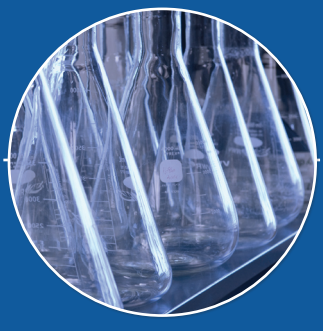
NSF International Standard /
American National Standard

NSF/ANSI 350 - 2017

Onsite Residential and Commercial Water Reuse Treatment Systems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NSF International Standard/
American National Standard
for Drinking Water Additives —

Onsite residential and commercial water reuse treatment systems

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Foreword[2]

This American National Standard, NSF/ANSI 350 *Onsite residential and commercial water reuse treatment systems,* has been developed as part of the ongoing efforts of interested parties to establish minimum material, design and construction, and performance requirements for onsite residential and commercial water treatment systems. This Standard also specifies the minimum literature that manufacturers shall supply to authorized representatives and owners as well as the minimum service-related obligations that a manufacturer shall extend to owners. This Standard is intended to address publich health and environmental issues. Actual performance for any site or system may vary, depending on variations in raw water supply (such as in alkalinity and hardness), graywater constituents, and patterns of use. The end use of the effluent is the responsibility of the owner, design professionals, and regulatory officials.

Management methods and end uses appropriate for the treated effluent discharged from onsite residential and commercial treatment systems meeting Class R (single family residential) or Class C (multi-family and commercial facilities) requiremens of this Standard include indoor restricted urban water use, such as toilet and urinal flushing, and outdoor unrestricted urban water use, such as surface irrigation.

Systems may include:

- Graywater treatment systems having a rated treatment capacity up to 5,678 L/day (1,500 gal/day): this applies to onsite residential and commercial treatment systems that treat graywater, those that treat laundry water from residential laundry facilities, and those that treat bathing water.

- Resdential wastewater treatment systems having a rated treatment capacity up to 5,678 L/day (1,500 gal/day): this applies to onsite residential treatment systems that treat combined wastewater generated by the occupants of residence(s). A reuse system treating 1,514 L/day (400 gal/day) to 5,678 L/day (1,500 gal/day) shall either be demonstrated to have met the Class I requirements of NSF/ANSI 40 *Residential wastewater treatment systems,* or shall meet these requirements during concurrent testing to this Standard. A treatment system treating less than 1,514 L/day (400 gal/day) shall not be required to have met the Class I requirements of NSF/ANSI 40.

- Commercial treatment systems: this applies to onsite commercial treatment systems that treat combined commercial facility wastewater and commercial facility laundry water of any capacity, and those treatment systems that treat graywater from commercial facilities with capacities exceeding 5,678 L/day (1,500 gal/day). These systems shall be performance tested and evaluated at the location of the reuse system installation, using the wastewater generated onsite from the facility serving the treatment system. See 8.3 for performance testing and evaluation. The key elements of a field evaluation of a commercial onsite treatment system are described in Annex A.

This edition of NSF/ANSI 350 includes the following issues:

Issue 9
Revision of section 8 sample frequency.

Issue 11
Add modifications to the language of section 8 to clarify and define the stress loading in each stress condition.

Issue 13
This modifies the language in Standard 350 regarding sampling requirements.

[2] The information contained in this Foreword is not part of this American National Standard (ANS) and has not been processed in accordance with ANSI's requirements for an ANS. As such, this Foreword may contain material that has not been subjected to public review or a consensus process. In addition, it does not contain requirements necessary for conformance to the Standard.

This Standard was developed by the NSF Joint Committee on Wastewater Technology using the consensus process described in the American National Standards Institute.

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 on this Standard should be sent to Chair, Joint Committee on Wastewater Technology at standards@nsf.org, or c/o NSF International, Standards Department, P.O. Box 130140, Ann Arbor, Michigan 48113-0140, USA.

NSF/ANSI Standard
For Wastewater Technology –

Onsite residential and commercial water resuse treatment systems

1 General

1.1 Purpose

The purpose of this Standard is to establish minimum material, design, and construction, and performance requirements for onsite residential and commercial water treatment systems. This Standard also specifies the minimum literature that manufacturers shall supply to authorized representatives and owners as well as the minimum service-related obligations that a manufacturer shall extend to owners.

1.2 Scope

This Standard contains minimum requirements for onsite residential and commercial water treatment systems. Systems may include the following.

- Graywater treatment systems having a rated treatment capacity up to 5,678 L/day (1,500 gal/day). This applies to onsite residential and commercial treatment systems that treat graywater, those that treat laundry water from residential laundry facilities, and those that treat bathing water. See 8.1 for performance testing and evaluation.

- Commercial treatment systems – this applies to onsite commercial treatment systems that treat combined commercial facility wastewater and commercial facility laundry water of any capacity, and those treatment systems that treat graywater from commercial facilities with capacities exceeding 5,678 L/day (1,500 gal/day). These systems shall be performance tested and evaluated at the location of the reuse system installation, using the wastewater generated onsite from the facility serving the treatment system. See 8.3 for performance testing and evaluation. The key elements of a field evaluatin of a commercial treatment system are described in Annex A.

Management methods and end uses appropriate for the treated efflent discharged from onsite residential and commercial treatment systems meeting Class R (single family residential) or Class C (multi-family and commercial facilitiesds) requirements of this Standard include indoor restricted urban water use, such as toilet and urinal flushing, and outdoor unrestricted urban water use, such as surface irrigation. Effluent quality criteria consistent with these uses are described in 8.6, Criteria.

This Standard is intended to address public health and environmental issues. Actual performance for any site or system may vary, depending on variations in raw water supply (such as alkalinity and hardness), wastewater constituents, and patterns of use. The end use of the effluent is the responsibility of the owner, design professionals, and regulatory officials.

System components covered under other NSF or NSF/ANSI standards or criteria shall also comply with the requirements therein. This Standard shall in no way restrict new system designs, provided such designs meet the minimum specifications described herein.

1.3 Alternate materials, design, and construction

While specific materials, designs, and constructions may be stipulated in this Standard, systems that incorporate alternate materials, designs, or constructions may be acceptable when it is verified that such

systems meet the applicable requirements of this Standard.

1.4 Performance classification

For the purpose of this Standard, systems are classified according to the chemical, biological, and physical characteristics of their effluents as determined by the performance testing and evaluations described herein.

Graywater treatment systems within a manufacturer's model series may be classified according to the performance testing and evaluation of the system (8.1) expected to produce the poorest effluent quality within the series based upon design characteristics.

Residential wastewater treatment systems within a manufacturer's model series may be classified according to the performance testing and evaluation of the system (8.2) with the smallest hydraulic capacity within the series. A series is limited to treatment capacities below 1,514 L/day (400 gal/day), and treatment capacities between 1,514 L/day (400 gal/day) and 5,678 L/day (1,500 gal/day).

Graywater and residential wastewater treatment systems having rated treatment capacities less than 378 L/day (100 gal/day) shall be within a manufacturer's model series having rated treated capacities at or above 378 L/day (100 gal/day).

The manufacturer shall submit design drawings and specifications of the entire model series, which shall include critical design parameters for the systems. An engineering review of the design parameters may be completed in lieu of performance testing and evaluation of other systems within the series provided they are determined to be appropriately proportionate to the evaluated system based on sound engineering principles.

Commercial treatment systems that treat combined commercial facility wastewater and commercial facility laundry water of any capacity, and treatment systems that treat graywater from commercial facilities with capacities exceeding 5678 L/day (1500 gal/day) performance tested and evaluated in accordance with 8.3 and Annex A, may be similarly classified within a manufacturer's model series. However, consideration must be given to the conditions of the field evaluation of the system, including the wastewater characteristics, treatment system loading conditions, and other variables affecting performance. These conditions shall become limitations for classifying other systems within a manufacturer's model series.

2 Normative references

The following documents contain provisions that, through reference in this text, constitute provisions of this Standard. At the time of publication, the indicated editions were valid. All standards are subject to revision, and parties are encouraged to investigate the possibility of applying the recent editions of the standards indicated below. The most recent published edition of the document shall be used for undated reference.

ANSI/AWS D1.1/D1.1M:2010. *Structural Welding Code -Steel*[3]

ANSI/AWS D1.3/D1.3M:2008. *Structural Welding Code – Sheet Steel,* 5th Edition, with Errata[3]

American Public Health Association (APHA), American Water Works Association (AWWA) & Water Environment Federation (WEF): *Standard Methods for the Examination of Water and Wastewater* (hereinafter referred to as *Standard Methods*)[4]

[3] American Welding Society, 550 N.W. LeJeune Road, Miami, Florida 33126 <http://www.aws.org>.

[4] Standard Methods for the Examination of Water and Wastewater <www.standardmethods.org>.