

American Water Works Association

ANSI/AWWA B101-01

(Revision of ANSI/AWWA B101-94)



AWWA STANDARD
FOR
PRECOAT FILTER MEDIA



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AMERICAN WATER WORKS ASSOCIATION

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Foreword

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

I. Introduction.

I.A. *Background.* Precoat media filtration is a process in which a filter medium, typically diatomite or perlite, is applied to filters, and then run, removed, and disposed of on a cyclic basis. This process is unlike granular-media filtration in which graduated layers of granules installed in granular-media filters 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 medium 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 medium through the filter. After the precoat layer is established and filtration has begun, additional precoat filter medium material is continually added as the raw water is passed through the filter. This is done to disperse the accumulation of solids from the source water on the precoat surface and throughout the media depth. The addition of a filter medium is called bodyfeeding. Using a bodyfeed 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. The spent filter medium and the collected particulates from the source water are drained to the waste disposal facility. The clean filter is precoated again and a new filtration cycle begun.

I.B. *History.* AWWA B101-94 was approved as a new standard by the AWWA Board of Directors on June 23, 1994. This edition was approved on June 17, 2001

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 all direct and indirect drinking water additives. Other members of the original consortium included the American Water Works Association Research Foundation (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.

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. An advisory program formerly administered by USEPA, Office of Drinking Water, discontinued on Apr. 7, 1990.
2. Specific policies of the state or local agency.
3. Two standards developed under the direction of NSF: ANSI[†]/NSF[‡] 60, Drinking Water Treatment Chemicals—Health Effects, and ANSI/NSF 61, Drinking Water System Components—Health Effects.
4. 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 ANSI/NSF 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.

Annex A, “Toxicology Review and Evaluation Procedures,” to ANSI/NSF 61 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 Annex A procedures may not always be identical, depending on the certifier.

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 all parties offering to certify products for contact with, or treatment of, drinking water.

*Persons in Canada, Mexico, and non-North American countries should contact the appropriate authority having jurisdiction.

†American National Standards Institute, 11 W. 42nd St., New York, NY 10036.

‡NSF International, 789 N. Dixboro Rd., Ann Arbor, MI 48113-0140.

§Both publications available from National Academy of Sciences, 2102 Constitution Ave. N.W., Washington, DC 20418.

3. Determine current information on product certification.

II. Special Issues.

II.A. *Storage and Handling Precautions.* Diatomaceous earth (DE) is a silica product, and prolonged breathing of excessive concentrations of its dust may cause lung damage. DE contains crystalline silica, which may cause silicosis when inhaled on a long-term basis. Crystalline silica has been classified as a probable cause of cancer (group 2N by IARC). As a result, proper precautions, including the wearing of respirators (see OSHA 29CFR 1910.134, Respiratory Protection Standard*), should be taken in 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 zero to 3 percent. A 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 all 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 covered in the purchaser's specifications:

1. Standard used—that is, AWWA B101, Standard for Precoat Filter Media, of latest revision.
2. Product name(s).
3. Generic characteristics (Table 1) that the purchaser may wish to require based on tests included in this standard follow:

**Code of Federal Regulations.* Available from Superintendent of Documents, US Government Printing Office, Washington, DC 20402.

- Bulk densities — Dry, expressed in pounds per cubic foot (ASTM* B527, Standard Test Method for Determination of Tap Density of Metallic Powders and Compounds) (Sec. 5.2.2).
- Wet, expressed in pounds per cubic foot (Sec. 5.2.3).
- Permeability — (Sec. 5.2.4.)
- Portion retained on 150 mesh — Percent (ASTM D422, Standard Test Method for Particle-Size Analysis of Soils) (Sec. 5.2.5).

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

5. 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.

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

7. Whether or not an affidavit of compliance is required (Sec. 6.3).

III.B. *Modification to Standard.* Any modification to the provisions, definitions, or terminology in this standard must be provided in the purchaser's specifications.

IV. Major Revisions. This standard has no applicable information for this section.

V. Comments. If you have any comments or questions about this standard, please call the AWWA Volunteer and Technical Support Group, (303) 794-7711 ext. 6283, FAX (303) 795-7603, or write to the group at 6666 W. Quincy Ave., Denver, CO 80235.

*American Society for Testing and Materials, 100 Barr Harbor Dr., West Conshohocken, PA 19428-2959.

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AWWA STANDARD FOR 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 application.

Sec. 1.2 Purpose

The purpose of this standard is to provide a guide for evaluating precoat filtration media. The criteria in this standard should be used to determine if this media is similar to the product used currently to produce potable water in a specific water treatment plant or pilot project. Extensive use of DE and perlite by the water industry supports the need for this standard.

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 apply only to precoat filter media for water supply service application.