

Historical Guide and User's Information for Houben-Weyl – 100 years of chemical reference works



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Science of Synthesis

Houben-Weyl
5th Edition

Editorial Board



Volume Editors



Advisory Board



The success of Houben-Weyl over the last 90 years was made possible by the collaborative work of world-renowned chemists in both industry and academia, who created a balanced work by considering published results from journals, books, and the patent literature. Thus, Houben-Weyl has become an important and celebrated standard reference work, serving the scientific community with a critical selection of synthetic methods. Houben-Weyl is an indispensable treatise for every synthetic chemist.

Science of Synthesis will continue to deliver the same excellence established over the last 90 years in Houben-Weyl.

Science of Synthesis Volumes

- Category 1: Organometallics (Vol. 1–8)**
- Vol. 1 Compounds with Transition Metal–Carbon Bonds and Compounds of Groups 10–18 (Ni, Pd, Pt, Cu, Ru, Rh, Fe, Os, Ir) (2001)
 - Vol. 2 Compounds of Groups 7–9 (Mn, Cr, V, Ti, Zr, Hf, Ta, Nb) (2001)
 - Vol. 3 Compounds of Groups 12 and 11 (Zn, Cd, Hg, Cu, Ag, Au) (2001)
 - Vol. 4 Compounds of Group 15 (As, Sb, Bi) and Silicon (2001)
 - Vol. 5 Compounds of Group 14 (Sn, Pb) (2002)
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 - Vol. 8 Compounds of Group 1 (Li–Cs) (2003)
- Category 2: Heteroatom- and Related Ring Systems (Vol. 9–17)**
- Vol. 9 Fully Unsubstituted Small-Ring Heterocycles and Monocyclic Five-Membered Heterocycles with One Heteroatom (2000)
 - Vol. 10 Fused Five-Membered Heterocycles with One Heteroatom (2000)
 - Vol. 11 Five-Membered Heterocycles with One Chalcogen and One Additional Heteroatom (2001)
 - Vol. 12 Five-Membered Heterocycles with Two Nitrogen or Phosphorus Atoms (2001)
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- Category 3: Compounds with Four and Three Carbon–Heteroatom Bonds (Vol. 18–24)**
- Vol. 18 Four Carbon–Heteroatom Bonds: Si–C, Sn–C, Ge–C, C–C (2003)
 - Vol. 19 Three Carbon–Heteroatom Bonds: Nitriles, Isocyanides, and Derivatives (2003)
 - Vol. 20 Three Carbon–Heteroatom Bonds: Acid Halides, Peroxy Acids, and RC(O)X Compounds; Carboxylic Acids and Acid Salts; Esters, Polyesters, and Lactones; RC(O)Y Compounds (2003)
 - Vol. 21 Three Carbon–Heteroatom Bonds: Amines and Derivatives; Polyamines and Propides; Lactams (2004)
 - Vol. 22 Three Carbon–Heteroatom Bonds: Thiols, Selenols, and Tellurocarboxylic Acids and Derivatives; Imino Acids and Derivatives; Ortho Acid Derivatives (2004)
 - Vol. 23 Three Carbon–Heteroatom Bonds: Ketenes and Derivatives (2004)
 - Vol. 24 Three Carbon–Heteroatom Bonds: Ketene Acetals and Yne–X Compounds (2004)
- Category 4: Compounds with All-Carbon Functions (Vol. 43–48)**
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 - Vol. 44 Cumulenes and Allenes (2007)
 - Vol. 45 Allenes, Quasiallenes, Aralkenes, and Polyenes (2007)
 - Vol. 46 1,3-Dienes (2007)
 - Vol. 47 Alkenes (2007)
 - Vol. 48 Alkanes (2007)



Science of Synthesis is a quality reference work developed by a highly esteemed editorial board to provide a comprehensive and critical selection of reliable organic and organometallic synthetic methods. Methods from journals, books and patent literature from the early 1800s until the year of publication are considered by chemists, who are among the leading experts in their field.

Based on the same traditions of excellence as all previous Houben-Weyl editions, Science of Synthesis is intended to be the first point of reference when searching for a synthesis strategy.

Science of Synthesis enables scientists to locate high-quality, applicable solutions to their synthesis problems. Science of Synthesis is designed to stimulate new discoveries and the development of new methodologies in both industry and academia by providing an understanding of the whole field of synthesis to date. Science of Synthesis will be updated periodically and will become a prime source of information for chemists in the 21st century.

Features of Science of Synthesis:

- Presents important synthetic methods for all classes of compounds, thus being truly comprehensive.
- Critically evaluates the preparative applicability and significance of the synthetic methods.
- Discusses relevant background information and gives detailed experimental procedures.
- Includes reaction schemes and assessment of reaction scope in tables.

Additional and Supplementary Volumes to the 4th Edition

Editorial Board



Volumes

- Vol. E.1 Organic Phosphorus Compounds (1982)
- Vol. E.2 Organic Phosphorus Compounds (1982)
- Vol. E.3 Aldehydes (1983)
- Vol. E.4 Carboxylic Acid Derivatives (1983)
- Vol. E.5 Carboxylic Acids, Carboxylic Acid Derivatives (2 Vols.) (1985)
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- Vol. E.100 Heterocyclic Five-membered Rings with Two and More Heteroatoms in the Ring System (1991)

1982

The series was updated with 89 additional and supplementary volumes which placed emphasis on the treatment of important classes of compounds and significant preparative methods. Since 1990, Houben-Weyl has been published in English, thus making it accessible to chemists worldwide.

Houben-Weyl



The policy of the editorial board and the publishers is to ensure that Science of Synthesis is the ultimate tool for the synthetic chemist in the 21st century. This endeavor will be achieved by the combined efforts of the publishing house, the editors, and the authors, who are among the leading experts in their field.

1909

The series METHODEN DER ORGANISCHEN CHEMIE (Houben-Weyl Methods of Organic Chemistry) was established in 1909 by the German chemist Theodor Weyl and continued in 1912 by Houben-Weyl. The comprehensive description of preparative methods in a consistent style and their critical evaluation by leading experts is the philosophy on which Houben-Weyl was founded.

1952

The fourth edition (founded by O. Bayer, H. Morawitz, E. Müller, K. Ziegler) began in 1952, and continued from 1973 by H. Kroll and H. C. Prohaska, and ended in 1986 with a total of 67 volumes and 3 index volumes.

The First Editions

- 1st Edition
 - Vol. I Analytical Methods, Purification (1909)
 - Vol. II Oxidation, Reduction, Special Topics (Oxygen, Sulfur, Halogen Compounds, Nitrogen Compounds, Organometallics) (2 Vols.) (1913)
- 2nd Edition
 - Vol. I Analytical Methods, Purification (1927)
 - Vol. II Oxidation, Reduction, Special Topics (1927)
 - Vol. III Oxygen, Sulfur, Halogen Compounds (1927)
 - Vol. IV Nitrogen Compounds, Organometallics (1924)
- 3rd Edition
 - Vol. I Analytical Methods, Purification (1924)
 - Vol. II Oxidation, Reduction, Special Topics (1925)
 - Vol. III Oxygen, Sulfur, Halogen Compounds (1924)
 - Vol. IV Nitrogen Compounds (1947)

4th Edition

Editorial Board



Volumes

- I General Laboratory Methods
 - Vol. I/1 General Laboratory Methods of Separation (1958)
 - Vol. I/2 General Laboratory Practice (1959)
- II Analytical Methods
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- III Physical Methods
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 - Vol. IV/1 Nonmetallic Oxidation Agents (1981)
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- V The Chemistry of Compound Classes
 - Vol. V/1 Alkanes, Cycloalkanes (1970)
 - Vol. V/2 Alkenes, Cycloalkenes, Hydroalkenes (1972)
 - Vol. V/3 Conjugated Dienes, Diels-Alder Reactions (1970)
 - Vol. V/4 Open-chain and Cyclic Polyenes; Enynes; Enynes (1972)
 - Vol. V/5 Alkenes, Di- and Polyenes; Allenes, Cumulenes (1977)
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- Vol. VI/1b Alcohols (1984)
- Vol. VI/1c Phenols (2 Vols.) (1976)
- Vol. VI/1d Ethers and Ether Derivatives; Ether Derivatives; Biogenesis of Hydroxy Compounds (1978)
- Vol. VI/1e Epoxides (1978)
- Vol. VI/1f Lactones (1981)
- Vol. VI/1g Ethers, Acetals, Hemiacetals, Oxetanes, Oxiranes, Cyclic Three- to Five-membered Heterocycles (1985)
- Vol. VI/1h Cyclic Six- and Higher-membered Ethers, Acetals (1986)
- Vol. VI/1i Aldehydes (1979)
- Vol. VI/1j Ketones (Formation of C–C and C=O Bonds) (1976)
- Vol. VI/1k Ketones (C–C Cleavage) (1976)
- Vol. VI/1l Ketones (Reactions with Retention of the Carbonyl Function) (1977)
- Vol. VI/1m α-Ketones (1977)
- Vol. VI/1n α-Ketones, Diols, and Sulfonates; Higher Ring Ketones, Quinones, Quinone Derivatives (1979)
- Vol. VI/1o Anthraquinones, Anthraquinone Derivatives (1978)
- Vol. VI/1p Imines, Thioureas, Thiourea Derivatives (1968)
- Vol. VI/1q Perazines, Carbonyl Acid Derivatives, Carboxylic Acids, Carboxylic Acid Derivatives (1972)
- Vol. VI/1r Sulfur, Selenium, Tellurium Compounds (1955)
- Vol. VI/1s Nitro, Nitroso and Hydroxamic Compounds (1971)
- Vol. VI/1t Hydrazines, Azides, Azoxy, Azoyl Compounds (1971)
- Vol. VI/1u Diazones (1967)
- Vol. VI/1v Diazoalkanes, Azos, Azoxy Compounds; Diazones (1965)
- Vol. VI/1w Azides, Diazo Compounds; N-Oxides (1968)
- Vol. VI/1x Amines (Amines, Amides, Amino Acids, Lactams, Quaternary Ammonium Salts, Nitrogen-Sulfur Compounds) (1958)
- Vol. VI/1y Phosphorus Compounds (Phosphorus Carbon Compounds) (1963)
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