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(Revision of ANSI/AWWA B101-16)

AWWA Standard

Precoat Filter Media

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American Water Works Association

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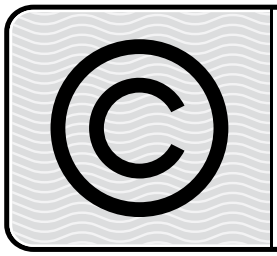
AWWA Standard

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Foreword

This foreword is for information only and is not a part of ANSI/AWWA B101.

I. Introduction.

I.A. *Background*. Precoat media filtration is a process in which the filter media, typically diatomite or perlite, are applied to a support structure, used for filtration, then removed and disposed of on a cyclic basis. This process is unlike granular-media filtration, in which graduated layers of filter media are more or less permanently placed in the filters and periodically backwashed or mechanically cleaned and reused.

In precoat media filtration, a thin layer of the filter media, or precoat, is applied to specially designed media-support structures, or septa, within the filter vessel or structure by recirculating a slurry of the filter media through the septum until it is coated. After the precoat layer is established and filtration has begun, additional filter media are continually added as the raw water passes through the filter. This process, known as *bodyfeeding*, is done to disperse the accumulation of solids from the source water on the precoat surface and throughout the media depth to maintain porosity and maximize the cycle length. Bodyfeeding reduces or eliminates premature clogging or fouling of the surface of the precoat layer. At the completion of the filtration cycle, the filter septa and the vessel are flushed. Spent filter media and particles removed from the source water are drained to an appropriate waste disposal system. The clean filter is precoated again, and a new filtration cycle begins.

I.B. *History*. ANSI/AWWA B101 was approved as a new standard by the AWWA Board of Directors on June 23, 1994. Subsequent revisions were approved on June 17, 2001, June 10, 2012, and Jan. 16, 2016. This edition was approved on Oct. 24, 2022.

I.C. *Acceptance*. In May 1985, the US Environmental Protection Agency (USEPA) entered into a cooperative agreement with a consortium led by NSF International (NSF) to develop voluntary third-party consensus standards and a certification program for direct and indirect drinking water additives. Other members of the original consortium included the Water Research Foundation (formerly AwwaRF) and the Conference of State Health and Environmental Managers (COSHEM). The American Water Works Association (AWWA) and the Association of State Drinking Water Administrators (ASDWA) joined later.

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In the United States, authority to regulate products for use in, or in contact with, drinking water rests with individual states.* Local agencies may choose to impose requirements more stringent than those required by the state. To evaluate the health effects of products and drinking water additives from such products, state and local agencies may use various references, including

1. Specific policies of the state or local agency.

2. Four standards developed under the direction of NSF[†], NSF/ANSI[‡]/CAN[§] 60, Drinking Water Treatment Chemicals—Health Effects, and NSF/ANSI/CAN 61, Drinking Water System Components—Health Effects, NSF/ANSI/CAN 372 Drinking Water System Components—Lead Content, and NSF/ANSI/CAN 600, Health Effects Evaluation and Criteria for Chemicals in Drinking Water.

3. Other references, including AWWA standards, *Food Chemicals Codex, Water Chemicals Codex*,[¶] and other standards considered appropriate by the state or local agency.

Various certification organizations may be involved in certifying products in accordance with NSF/ANSI/CAN 61. Individual states or local agencies have authority to accept or accredit certification organizations within their jurisdiction. Accreditation of certification organizations may vary from jurisdiction to jurisdiction.

NSF/ANSI/CAN 600, (which formerly appeared in NSF/ANSI/CAN 60 & 61 as Annex A, "Toxicology Review and Evaluation Procedures,") does not stipulate a maximum allowable level (MAL) of a contaminant for substances not regulated by a USEPA final Maximum Contaminant Level (MCL). The MALs of an unspecified list of "unregulated contaminants" are based on toxicity testing guidelines (noncarcinogens) and risk characterization methodology (carcinogens). Use of NSF/ANSI/CAN 600 procedures may not always be identical, depending on the certifier.

ANSI/AWWA B101 does not address additives requirements. Thus, users of this standard should consult the appropriate state or local agency having jurisdiction to

1. Determine additives requirements, including applicable standards.

2. Determine the status of certifications by parties offering to certify products for contact with, or treatment of, drinking water.

3. Determine current information on product certification.

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* Persons outside the United States should contact the appropriate authority having jurisdiction.

† NSF International, 789 N. Dixboro Road, Ann Arbor, MI 48105.

‡ American National Standards Institute, 25 West 43rd Street, Fourth Floor, New York, NY 10036.

§ Standards Council of Canada, 55 Metcalfe Street, Suite 600, Ottawa, ON K1P 6L5 Canada.

¶ Both publications available from National Academy of Sciences, 500 Fifth Street, NW, Washington, DC 20001.

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II. Special Issues.

II.A. *Storage and Handling Precautions*. Diatomaceous earth (DE) is a silica product; prolonged breathing of excessive concentrations of its dust may cause lung damage. Most grades of DE used in filtration contain crystalline silica, which may cause silicosis upon entry into the lungs. Extremely high concentrations of respirable crystalline silica can result in acute silicosis after a few months' exposure, and chronic/classic silicosis can occur after 15–20 years of moderate to low exposures to respirable crystalline silica. Accelerated silicosis can occur after 5–10 years of exposure to respirable crystalline silica. Crystalline silica has been classified as carcinogenic to humans (group 1 by the International Agency for Research on Cancer [IARC]). As a result, proper precautions, including wearing respirators (see OSHA 29 CFR 1910.134—Respiratory Protection Standard), and work practices as described by National Institute for Occupational Safety and Health (Publication No. 75-120) should be taken when handling and disposing of the material to control inhalation of the dust.

Perlite is an alumina silicate and may contain small quantities of crystalline silica, ranging from 0 percent to 3 percent. In the United States, crystalline silica content above the threshold limit of 0.1 percent must be labeled as a cancer-causing hazard. It is possible to obtain a product with silica levels below 0.1 percent, but any product with levels in excess of this concentration should be labeled in accordance with 29 CFR 1910.1200, Hazard Communication.

Neither DE nor perlite is considered explosive or corrosive. There is no concern for a chemical reaction caused by accidental exposure of these products to other chemicals because the media are relatively inert.

Suppliers of these products should provide purchasers with proper safety literature and material safety data sheets.

III. Use of This Standard. It is the responsibility of the user of an AWWA standard to determine that the products described in that standard are suitable for use in the particular application being considered.

III.A. *Purchaser Options and Alternatives*. The following items should be provided by the purchaser:

1. Standard used—that is, ANSI/AWWA B101, Precoat Filter Media, of latest revision.
2. Whether compliance with NSF/ANSI/CAN 61, Drinking Water System Components—Health Effects, is required.
3. Details of federal, state, provincial, territorial, and local requirements (Section 4).

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4. Product name(s).

5. Generic characteristics (see Table 1 in Section 4) that the purchaser may wish to require based on tests included in this standard follow:

Bulk densities	—	Dry, expressed in lb/ft^3 (ASTM* B527, Standard Test Method for Determination of Tap Density of Metal Powders and Compounds) (Sec. 5.2.2).
	—	Wet, expressed in lb/ft^3 (Sec. 5.2.3).
Permeability	—	See Sec. 5.2.4.
Portion retained on 150 mesh	—	Percent (Sec. 5.2.5).

6. Packaging units desired (bulk, bags, semibulk containers, pallets, or shrink wrap) and transportation options (truck or rail).

7. Source of supply. Precoat media (processed grades of DE and/or perlite suitable for use in water treatment) are readily available from many producers throughout the United States.

8. Point of delivery (on truck or unloaded).

9. Whether an affidavit of compliance is required (Sec. 6.3).

III.B. *Modification to Standard.* Any modification to the provisions, definition, or terminology in this standard must be provided by the purchaser.

IV. Major Revisions. Major revisions made to the standard in this edition include the following:

1. Language added to be consistent with AWWA Standards Council guidelines.

V. Comments. If you have any comments or questions about this standard, please contact AWWA Engineering and Technical Services at 303.794.7711, FAX at 303.795.7603; write to the department at 6666 West Quincy Avenue, Denver, CO 80235-3098; or email at standards@awwa.org.

* ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428.

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ANSI/AWWA B101-22
(Revision of ANSI/AWWA B101-16)

American Water Works Association

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AWWA Standard

Precoat Filter Media

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard describes diatomaceous earth (DE), perlite, and other disposable filter materials used to precoat filters for water supply service.

Sec. 1.2 Purpose

The purpose of this standard is to provide the minimum requirements for precoat filtration media, including physical, chemical, packaging, shipping, and testing requirements.

Sec. 1.3 Application

This standard can be referenced in specifications for evaluating precoat filter media and can be used as a guide for testing the physical and chemical properties of filtering materials used to precoat filters. The stipulations of this standard apply when this document has been referenced, and then only to precoat filter media for water supply service.

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