

1982 ANNUAL BOOK OF ASTM STANDARDS

Part **31** Water

1982 ANNUAL BOOK OF ASTM STANDARDS



PART 31

Water

Includes standards of:

Committee

D-19 on Water

D-34 on Water Disposal

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ASTM

1916 Race St., Philadelphia, Pa. 19103

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FOREWORD

ASTM

ASTM, founded in 1898, is a scientific and technical organization formed for "the development of standards on characteristics and performance of materials, products, systems, and services; and the promotion of related knowledge." It is the world's largest source of voluntary consensus standards.

The Society operates through more than 137 main technical committees with 1925 subcommittees. These committees function in prescribed fields under regulations that ensure balanced representation among producers, users, and general interest participants.

The Society currently has 29,000 active members, of whom approximately 17,155 serve as technical experts on committees, representing 81,540 units of participation.

Membership in the Society is open to all concerned with the fields in which ASTM is active. A membership application with detailed information may be found at the back of this book. Additional information may be obtained from Member, Committee, and Sales Services, ASTM, 1916 Race St., Philadelphia, Pa. 19103.

1982 Annual Book of ASTM Standards

The 1982 *Annual Book of ASTM Standards* consists of 48 parts, of which this part is one. It contains all currently formally approved ASTM standard specifications, test methods, classifications, definitions, and practices, and related material such as proposals. These terms are defined as follows:

standard—a specification, test method, definition, classification, or practice that has been approved by the sponsoring committee and adopted by the Society in accordance with the procedures established in the Regulations Governing ASTM Technical Committees. ASTM standards may also take other forms such as guidelines, charts, tolerances, tables, and reference photographs.

specification—a form of standard that is a precise statement of a set of requirements to be satisfied by a material, product, system, or service, indicating, whenever appropriate, the procedure by means of which it may be determined whether the requirements given are satisfied. As far as practicable, it is desirable that the requirements be expressed numerically in terms of appropriate units together with their limits.

test method—a form of standard that covers sampling and describes the subsequent testing procedures used in determining the properties, composition, or performance for materials, products, systems, or services that may be specified. A test method shall not include the kind of numerical limits for the properties, composition, or performance that should normally be included in a specification.

classification—a form of standard that defines a systematic arrangement or division of materials, products, systems, or services, into groups based on similar characteristics such as origin, composition, properties, or use.

definition—a form of standard that comprises one or more terms with explanation of its meaning as applied to materials, products, systems, services, and methods within the scopes of technical committees.

practice—a form of standard that is a procedure, guide, or service which may or may not be auxiliary to a test method or a specification. Examples of such include selection, preparation,

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application, inspection, necessary precautions for use or disposal, installation, maintenance, and operation of testing apparatus.

emergency standard—a document published by the Society to meet a demand for more rapid issuance of a standard where such action is deemed necessary by the Executive Subcommittee of a committee and concurred in by the Committee on Standards. Emergency standards are not consensus documents because they are not submitted for Society ballot.

proposal—a preliminary standard that has been approved by the sponsoring committee for publication as information only. There is no Society letter ballot on proposals and no designation is assigned.

A new edition of the Book of Standards is issued annually. Each part contains all actions accepted by the Society at least six months before the issue date. Later actions are included wherever this is possible without delaying the appearance of the part. In addition, a list of new and revised standards received too late for processing is appended to the end of each table of contents just before going to press. Most current standards as well as new and revised items accepted by the Society between the annual appearances of any given part are made available as separate reprints. The 1982 edition of the Book of Standards comprises approximately 52,000 pages and includes over 6500 ASTM standards.

Purpose and Use of ASTM Standards

An ASTM standard represents a common viewpoint of those parties concerned with its provisions, namely, producers, users, and general interest groups. It is intended to aid industry, government agencies, and the general public. The use of an ASTM standard is purely voluntary. It is recognized that, for certain work or in certain regions, ASTM specifications may be either more or less restrictive than needed. The existence of an ASTM standard does not preclude anyone from manufacturing, marketing, or purchasing products, or using products, processes, or procedures not conforming to the standard. Because ASTM standards are subject to periodic review and revision, those who use them are cautioned to obtain the latest revision.

Consideration of Comments on ASTM Standards

An ASTM standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited either for revision of any standard or for additional standards and should be addressed to ASTM Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, 1916 Race St., Philadelphia, Pa. 19103, which will schedule a further hearing regarding your comments. Failing satisfaction there, you may appeal to the ASTM Board of Directors.

Using the Annual Book of ASTM Standards

The standards are assembled in each part in alphanumeric sequence of their ASTM designation numbers except for Parts 31 and 47, which are assembled by subject matter. Parts 25, 26, and 29 are assembled first by committee, then in alphanumeric sequence. Each part has two tables of contents—one, a list of the standards in alphanumeric sequence of their ASTM designations; the other, a list of the standards classified according to subject. A subject index of the standards in each part appears at the back of each volume.

Availability of Individual Standards

Each ASTM standard is available as a separate publication from ASTM at the following prices per standard: \$4.00 for 1–32 pages, \$5.00 for 33–64 pages, \$6.00 for 65–96 pages, and \$7.00 for 97 or more pages. Special quantity prices are available. When ordering, give ASTM standard designation, title, quantity desired, and shipping instructions.

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Obsolete Editions

This new edition of the *Annual Book of ASTM Standards* makes last year's edition obsolete. Each part of the *Annual Book of ASTM Standards* is replaced annually because of additions of new standards and significant revisions in existing standards. On the average, about 30 % of each part is new or revised. For practical purposes, therefore, it is not wise to use obsolete parts. However, for teaching purposes, these outdated parts might be useful.

Disclaimer

The American Society for Testing and Materials takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in these standards. Users of these standards are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.

INTRODUCTION

The methods in this volume are under the jurisdiction of Committee D-19 on Water. This committee is concerned with the study of water, the promotion of knowledge thereof, and the standardization of terminology and methods for (1) sampling and analysis of water, water-borne materials and wastes, water-formed deposits; (2) the determination of the structure, function, and condition of communities of indigenous and other aquatic organisms; (3) surface water hydraulics and hydrologic measurements; (4) the determination of the performance of materials used to modify water characteristics; and (5) the determination of the corrosivity or deposit-forming properties of water.

Committee D-19, formed in 1932, has technical activities which are carried forward by more than 750 members working in the following subcommittees:

- D19.01 Statistical Methods
- D19.02 General Specifications and Technical Resources
- D19.03 Hydraulics, Sampling, and Surveillance of Water and Water-Formed Deposits
- D19.04 Methods of Radiochemical Analysis
- D19.05 Inorganic Constituents in Water
- D19.06 Methods of Analysis for Organic Substances in Water
- D19.07 Methods of Testing for Sediments
- D19.08 Water Treatment Materials
- D19.09 Saline and Brackish Waters
- D19.11 Water for Power Generation and Process Use
- D19.23 Biological Field Methods
- D19.24 Water Microbiology
- D19.31 Identification of Waterborne Oils
- D19.32 Water for Subsurface Injection
- D19.33 Water Associated with Alternative Fuel Production

Membership is open to all who have an interest in participating in the development of standards in these areas. While Committee D-19 may generally be considered one of the unclassified committees of the Society, Subcommittee D19.08 on Water Treatment Materials is classified for Particulate Ion Exchange Materials. The standards published herein are reviewed by the committee at least once every 5 years. Each committee member is given an opportunity through a written letter ballot to vote on new standards, revisions to standards, the reapproval of standards, and the withdrawal of standards. All negative votes with accompanying reasons must be acted upon within the committee before acceptance of the action.

The designation numeric list is followed by a subject-oriented Table of Contents in which the standards are listed alphabetically according to the subject of the test under the following areas of interest:

- I. Definitions, Specifications, Reagents, and Reporting Results
- II. Sampling and Flow Measurement
- III. General Properties of Water
- IV. Inorganic Constituents
- V. Organic Constituents
- VI. Radioactivity
- VII. Saline and Brackish Waters, Seawaters, and Brines
- VIII. Microbiological Examination

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- IX. Water-formed Deposits
- X. Water Treatment Materials

At the back of the book, the gray-marked pages include:

Excerpts from E 380 Standard for Metric Practice
Proposed Methods

Following these is a complete subject index in alphabetical order including the designation number of each standard referred to in the index.

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- Part 5*—Steel Bars, Chain, and Springs; Bearing Steel; Steel Forgings
- Part 6*—Copper and Copper Alloys (Including Electrical Conductors)
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- Part 40*—Electrical Insulation—Specifications: Solids, Liquids, and Gases; Test Methods: Liquids and Gases; Protective Equipment
- Part 41*—General Test Methods, Nonmetal; Statistical Methods; Space Simulation; Particle Size Measurement; Laboratory Apparatus; Durability of Nonmetallic Materials; Metric Practice
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The 1983 *Annual Book of ASTM Standards* is being restructured into 66 volumes, divided among 16 sections. The following table indicates the section number (first two digits) and volume number (last two digits) in which each technical committee will find its standards in the 1983 edition. Further information on the restructuring will appear in *Standardization News*.

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STANDARDS AND TENTATIVES RELATING TO WATER AND ON WATER DISPOSAL

A complete Subject Index begins on p. 1533

Listed below are those standards included in this book and those standards that appeared previously that have been discontinued within the past five years.

In the serial designations prefixed to the following titles, the number following the dash indicates the year of original issue as tentative or of adoption as standard or, in the case of revision, the year of last revision. Thus standards adopted or revised during the year 1981 have as their final number, 82. A letter following this number indicates more than one revision during that year, that is 82a indicates the second revision in 1981, 81b the third revision, etc. Tentatives are identified by the letter T. Standards that have been reapproved without change are indicated by the year of last reapproval in parentheses as part of the designation number, for example, (1982). A superscript epsilon indicates an editorial change since the last revision on reapproval— $\epsilon 1$ for the first change, $\epsilon 2$ for the second, etc.

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* Editorially changed.

§ Approved for use by agencies of the Department of Defense and, if indicated on the standard, replaces corresponding Federal or Military document.

† Although this standard has been officially withdrawn from Society approval, a brief description is included for information only.

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