NSF International Standard /
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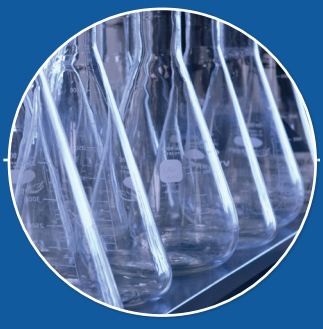
NSF/ANSI 419 – 2018

Public Drinking Water Equipment Performance – Filtration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NSF International Standard /
American National Standard
for Public Drinking Water Equipment Performance –

Public Drinking Water Equipment Performance – Filtration

Standard Developer
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Contents

Foreword[2]

The purpose of this Standard is to establish minimum performance requirements for filtration devices used in the treatment and production of public drinking water. The Standard describes the performance evaluation (PE) test procedure for the product specific challenge testing (PSCT) of full scale ultrafiltration (UF) and microfiltration (MF) membrane modules, bag filters, and cartridge filters for the removal of microbial contaminants. It provides procedures to develop challenge testing log removal values ($LRV_{C\text{-}TEST}$), as required in the US EPA's Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) published in 40 CFR Part 141, Subpart W[3]. The procedures in this Standard have been adapted from and are consistent with those applications described in the US EPA Membrane Filtration Guidance Manual (MFGM)[4]. Quality assurance / quality control (QA/QC) procedures are also described under informational Annexes to ensure that data generated from the testing will provide sound analytical results that can serve as the basis for the PE.

It is anticipated that alternative filtration technologies may be addressed under this Standard in the future.

This edition of the Standard contains the following revisions:

Issue 3

This revision changes the sampling and analysis requirements of microspheres under Annex A.

Issue 4

This revision changes Annex C from an Informative Annex to a Normative Annex.

Issue 5

This revision adds language to clarify the purpose under Section 1.1. A reference for ISO/IEC 17025 was added to the normative references under Section 2, and definitions for challenge test and minimum detection limit were added, along with additional clarifications and corrections, under Section 3.

Issue 6

This revision adds to Section 5 an example test apparatus for challenge testing bags and cartridge filters, and language to clarify the test method.

Issue 7

This revision adds to Section 6 the minimum and maximum feed concentrations for challenge organisms, clarifying language for conditioning and sample procedures, and moves Table 2 – Membrane module specifications. A table with duplicate information was added previously to Annex C as Table C.5 – Manufacturer and model specifications.

Issue 8

This revision contained multiple changes to Annex C, including the addition of several tables.

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[3] Superintendent of Documents, US Government Printing Office. Washington, DC 20402. <www.gpo.gov>

[4] US Environmental Protection Agency (US EPA), Office of Water. Washington, DC 20460. <www.epa.gov>

Issue 9

This revision adds a new informational annex: Annex F – LRV calculation for micro- and ultrafiltration.

Issue 10

This revision adds a new informational annex: Annex G – Regulatory approval, installation, and commissioning of membranes.

This Standard was developed by the NSF Joint Committee on Public Drinking Water Equipment Performance with balanced input from industry, regulatory, and end-user groups using the consensus process described by the American National Standards Institute. The Standard incorporates NSF International's nearly two decades of experience managing the US Environmental Protection Agency's Environmental Technology Verification Drinking Water Systems Center (ETV DWSC).

Suggestions for improvement of this Standard are welcome. This Standard is maintained on a Continuous Maintenance schedule and can be opened for comment at any time. Comments should be sent to: Chair, Joint Committee on Public Drinking Water Equipment Performance at standards@nsf.org, or c/o NSF International, Standards Department, PO Box 130140, Ann Arbor, Michigan 48113-0140, USA.

NSF/ANSI Standard
for Public Drinking Water Equipment Performance –

Public Drinking Water Equipment Performance – Filtration

1 General

1.1 Purpose

It is the purpose of this Standard to establish minimum performance requirements for bag filters, cartridge filters, and microfiltration (MF) or ultrafiltration (UF) membranes used in the treatment and production of public drinking water.

1.2 Scope

This Standard is designed to describe the performance evaluation (PE) test procedure for the product specific challenge testing (PSCT) of full scale UF and MF membrane modules, bag filters, and cartridge filters for the removal of microbial contaminants. This Standard provides procedures to develop challenge testing log removal values ($LRV_{C\text{-}TEST}$), as required in the EPA's Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) published in 40 CFR Part 141, Subpart W.

Evaluation of cleaning, maintenance and operation of the filtration equipment are not covered under the scope of this Standard.

1.3 Alternate materials, designs, and construction

While specific materials, designs, and construction are stipulated in this Standard, it is possible that systems that incorporate alternate materials, designs, and construction are acceptable when it is verified that such systems meet the applicable requirements stated herein.

1.4 Minimum requirements for testing facility and equipment

Testing should be performed at a test facility / laboratory such that the testing equipment at a minimum shall precisely and accurately control flow rate and has a flow meter upstream and/or downstream of the filter unit or membrane module, and shall ensure that the water is well mixed before sampling (e.g., static mixers or appropriate number of pipe lengths with good mixing confirmed).

1.5 Standard review

This Standard shall be reviewed at least once every five years. The review shall be conducted by the NSF Joint Committee on Public Drinking Water Equipment Performance.

1.6 Significant figures

For determining conformance with specifications in this Standard, the Absolute Method in ASTM E29 *Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications* shall be used.