

NSF/ANSI 55 – 2002
Addendum 2.0 – 2002

Ultraviolet microbiological water treatment systems

NSF International Standard/
American National Standard

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American National Standard
for Drinking Water Treatment Units –
**Ultraviolet microbiological
water treatment systems**

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3 Definitions

3.10 disposable pressure vessel: A pressure vessel that is to be replaced at the end of each rated service cycle and has an estimated service life of one year or less.

3.23 pressure vessel: A component of the system, intended to hold water under pressure higher than atmospheric pressure.

6 Bacteriological, chemical, mechanical, and structural performance

6.2 Structural integrity

6.2.1 ~~General~~

The purpose for testing structural integrity performance is to evaluate the materials, design, and fabrication quality of the complete water treatment system.

~~6.2.2~~ 6.2.1 Acceptance

Each test of structural integrity (cyclic pressure, hydrostatic pressure, and burst pressure) shall be performed on a separate system. If the complete water treatment system is tested, a separate test of the system pressure vessel is not required.

Complete systems, pressure vessels, and components shall be tested for structural integrity in accordance with 6.2.3 at the pressures specified in table 5. When more than one pressure is specified in table 5, testing shall be done at the higher pressure.

Complete systems, pressure vessels, and components shall be water tight when tested for structural integrity under 6.2.3.

Revisions to NSF/ANSI 55 – 2002 are shown in this addendum as **crossouts** for deletions and **highlights** for additions.

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Table 5 – Structural integrity testing requirements

Complete systems	Hydrostatic pressure test¹	Burst pressure test¹	Cyclic pressure test¹
complete systems with pressure vessels having a diameter < 203 mm (8 in)	3 x maximum working pressure or 2,070 kPa (300 psig)	none	100,000 cycles at 0 to 1,040 kPa (0 to 150 psig) or maximum working pressure
complete systems with pressure vessels having a diameter of 203 mm (8 in)	1.5 x maximum maximum working pressure or 1,040 kPa (150 psig)	none	100,000 cycles at 0 to 1,040 kPa (0 to 150 psig) or maximum working pressure
complete systems designed for open discharge ²	1.5 x maximum working pressure or 1,040 kPa (150 psig)	none	10,000 cycles at 0 to 345 kPa (0 to 50 psig)
complete portable systems pressurized by user ³	1.5 x maximum working pressure	none	none
Components	Hydrostatic pressure test	Burst pressure test	Cyclic pressure test
Permanent metallic pressure vessels having a diameter < 203 mm (8 in) ⁴	3 x maximum working pressure or 2,070 kPa (300 psig)	none	100,000 cycles at 0 to 1,040 kPa (0 to 150 psig) or maximum working pressure
Permanent metallic pressure vessels having a diameter of 203 mm (8 in) ⁴	1.5 x maximum working pressure or 1,040 kPa (150 psig)	none	100,000 cycles at 0 to 1,040 kPa (0 to 150 psig) or maximum working pressure
Permanent nonmetallic pressure vessels having a diameter < 203 mm (8 in)	3 x maximum working pressure or 2,070 kPa (300 psig)	4 x maximum working pressure or 2,760 kPa (400 psig)	100,000 cycles at 0 to 1,040 kPa (0 to 150 psig) or maximum working pressure
Permanent nonmetallic pressure vessels having a diameter of 203 mm (8 in)	1.5 x maximum working pressure or 1,040 kPa (150 psig)	4 x maximum working pressure or 2,760 kPa (400 psig)	100,000 cycles at 0 to 1,040 kPa (0 to 150 psig) or maximum working pressure
disposable metallic pressure vessels and components	3 x maximum working pressure or 2,070 kPa (300 psig)	none	10,000 cycles at 0 to 1,040 kPa (0 to 150 psig) or maximum working pressure
disposable nonmetallic pressure vessels and components	3 x maximum working pressure or 2,070 kPa (300 psig)	4 x maximum working pressure or 2,760 kPa (400 psig)	10,000 cycles at 0 to 1,040 kPa (0 to 150 psig) or maximum working pressure
valves and controls ⁵	none	none	100,000 cycles at 0 to 1,040 kPa (0 to 150 psig) or maximum working pressure

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Table 5 – Structural integrity testing requirements

Complete systems	Hydrostatic pressure test ¹	Burst pressure test ¹	Cyclic pressure test ¹
<p>¹ When a choice is given in the table, testing shall be done at the greater pressure.</p> <p>² Components downstream of the system on/off valve that are not subject to pressure under the off mode, and that either contain no media subject to plugging or are not designed to contain media shall be exempt from the hydrostatic pressure test, but shall be watertight in normal use. Components that are downstream of the system on/off valve but upstream of media subject to clogging shall meet the requirements of this section.</p> <p>³ Portable systems designed to utilize only atmospheric pressure or gravity flow shall be exempt from the hydrostatic pressure test, but shall be watertight in normal use.</p> <p>⁴ Permanent Metallic pressure vessels require measurement of permanent circumference and head deflection. The pressure vessel circumference shall not exhibit a permanent increase of more than 0.2% when measured at the midsection and at 30 cm (12 in) intervals. The top and bottom head deflection of the pressure vessel shall not exhibit a permanent deflection exceeding 0.5% of the vessel diameter.</p> <p>⁵ Subject to line pressure and tested as separate components.</p>			

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Standards and Criteria²

The following standards and criteria established and adopted by NSF as minimum voluntary consensus standards are used internationally:

- 2 Food equipment
- 3 Commercial warewashing equipment
- 4 Commercial cooking, rethermalization, and powered hot food holding and transport equipment
- 5 Water heaters, hot water supply boilers, and heat recovery equipment
- 6 Dispensing freezers
- 7 Commercial refrigerators and freezers
- 8 Commercial powered food preparation equipment
- 12 Automatic ice making equipment
- 13 Refuse processors and processing systems
- 14 Plastics piping system components and related materials
- 18 Manual food and beverage dispensing equipment
- 20 Commercial bulk milk dispensing equipment
- 21 Thermoplastic refuse containers
- 24 Plumbing system components for manufactured homes and recreational vehicles
- 25 Vending machines for food and beverages
- 29 Detergent and chemical feeders for commercial spray-type dishwashing machines
- 35 High pressure decorative laminates (HPDL) for surfacing food service equipment
- 36 Dinnerware
- 37 Air curtains for entranceways in food and food service establishments
- 40 Residential wastewater treatment systems
- 41 Non-liquid saturated treatment systems
- 42 Drinking water treatment units – Aesthetic effects
- 44 Residential cation exchange water softeners
- 46 Evaluation of components and devices used in wastewater treatment systems
- 49 Class II (laminar flow) biosafety cabinetry
- 50 Circulation system components and related materials for swimming pools, spas/hot tubs
- 51 Food equipment materials
- 52 Supplemental flooring
- 53 Drinking water treatment units – Health effects
- 55 Ultraviolet microbiological water treatment systems
- 58 Reverse osmosis drinking water treatment systems
- 59 Mobile food carts
- 60 Drinking water treatment chemicals – Health effects
- 61 Drinking water system components – Health effects
- 62 Drinking water distillation systems
- 75 Non-potentially hazardous foods
- 116 Non-food compounds used in food processing facilities – Food grade lubricants (draft standard for trial use)
- 170 Glossary of food equipment terminology
- 173 Dietary supplements
- 184 Residential dishwashers
- 14159 Safety of machinery – Hygiene requirements for the design of machinery
- 14159-1 Hygiene requirements for the design of meat and poultry processing equipment
- C-2 Special equipment and/or devices

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