

How to Search Printed CA

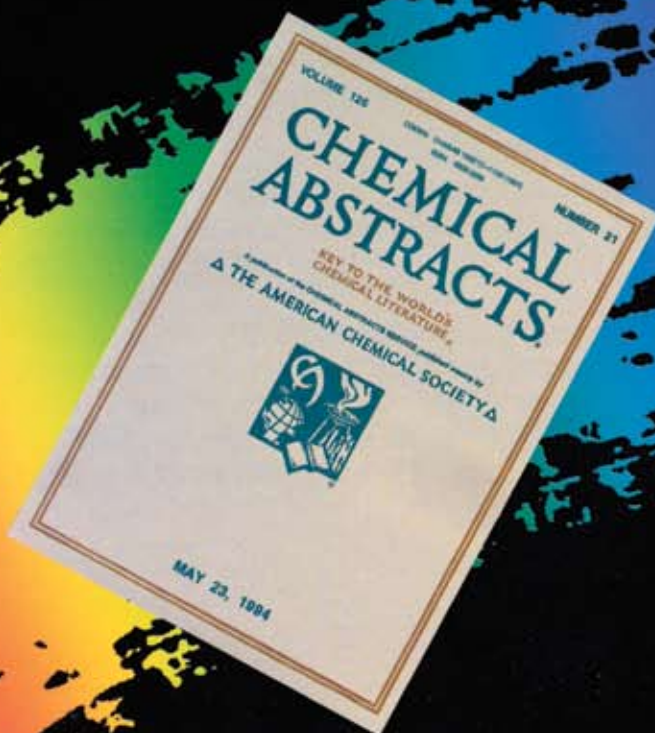


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CHEMICAL ABSTRACTS

CHEMICAL ABSTRACTS® (CA) is the most complete guide to the chemical literature of the world, referencing more than 14.8 million documents since it was first published in 1907. This completeness means you can search CA with confidence, knowing that you won't miss essential chemical information. The answer to almost any question pertaining to chemistry can be found through CA. By defining chemistry broadly, CA also covers aspects of many other related scientific disciplines such as biology, clinical medicine, physics, geology, engineering, and more.

Finding the specific documents that contain the information you need from among over 14 million documents might seem like a daunting task. Searching CA simplifies the process and offers an efficient means of finding those documents that focus on your topic of interest.

The purpose of this short booklet is to explain quickly and simply how to search CA. The booklet does not delve into the various subtleties of CA indexing policy or arrangement of specific subjects in CA. It can, however, provide you with the basis for becoming reasonably competent in searching and can refresh your memory should you require assistance in the midst of a search.

Two Ways of Searching CHEMICAL ABSTRACTS

1. CA Weekly Issues for Current- Awareness Searching

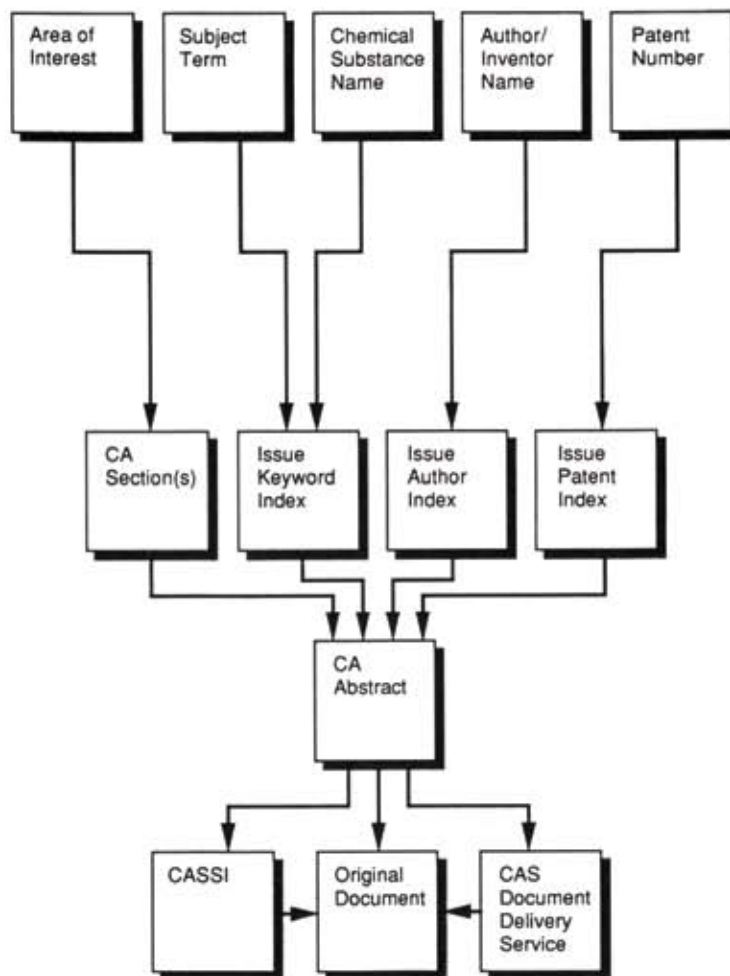
As it sits on the library shelves, CA looks like a large collection of nearly identical books. This appearance is deceptive, however, as each book of CA has a distinct purpose and can play a unique role in helping you find the information you need.

There are two ways you can search CA: (1) consult the Weekly Issues for current-awareness searching or (2) consult the Volume or Collective Indexes for retrospective searching (see the charts below).

Each week, CA carries approximately 10,000 abstracts of the newest findings in chemistry and chemical engineering reported in scientific and technical literature worldwide. Over 9,000 scientific and technical periodicals from more than 150 nations, patent documents issued by 26 nations and two international bodies, conference and symposium proceedings, dissertations, government reports, and books from around the world are monitored for new information relevant to chemistry or chemical engineering.

While much of the material abstracted comes from chemistry journals, documents are also chosen from thousands of other sources whose titles may reflect an emphasis other than chemistry but whose contents disclose new chemical information. These abstracts provide brief, informative summaries of the new chemical information contained in original documents. They are intended to help you decide whether the original document is likely to be of interest.

Abstracts in CA are placed in one of 80 sections based upon the principal emphasis of the document. The sections are collected into five broad groupings labeled Biochemistry (sections 1-20), Organic Chemistry (21-34), Macromolecular Chemistry (35-46), Applied Chemistry and Chemical Engineering (47-64), and Physical, Inorganic, and Ana-



lytical Chemistry (65-80). Sections 1 through 34 are published one week; sections 35 through 80 the following week.

Since abstracts are not duplicated in CA, the primary focus of their content determines the section in which they appear. Cross-references for abstracts are provided at the end of each section. These cross-references indicate abstracts whose diverse subject content might have permitted placement in any one of several sections.

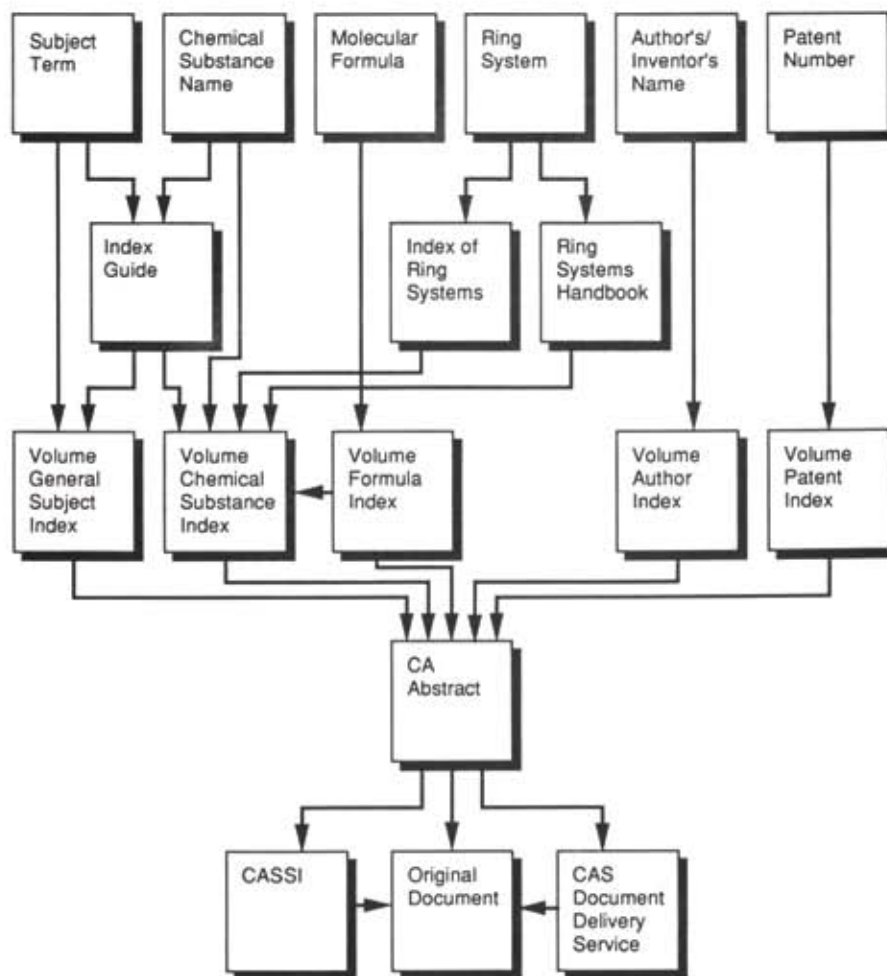
Sequential numbers are assigned to abstracts from the beginning of each six-month volume period. These numbers are preceded by the volume number. Each abstract is accompanied by a bibliographic heading that completely identifies the original document.

Current-Awareness Browsing. You can keep up with the current developments in your area of interest by scanning the abstracts in relevant sections of the CA Weekly Issues and corresponding cross-references that direct you to other sections.

Issue Indexes. Accompanying the CA weekly collections of abstracts are three indexes: (1) an index of authors' or inventors' names, (2) an index of keyword phrases chosen from the abstract text and document titles, and (3) an index of patent numbers. These indexes provide you with access points for locating abstracts on your subject of interest.

2. CA Volume Indexes for Retrospective Searching

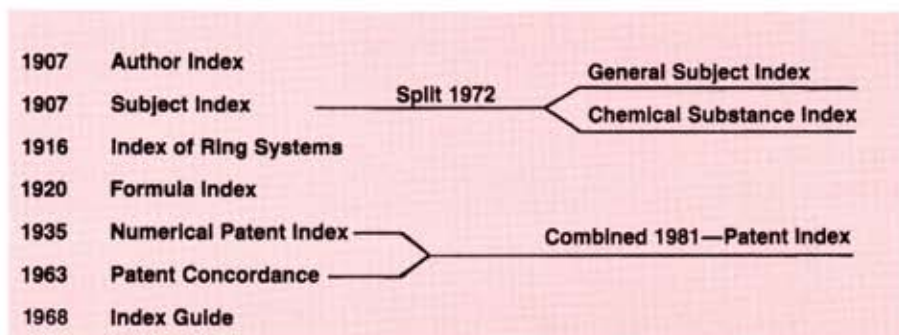
In-depth indexes refer to six-month collections of CA abstracts. Subjects covered in these indexes are selected from the original documents, not just the abstracts, and the terms used reflect a controlled vocabulary chosen to prevent indiscriminate scattering of the index references. The set of Volume Indexes includes



2. CA Volume Indexes for Retrospective Searching (cont'd)

- General Subject Index
- Chemical Substance Index
- Formula Index
- Index of Ring Systems
- Author Index
- Patent Index

The chart below shows the date at which each index was introduced and illustrates two important changes. Before 1972, the General Subject and the Chemical Substance Indexes were published as a single Subject Index. The Patent Index was issued in two parts before 1981: the Numerical Patent Index and the Patent Concordance. Prior to 1962, Volume Indexes were published annually rather than semiannually.



Index Guide. The Index Guide is an indispensable aid when searching the Chemical Substance and the General Subject Volume Indexes. Your first step in searching CA Volume Indexes should always be the Index Guide because it provides links from various names for chemical substances and general subject terms favored by scientists and engineers in the field to the controlled terminology of the Volume Indexes. Also included in the Index Guide are indexing policy notes and cross-references. Prior to 1968 when the Index Guide was first published, these cross-references were included in the Subject Indexes themselves.

The Index Guide also is a valuable aid for retrieving **CAS Registry Numbers**[®] for common substances. CAS Registry Numbers carry no chemical significance, but are identifying numbers assigned to each substance mentioned in the literature as it enters the CAS Chemical Registry System, a computer file of substance information. These numbers have come into wide use as unique identifiers of specific substances, especially for those substances most often used that have many commercial and trade names.

General Subject Index. Subject terms referring to reactions, processes, and equipment; classes of substances; and plant and animal species should be searched in the General Subject Index. Most entries include a "text modification" phrase that further describes the aspect of the heading topic that was considered when the document was indexed. You can use this phrase as an aid for selecting the abstracts most relevant for your purpose.

Each index entry is linked to an abstract number consisting of one to six digits followed by an alphabetic character. The small letter at the end is intended for computer verification only—to ensure that the abstract number has been recorded properly. The capital letter B, P, or R before the number tells you that the original document is a book, a patent, or a review article, respectively.

Chemical Substance Index. The Index Guide will provide you with a systematic CA index name for many common and trade names of chemical substances. The index name identifies a specific chemical substance and can be scanned in the Chemical Substance Index, which is ordered alphabetically by index name. Entries in this index also include text modification phrases, which describe aspects of the substance that were studied.

CA Collective Indexes. When searching for references to scientific work appearing in CA prior to 1992, you should consider the following points. Every five years the Volume Indexes are merged and republished as a single index to all abstracts published during the period—the Collective Index (CI). Before 1957, collectives covered 10 years and were called Decennial Indexes (DI). The collectives and the CA volumes they include are further described in the chart below. Searching the Collective Indexes instead of the individual Volume Indexes can save you much time if you are performing a search covering several years.

CA VOLUMES & COLLECTIVES

1st DI (1907-16) Vol 1-10		6th CI (1957-61) Vol 51-55				
2nd DI (1917-26) Vol 11-20		7th CI (1962-66) Vol 56-65				
3rd DI (1927-36) Vol 21-30		8th CI (1967-71) Vol 66-75				
4th DI (1937-46) Vol 31-40		9th CI (1972-76) Vol 76-85				
5th DI (1947-56) Vol 41-50						
10th CI	1977	1978	1979	1980	1981	
	V86-87	V88-89	V90-91	V92-93	V94-95	
11th CI	1982	1983	1984	1985	1986	
	V96-97	V98-99	V100-101	V102-103	V104-105	
12th CI	1987	1988	1989	1990	1991	
	V106-107	V108-109	V110-111	V112-113	V114-115	
13th CI	1992	1993	1994	1995	1996	
	V116-117	V118-119	V120-121	V122-123	V124-125	

CA issues have been published weekly since 1967. Before then, all sections were published together on a biweekly basis. The content, arrangement, and number of sections have also changed over the years.

Prior to 1967, the abstracts were designated in the Volume and Collective Indexes by a number with a superscript letter. The number represented a column in CA and the superscript letter represented the fraction of the page where the abstract of interest could be found.

Because the indexing system of CA is so thorough and comprehensive, each abstract has a variety of access points. You can find abstracts that can help you in your writing and research by beginning with one or several of the following pieces of information:

- a general subject term
- a chemical substance name
- a molecular formula
- a ring system
- the name of an author, coauthor, or inventor
- a patent number

Index Guide. If the starting point for your retrospective search is a general subject term or a common, trade, or systematic name for a chemical substance, you should always begin by consulting the CA Index Guide. This all-purpose cross-reference tool provides you with a guide to the Volume and Collective General Subject and Chemical Substance Indexes. The terms you find by consulting the Index Guide can then be searched in the appropriate index to locate CA abstract numbers of relevant abstracts.

**General Subject
Terms**

Abstracts in each CA Weekly Issue are indexed by subject through keyword phrases selected primarily from the abstract text and document titles. For instance, a patent for plasma metalizing of various materials is linked to such keywords as "plasma," "metalizing," "fibers," and "polymers."

<p>Plasma accelerator operating mode 223131h accelerator wake field 223140k active metal smelting P 219599z arc copper resonant radiation transfer 225985p arc iron oxygen flow 218680g arc melting review 219176j arc refining iron alloy 218667h : : : mass spectrometry polyatomic ion inter= ference 227136m mass spectrometry single atom detection 227113b matter quark gluon review 222629q metalizing alloy metal P 219715j microwave cathode 225994r microwave induced trace analysis review 227022w</p>	<p>Metalization aluminum resistance temp review 225479b dielec copper ammine hypophosphite aging 222288c optimization electrodiffusion resistance 226046v patterning printed elec circuit P 226383c printed circuit board P 226391d selective contact high temp semiconduc= tor P 226205w Metalized yarn luster manuf P 216283f Metalizing plasma alloy metal P 219715j Metallic aerosol argon plasma 225983m alloy dil electronic structure LMTO 221833q glass chromium phosphorus alloy electro= deposition 223704x</p>
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Keyword Index

These keywords are helpful in identifying relevant abstracts among those published each week. Keywords are also useful because they reflect the terminology chosen by authors in a variety of specialties and from a number of nations. On the other hand, keywords lack the precision and consistency necessary for an index used for retrospective searching.

In the semiannual Volume Indexes and the Collective Indexes, author terminology is replaced by a controlled vocabulary that prevents scattering of references over several terms. For instance, abstracts on the general subject of cancer-causing agents might be found under such keywords as cancer, carcinogen, tumor, and malignancy in the issue indexes. In the General Subject Index, all these references would be linked to the single term "Carcinogens."

Author terminology is linked to the subject term employed in the General Subject Index through the Index Guide. The General Subject Index is the appropriate volume to consult for all topics other than specific chemical substance names.

Plasma

For sources of numerical data on plasma see the list of Data Collection and Analysis Centers, Index Guide, Appendix II, ¶ 15

Ionized-gas plasmas are indexed at this heading.

Electron-hole plasmas in the solid state are indexed at *Electron-hole plasma*. Plasma of the blood is indexed at *Blood plasma*.

accelerators for—see *Accelerators, plasma*

app. for

see such headings as

Electric discharge devices

Electric lamps

Electron sources

discharge

Ion sources

plasma

coating or film deposition by

see

Anodization

plasma

Coating process

plasma

Epitaxy

Vapor deposition processes

plasma

Debye screening in—see *Debye screening*

Coating process

The application of coatings, including lacquers, paints and varnishes, is indexed at this heading.

See also *Coloring*

anodization—see *Anodization*

bronzing—see *Bronzing*

cladding—see *Cladding*

for copying materials

see such headings as

Copying paper

Electrography

Electrophotography

Photoduplication

Thermographic copying

CVD—see *Vapor deposition processes*

diffusion, of metals

see such headings as

Aluminizing

Cementation

Chromizing

electrodeposition—see *Electrodeposition and*

Electroplating

electrophoretic—see *Electrodeposition and*

Electroplating, electrophoretic

electrostatic—see *Electrodeposition and*

Electroplating, electrostatic

Coating process

The application of coatings, including lacquers, paints and varnishes, is indexed at this heading.

ablation

laser-induced, with barium titanate, properties and crystal orientation in relation to, 179459v

laser-induced, with barium yttrium cuprate, supercond. in relation to, 179466v

⋮

plasma

activation and degreasing of metallic surfaces prior to, R 25682a

air, of powders, corrosion and wear of steel in relation to, 239345s

with alumina, properties in relation to, 89544q

with alumina and chromium oxide of steel, corrosion resistance from, effect of

aluminum-nickel and chromium-nickel sublayers on, 156635k

⋮

of titanium with amorphous diamond, for increased wear resistance, 198837h

with transition metals, of alloys and metals and fibers and glasses and polymers, P 219715j

with tungsten carbide-cobalt, friction in relation to, 64582n

of turbine parts, with metal and metal-ceramic composite and ceramics, pressure control in, P 26068y

ultramicrocryst. materials for, grinding of, R 25683b

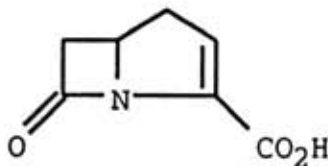
General Subject Index

Chemical Substance Names

Knowing a substance's name, its molecular formula, or the analysis of its constituent rings can provide you with valuable pointers in your attempt to locate abstracts describing the substance of interest.

If you have the name of a substance, you can begin your search with the chemical substance indexes. The weekly CA Issue Indexes provide access to substance-related abstracts through the chemical names used by authors and inventors. These names are included with subject terms in the weekly Keyword Index at the back of each issue.

For instance, if you are interested in abstracts concerning the following substance:



you would look in the Keyword Index under the name "carbapenem."

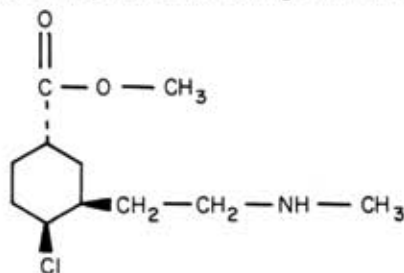
Carbamoyloxypyridylmethylindole
prepn acetylcholinesterase inhibitor
P 214361f
→ Carbapenem
antibiotic Nocardia susceptibility
211034r
cyclopropylpyrrolidinyl prepn antibacter=
ial P 214228t
→ epoxide topol analog 214261y
Carbaryl
extn food plant chromatog 213119w

Although helpful, these entries are not consistent enough to serve as the basis for a thorough and comprehensive index. For one thing, many substances have more than one name. The common industrial polymer polyethylene has more than 900 names on record. In addition, some trade names are little more than codes, such as AQ 110, which would be meaningless as an index term.

To maintain consistency in its indexing policies, CAS has extended nomenclature principles adopted by the International Union of Pure and Applied Chemistry (IUPAC) to develop names in a precise manner ensuring that each substance receives a single name and that each name completely describes a single substance. These names, called CA index names, are the basis for classifying substance information in the Chemical Substance Index.

Index names are built around a "parent," generally the name of a structural skeleton plus a suffix denoting the principal group. The index name is inverted so that the parent appears first in the name printed in the index. This practice allows substances with the same structural skeleton to appear near each other in the alphabetically arranged index.

Substituents on the parent structure are listed next in the name. They may be followed by a "modification" that identifies a specific derivative (such as an ester) of the principal indexed substance. Stereochemical information, if appropriate, appears at the end of the name. As an example, the following structure:



is named

Cyclohexanecarboxylic acid, 4-chloro-3-[2-(methylamino)ethyl]-, methyl ester, (1 α , 3 β , 4 β)-
PARENT SUBSTITUENTS MODIFICATION STEREO

If you search frequently for a particular class of substances, it may be worthwhile to learn the conventions for naming the members of that class. The essential rules and procedures for deriving CA index names are detailed in Appendix IV of the Index Guide.

In most instances, it is not necessary to derive an index name to search for a substance. If you know a common name, like carbapenem, looking it up in the Index Guide often will provide the index name. The Index Guide lists about 150,000 common and trade names with their corresponding index names and CAS Registry Numbers. Looking up carbapenem in the Index Guide, for example, would yield

Index Guide

Carbapenem

See *1-Azabicyclo[3.2.0]hept-2-ene-2-carboxylic acid, 7-oxo-* [83200-96-8]

Carbapheithiol

See *Carbamothioic acid, phenyl-, S-(2-amino-3-phenylpropyl) ester* [118104-82-8]

Carbarson B

See *Urea, [4-[4-(hydroxymethyl)-1,3,2-dithiarsolan-2-yl]phenyl]-* [54267-41-3]

Carbarsone

See *Arsonic acid, [4-[(aminocarbonyl)amino]=phenyl]-* [121-59-5]

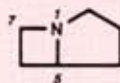
Carbaryl

See *1-Naphthalenol, methylcarbamate* [63-25-2]

Carbasalate calcium

See *Benzoic acid, 2-(acetyloxy)-, calcium salt, compd. with urea (1:1)* [5749-67-7]

1-Azabicyclo[3.2.0]heptane [327-59-3]



⋮

1-Azabicyclo[3.2.0]hept-2-ene-2-carboxylic acid —, 7-oxo- [83200-96-8]

carbamoylpyrrolidinylthio derivs., prepn. of, as bactericides, P 128505z
 cationic oligopeptide mixt., infection treatment with, P 51534y
 derivs.
 acetoxy(hydroxyethyl)azetidinone intermediate for, prepn. of, 41134d
 intermediates for, acetoxyazetidinones as, P 105967n
 mixts. with morpholinoamino alcs., antiplaque dentifrices contg., P 158620a
 prepn. of, as antibacterial agents, P 41191v
 epoxyheptenoates as topol. analogs of, 214261y
 heterocyclalkylphenyl-, prepn. of, P 128500u
 (heterocyclmethylphenyl) derivs., prepn. of, as antibacterials, P 151435k

Chemical Substance Index

CA Collective Indexes. An Index Guide is issued at the beginning of each Collective Index period. It is then reissued three times during the collective period. When searching for abstracts published before 1992 (the beginning of the 13th collective period), you should remember that the common name must be looked up in the Index Guide for EACH collective period of interest. Nomenclature practices have changed over the years, and the index name, which links a substance to references about it in one collective period, may not necessarily be the correct index name for previous collectives.

Molecular Formulas

When you know the molecular formula for a substance of interest, you can consult the Formula Index directly. This volume index provides CA index names, CAS Registry Numbers, and abstract numbers for chemical substances identified by molecular formulas.

Element symbols in the molecular formula used in the Formula Index are arranged according to the Hill system. For all carbon-containing compounds, C is listed first, followed by H, if present, and then by the remaining element symbols in alphabetical order. The resulting formulas are ordered in ascending numerical order in the index. For instance, CH appears before all substances beginning with CH₂, and all substances containing one carbon atom appear before substances whose formulas start with C₂. Formulas for substances that do not contain carbon are arranged alphabetically by element symbol. This practice may result in some formulas that differ from usual chemical conventions. For instance, table salt will not be found under the N's as NaCl, but will appear as ClNa. The following is the Formula Index entry for carbapenem:

Formula Index

C₇H₇NO₃

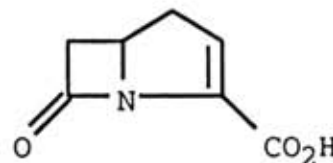
- 1-Azabicyclo[3.2.0]hept-2-ene-2-carboxylic acid, 7-oxo- [83200-96-8], P 128500u, P 151435k, 167366z, 214261y, P 255394n. For general derivs. see *Chemical Substance Index*
- Benzaldehyde, 2,4-dihydroxy-oxime [5399-68-8], P 72189e, P 224627m
- , 2,5-dihydroxy-oxime [37110-11-5], P 72189e, P 224627m
- Benzamide, N,2-dihydroxy- [89-73-6], 25082e, 68621x, 112682u, 160033e, 169398k, 178063z, 211206y. For general derivs. see *Chemical Substance Index*
- Benzene, 1-methoxy-2-nitro- [91-23-6], 6069q, 40808q, 43069k, 58857q, 68640c, 78250q, 83489d, P 105829u, 112682u, 114412e, 128035w, 229956c, 254910r
- , 1-methoxy-3-nitro- [555-03-3], 6069q, 112682u, 194003k, 213870j, 255074h, P 255479u. For general derivs. see *Chemical Substance Index*

While the Formula Index does give abstract numbers for references about most substances, it does not include the text modifications that further describe the content of each abstract. For this reason it frequently may be more desirable to use the Formula Index to retrieve an index name, and then look up that index name in the Chemical Substance Index, where headings are accompanied by text modifications. Entries in the Formula Index for which a large number of references are published do not include the abstract numbers, but do provide index names so that you can search for references listed in the Chemical Substance Index.

Ring Systems

You could also begin your search with a ring system, if you know the configuration of your substance of interest. Each set of Volume Indexes provides you with an Index of Ring Systems that orders substances on the basis of an analysis of the constituent rings. An entry is included for each ring system CAS encounters during a volume or collective period. Performing a ring analysis requires only that three pieces of information be noted and listed in order: the number of component rings, the sizes of component rings, and the elemental composition of component rings. For instance, the ring analysis for the ring parent in carbapenem would be

Number of rings = 2
Size of rings = 4, 5
Elemental analysis of rings = C₃N-C₄N



The Index of Ring Systems is ordered in ascending numerical and alphabetical order of these ring analysis components. Rings that require indicated hydrogen show the saturated center in the lowest available position.

Each elemental analysis is linked to the CA index name for all ring systems that share the ring analysis. The index names can then be looked up in the Chemical Substance Index for references about substances containing that ring system.

Index of Ring Systems

2-RING SYSTEMS

⋮
4,5
CNOP-C₂NOP
2,7-Dioxa-5-aza-1-phosphabicyclo[3.2.0]heptane
C₂B₂-C₂B₃
2,3,5,6-Tetraborabicyclo[2.1.1]hexane
C₂NP-C₃NO
4-Oxa-1-aza-7-phosphabicyclo[3.2.0]heptane
C₂N₂-C₃NO
4-Oxa-1,6-diazabicyclo[3.2.0]heptane
⋮
C₃N-C₃NS
4-Thia-1-azabicyclo[3.2.0]heptane
4-Thia-2,6-diazabicyclo[3.2.0]heptane
C₃N-C₄N
→ 1-Azabicyclo[3.2.0]heptane
C₃N-C₄O
2-Oxa-7-azabicyclo[3.2.0]heptane
3-Oxa-6-azabicyclo[3.2.0]heptane
C₃N-C₅
6-Azabicyclo[3.2.0]heptane
2-Azaspiro[3.4]octane

A separate, complementary publication, the **Ring Systems Handbook**, includes all ring systems encountered by CAS. It contains structure drawings of all ring systems and cyclic natural products used as parent headings in deriving CA index names. By consulting this publication, you have an alternative route of access to the Volume Chemical Substance Index.

Author Names

The Issue and Volume Author Indexes link names of authors, coauthors, inventors, and assignees to the abstract numbers of documents that they have produced. Since corporations are frequently listed as assignees of patent rights, these indexes include corporate as well as personal names.

In the weekly Issue Indexes the author names are listed in an abbreviated form, consisting of last name and initials only.

		Issue Author Index
	Gou C 225171v	DeSimone J M 215053u
	Goubaa K 219372v 219390z	Desimoni E 225844a
	Goubier M 220982a	DesJardin W F 225529t
	Goubitz K 225271c	Desorcie J L 215834z
→	Goudmand P P 219715j	De Souza R T 222786p
	Gouge S T P 221569h	Dessaux O P 219715j
→	Gough J S 222207a	De Stefano C 222574t
	Gough K M 221921a	DeStefano J J 221686u
	Gougoutas J Z 226917e	Destouni G 221096b

Since the number of abstracts in each issue is relatively small, this practice creates little confusion. In contrast, there may be as many as eight pages in the Volume Author Index devoted to scientists named Smith, so the fullest available information is included with each name entry.

		Volume Author Index
	Dessau, W.	
	—; Ziegelmayer, B.; Popp, W.	
	Enzyme immunoassays for quantitative detection of plant treatment agents in water. Fundamentals and results, 113201y	
	Dessauer Magnetband G.m.b.H.	
	Two-stage process for the manufacture of α -ferric hydroxide oxide, P 258515p	
→	Dessaux, Odile See Djebabra, Djamal; Goudmand, Pierre	
	Desse, J. M.	
	—; Pegneaux, J. C.	
	Whole-field measurement of gas density from two simultaneously recorded interferograms, 238085v	
	⋮	
	Goudie, Cheryl Ann See Davis, Kenneth B.	
	Goudie, D. R. See Furlong, R. A.; Lyall, J. E. W.; Yuille, M. A. R.	
	Goudis, C. D. See Meaburn, J.	
	Goudmand, P. See Amal, S.	
→	Goudmand, Pierre See Djebabra, Djamal	
	—; Dessaux, O.; Ben Taleb, A.; Cannesson, C.	
	Plasma metalizing of polymers, glasses, metals and alloys, and fibers, P 219715j	
	Goudonnet, Herve See Charmoillaux, Manuel	
	Goudonnet, Jean Pierre See Flamion, Pierre Jacques	

The order is alphabetical by last name. Where last names are identical, the order is alphabetical by first initial and second initial, NOT alphabetical by the letters of the first name. Abstract numbers and document titles are linked only to the first listed author of coauthored papers. Other author names are cross-referred to the name of the first author.

Patent Numbers

The General Subject, Chemical Substance, and Author Indexes can lead you to abstracts of patents about particular subjects or substances, or by known inventors or assignees. Additional routes to patent information are available when the patent number is known. These are provided by the Patent Indexes, both weekly and volume, which began publication in January 1981 (Volume 94). (For patents prior to 1981, see tip for searching CA Collective Indexes below.)

When looking for a patent number in these indexes, there are two possibilities: the number in hand may be the first document of the patent family encountered by CAS and, therefore, abstracted in CA; or the number may belong to an equivalent document. (The patent family comprises all patent documents that describe the same basic invention.) In the first case, the patent number will be linked to an abstract number for that document, and a complete history of all equivalent documents will be listed beneath the entry. In the second, the equivalent will be cross-referred to the patent number of the first abstracted patent.

Patent Index

DE (Germany)

4122196 A1, 116:128160h
FR 2664267 A1
JP 04/069347 A2
4122229 A1, 116:219715j
CA 2046122 AA
FR 2664294 A1
GB 2245600 A1
4122383 A1, 116:164910m
JP 04/065102 A2
4122473 A1, See EP 468395 A1
4122513 A1, See EP 471318 A1
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Regional States: EP(AT,
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116: 219715j **Plasma metalizing of polymers, glasses, metals and alloys, and fibers.** Goudmand, Pierre; Dessaux, Odile; Ben Taleb, Abdellah; Cannesson, Catherine (Plasmametal) **Ger. Offen. DE 4,122,229 (Cl. C23C16/16), 09 Jan 1992, FR Appl. 90/8,602, 06 Jul 1990; 7 pp.** N and/or inert gas (Ar) plasma is formed in a plasma tube, which is connected to a deposition chamber contg. the coating part(s) and being supplied with vapor(s) of transition metal carbonyl(s). To be coated parts are pretreated in a plasma with no metal carbonyl addn., the pressure of the plasma *p* in the deposition chamber is 20–5000 Pa, and the pressure of the carbonyl vapor in the deposition chamber is *P*/3.

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6. year of publication
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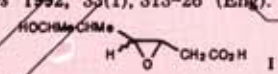
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116: 214261y **Synthesis and biological evaluation of functionalized epoxides structurally related to the carbapenem family.** Marchand-Brynaert, Jacqueline; Davies, John; Ghosez, Leon (Lab. Chim. Org. Synth., Univ. Cathol. Louvain, B-1348 Louvain-la-Neuve, Belg.). **Heterocycles 1992, 33(1), 313–26 (Eng).** Epoxides *syn-* and



anti-I, topol. related to the carbapenem antibiotics, were designed as potential alkylating inhibitors of the bacterial D,D-peptidases. The olefinic precursors, HOCHMeCHMeCH:CHCH₂CO₂H, were readily prepd., in three steps, by coupling the Me₃SiC:CCH₂P⁺Ph₃ Br⁻ with Me₃CSiMe₂OCHMeCHMeCHO resulting from diastereoselective aldol condensations. *anti*-I showed a weak anti-β-lactamase activity.

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Heterocycles. An International Journal for Reviews and Communications in Heterocyclic Chemistry. HCYAM. ISSN 0385-5414. In Eng; Eng sum. v1 n1 Oc, 1973+. m 27 1988. *Japan Institute of Heterocyclic Chemistry, 1-1-7-804, Motoakasaka, Minato-ku, Tokyo, 107, Japan or Elsevier (Amsterdam).*

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**SYNTHESIS AND BIOLOGICAL EVALUATION OF FUNCTIONALIZED
EPOXIDES STRUCTURALLY RELATED TO THE CARBAPENEM FAMILY**

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Abstract - Epoxides (6) and (7), topologically related to the carbapenem antibiotics, were designed as potential alkylating inhibitors of the bacterial D,D-peptidases. The olefinic precursors (8-9) were readily prepared, in three steps, by coupling the Wittig reagent (13) with the aldehyde synthons (10) or (11) resulting from diastereoselective aldol condensations. Epoxide (7) showed a weak anti- β -lactamase activity.

INTRODUCTION

The increasing bacterial resistance to penicillin and cephalosporin antibiotics stimulated intensive research aiming at the discovery of non β -lactam analogs¹ which would bypass the microorganisms' defenses. Some years ago, we became interested in the synthesis of alkylating agents capable of interacting irreversibly with penicillin binding proteins.² We first prepared oxaziridines (1-2)^{3,4} and epoxides (3-4)^{5,6} equipped with penicillin acylamino side-chains (Scheme 1). Unfortunately, the compounds were chemically too unstable to be used in any biological application. The easy cleavage of the strained heterocyclic ring probably resulted from an anchimeric assistance of the neighbouring amide group.

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