



*NSF International Standard /  
American National Standard*

## NSF/ANSI 245 - 2013

Wastewater Treatment Systems -  
Nitrogen Reduction



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NSF International Standard/  
American National Standard  
for Wastewater Technology —

## **Nitrogen reduction**

Standard Developer

**NSF International**

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## Foreword<sup>2</sup>

The purpose of this Standard is to establish minimum materials, design and construction, and performance requirements for residential wastewater treatment systems providing for nitrogen reduction. 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 manufacturers shall extend to owners.

The Joint Committee on Wastewater Technology granted NSF International the authority to proceed with the evaluation and development of a stand-alone Nutrient Reduction Standard. A task group of Joint Committee members was formed to do the evaluation and bring recommendations to the Joint Committee. After evaluating the scope of the Standard, the task group decided to narrow the focus to nitrogen reduction and revisit the issue of reduction of other nutrients at a later time.

This Standard (NSF/ANSI 245-2013) includes the following change:

**Issue 7** – The purpose of this ballot was to update the language in section 8.4.1 for consistency among wastewater standards relating to pH grab samples. The change in section 9 addressed a comment on the ballot 40i20 regarding when adjustments to alkalinity are made, they are required to be reported.

**Annex B Nitrogen reduction measurement (informational)** - The purpose of this annex is to help Regulators and Users of this Standard understand the percent reduction for nitrogen reduction in comparison to a set nitrogen effluent limit.

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

Suggestions for improvements 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 Wastewater Technology at [standards@nsf.org](mailto:standards@nsf.org), or c/o NSF International, Standards Department, P.O. Box 130140, Ann Arbor, Michigan 48113-0140, USA.

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# NSF/ANSI Standard for Wastewater Treatment Systems —

## Nitrogen Reduction

### 1 General

#### 1.1 Purpose

The purpose of this Standard is to establish minimum materials, design and construction, and performance requirements for residential wastewater treatment systems providing for nitrogen reduction. 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 manufacturers shall extend to owners.

#### 1.2 Scope

This Standard contains minimum requirements for residential wastewater treatment systems having rated treatment capacities of 1514 L/d (400 gal/d) to 5678 L/d (1500 gal/d) that are designed to provide reduction of nitrogen in residential wastewater. Management methods for the treated effluent discharged from these systems are not addressed by this Standard. A system, in the same configuration, must either be demonstrated to have met the Class I requirements of NSF/ANSI 40 or must meet the Class I requirements of NSF/ANSI 40 during concurrent testing for nutrient removal.

The water chemistry of a site for installation and use of these systems is critical to achieve expected water quality results. Before these systems are installed at a location, the water used within the residence must be analyzed to verify that there is sufficient alkalinity to achieve the system's performance. Refer to Annex A for further explanation.

Natural systems involving features such as vegetation, wetlands, free access or buried sand filters, and soil systems may be evaluated using this protocol as long as effluent samples are representative of all treated effluent discharged from the system, as sampled from a central point of collection of all treated effluent.

#### 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 herein.

#### 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.

All systems within a manufacturer's model series may be classified according to the performance testing and evaluation of the system with the smallest hydraulic capacity within the series. Performance testing and evaluation of larger systems within the series (having hydraulic treatment capacities within the scope of this Standard) may not be necessary provided that the dimensions, hydraulics, mixing, filtering and biological treatment capabilities, and other applicable design characteristics are proportionately equivalent to the evaluated system.