ligands. Of the 1200 publications, one-half have been published in the last ten years. The number of reported compounds—not including the transition metal complexes—exceeds 3000! In view of these facts, Dr. Margot Becke, the former director of the Gmelin Institute, Dr. Ekkehard Fluck, the present director, and I felt that now was the correct time to produce a comprehensive review of all the work in this field.

This comprehensive review is restricted to the organometallic compounds of antimony. Every compound has at least one bond connecting an antimony atom to a carbon atom belonging to an organic group. Thus excluded are the simple inorganic cyanides, cyanates, thiocyanates, carbides, etc.

The compounds naturally fall into two main groups: those containing trivalent antimony and those containing pentavalent antimony. I have placed the tetravalent antimony compounds, which include transition metal complexes and stibonium compounds, with the first group and the hexavalent antimony compounds, where antimony acts as a Lewis acid, with the second group.

This first volume describes the compounds of the type SbR_3, in which the antimony has three σ bonds to organic groups. The organic groups may be the same or may be different, and in a few cases they are cyclic, bonded at both ends to the antimony atom. There are three main sections: mononuclear compounds (one Sb per molecule), binuclear compounds (two Sb per molecule), and compounds containing more than two Sb per molecule.

Many have helped me with this book. I thank Dr. Hubert Bitterer for his suggestions and editing and Mrs. Ursula Hettwer for the index and her help in arranging the compounds in chapters. I am grateful to Dr. U. Baudis, Dr. P. Miczajka, Dr. B. Dorbath, Mrs. B. Volk, and Miss K. Kruse for their help in collecting and evaluating the literature. Professor G. O. Doak of the North Carolina State University at Raleigh generously supplied an annual bibliography before its publication. And I especially thank my wife Sigrid for her care in typing the manuscript.

Würzburg-Gerbrunn, November 1980 Markus Wieber

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Organoantimony Compounds

General Literature

The following extensive list of references provides a survey of the literature on organoantimony compounds. The list is divided into five parts: (1) monographs and review articles on organometallic compounds of the main group elements but which specifically discuss organoantimony compounds, (2) monographs and reviews on organometallic compounds of the main group V elements, (3) monographs and reviews on the organoantimony compounds, (4) articles on the analysis of the organoantimony compounds, and (5) articles on the medicinal, pharmaceutical, and biocidal uses of organoantimony compounds.

The English titles for foreign-language publications are from Chemical Abstracts.

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Organoantimony Compounds

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