



**WaterSense® Specification for Flushometer-Valve  
Water Closets**

**Version 1.0**

**December 17, 2015**

## WaterSense® Specification for Flushometer-Valve Water Closets

### 1.0 Scope and Objective

This specification establishes the criteria for high-efficiency flushometer-valve water closet fixtures and high-efficiency flushometer valves under the U.S. Environmental Protection Agency's (EPA's) WaterSense program. Therefore, this specification is applicable to<sup>1</sup>:

- Siphonic or blowout water closet fixtures (i.e., bowls) that receive liquid and solid waste and use water from a flushometer valve or other non tank-type technology, as defined in this section, to convey the waste through a trap seal into a gravity drainage system.
- Single-flush flushometer valves that deliver water to water closet fixtures.
- Dual-flush flushometer valves that deliver water to water closet fixtures.
- Any other non-tank-type technology that serves the function of a flushometer valve, falls within the scope of *ASSE 1037/ASME A112.1037/CSA B125.37*, and that meets these performance specifications.

The specification is designed to ensure both sustainable, efficient water use and a high level of user satisfaction with flushing performance.

### 2.0 Water Efficiency Criteria

- 2.1 Water consumption shall be tested in accordance with the following ANSI standards as applicable: *ASME A112.19.2/CSA B45.1 Ceramic Plumbing Fixtures*, *ASME A112.19.3/CSA B45.4 Stainless Steel Plumbing Fixtures*, or *CSA B45.5/IAPMO Z124 Plastic Plumbing Fixtures*.<sup>2</sup>
- 2.1.1 The manufacturer shall specify a rated flush volume for the flushometer valve or water closet fixture, which shall not exceed 1.28 gallons per flush (gpf) (4.8 liters per flush [Lpf]) and shall not be less than 1.0 gpf (3.8 Lpf).
- 2.2 The water consumption, determined through testing and when evaluated in accordance with the sampling plan contained in the Code of Federal Regulations (CFR) at 10 CFR 429.30, shall not exceed the rated flush volume specified in Section 2.1.1.
- 2.3 For flushometer valves with dual-flush capabilities, the manufacturer shall specify the rated flush volume of both the full-flush and reduced-flush modes and the water efficiency requirements specified in 2.1.1 shall apply to both the full-flush and reduced-flush modes.

<sup>1</sup> For information on certification and labeling of water closet fixtures, flushometer valves, or complete systems, see Appendix A.

<sup>2</sup> References to these and other standards apply to the most current version of those standards.

### 3.0 General Water Closet Fixture Requirements

- 3.1 Except as otherwise indicated in this specification, ceramic water closet fixtures must conform to applicable requirements in *ASME A112.19.2/CSA B45.1* when tested with a flushometer valve that has the same rated flush volume and that meets the requirements of Sections 2.0, 4.0, and 5.0.
- 3.2 Except as otherwise indicated in this specification, stainless steel water closet fixtures must conform to applicable requirements in *ASME A112.19.3/CSA B45.4* when tested with a flushometer valve that has the same rated flush volume and that meets the requirements of Sections 2.0, 4.0, and 5.0.
- 3.3 Except as otherwise indicated in this specification, plastic water closet fixtures must conform to applicable requirements in *CSA B45.5/IAPMO Z124* when tested with a flushometer valve that has the same rated flush volume and that meets the requirements of Sections 2.0, 4.0, and 5.0.
- 3.4 For water closet fixtures marked with a dual-consumption or consumption range marking, as indicated in Section 6.1, the water closet fixture must also conform to applicable requirements in *ASME A112.19.2/CSA B45.1* and the flush performance criteria identified in Section 5.0 of this specification when tested at the lowest flush volume marked on the water closet fixture. The water closet fixture shall be tested with a flushometer valve with a rated flush volume consistent with the lowest flush volume marked on the water closet and that meets the requirements of Sections 2.0, 4.0, and 5.0.

### 4.0 General Flushometer Valve Requirements

- 4.1 Except as otherwise indicated in this specification, flushometer valves must conform to *ASSE 1037/ASME A112.1037/CSA B125.37*.
- 4.2 The flushometer valve must not exceed the rated flush volume of water specified in accordance with Section 2.1.1 and 2.3 even if the primary actuator is maintained in the flush position (i.e., device's primary actuator must be a non-hold-open design).
- 4.3 The flushometer valve must not contain a flush volume adjustment that allows the flush volume to vary more than 10 percent from the flushometer valve's rated flush volume specified in accordance with Section 2.1.1 and 2.3 (e.g.,  $\pm 0.13$  gpf [0.48 Lpf] for a 1.28-gpf flushometer valve).<sup>3</sup>

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<sup>3</sup> A control stop that supplies water to a flushometer valve is not considered a flush volume adjustment.

## 5.0 Flush Performance Criteria

- 5.1 Flush performance testing for flushometer valves and water closet fixtures shall be conducted in accordance with the waste extraction test protocol provided in Section 7.10<sup>4</sup> of *ASME A112.19.2/CSA B45.1*.
- 5.2 For flushometer valves with dual-flush capabilities, the following flush performance criteria shall apply:
  - 5.2.1 For the full-flush mode, the flush performance testing shall be conducted in accordance with Section 5.1.
  - 5.2.2 For the reduced-flush mode, flush performance testing shall be conducted in accordance with Section 3.2.4<sup>5</sup> of *ASME A112.19.14*.

## 6.0 Product Marking

- 6.1 Water closet fixtures and associated packaging shall be marked with the rated flush volume specified in Section 2.1.1 and in accordance with requirements in *ASME A112.19.2/CSA B45.1* with the exceptions identified in Section 6.1.1 and 6.1.2 below.
  - 6.1.1 Water closet fixtures intended to be used with flushometer valves of varying consumption levels (e.g., 1.6 and 1.28 gpf) shall be marked with a dual-consumption or consumption range marking as indicated in *ASME A112.19.2/CSA B45.1*. The rated flush volume specified in Section 2.1.1 shall be included within this dual-consumption or consumption range marking. Water closet fixtures shall not be marked with the words “or less” to indicate compatibility with flushometer valves of varying consumption levels.
  - 6.1.2 The lowest flush volume marked on the water closet fixture shall not be less than the minimum allowable flush volume identified in Section 2.1.1 (i.e., 1.0 gpf [3.8 Lpf]).
- 6.2 Flushometer valves and associated packaging shall be marked with the rated flush volume specified in Section 2.1.1 and in accordance with requirements in *ASSE 1037/ASME A112.1037/CSA B125.37*. For flushometer valves with dual-flush capabilities, the flushometer valve and associated packaging shall be marked with the rated flush volume specified in Section 2.3 for both the full-flush and reduced-flush modes. Additional marking requirements for flushometer valves are provided in Section 6.2.1 below.
  - 6.2.1 Product documentation shall be clearly marked with specific maintenance instructions and shall identify replacement parts (e.g., pistons,

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<sup>4</sup> Or relevant section(s) of subsequently updated versions of *ASME A112.19.2/CSA B45.1*.

<sup>5</sup> Or relevant section(s) of subsequently updated versions of *ASME A112.19.14*.

diaphragms, repair kits) that should be used to ensure that the device maintains its rated flush volume. The flushometer valve shall not be packaged, marked, or provided with instructions directing the user to an alternative flush volume setting that would override the rated flush volume specified in Section 2.1.1.

## **7.0 Effective Date**

This specification is effective on December 17, 2015.

## **8.0 Future Specification Revisions**

EPA reserves the right to revise this specification should technological and/or market changes affect its usefulness to consumers, industry, or the environment. Revisions to the specification would be made following discussions with industry partners and other interested stakeholders.

## **9.0 Definitions**

Definitions within *ASME A112.19.2/CSA B45.1*, *ASME A112.19.3/CSA B45.4*, *ASME A112.19.14*, *CSA B45.5/IAPMO Z124*, and *ASSE 1037/ASME A112.1037/CSA B125.37* are included by reference.

ANSI: American National Standards Institute

ASME: American Society of Mechanical Engineers

ASSE: American Society of Sanitary Engineering

CSA: Canadian Standards Association

IAPMO: International Association of Plumbing and Mechanical Officials

**Complete system:** Any combination flushometer valve and water closet fixture that have both been certified for the same rated flush volume and when used together, meet the requirements of this specification for water efficiency and performance.

**Rated flush volume:** The maximum flush volume, as specified by the manufacturer, verified through testing and in compliance with this specification.

## Appendix A: Informative Annex for WaterSense Labeling

The following requirements must be met for products to be marked with the WaterSense label.

### 1.0 WaterSense Partnership

The product's manufacturer<sup>6</sup> must have a signed partnership agreement in place with EPA. In accordance with this specification, the product can be considered as either a flushometer valve, water closet fixture, or the complete system.

### 2.0 Conformity Assessment

Conformance to this specification must be certified by a licensed certifying body accredited for this specification in accordance with the *WaterSense Product Certification System*.

### 3.0 Independent Labeling of Fixtures and Flushometer Valves

Certified water closet fixtures and flushometer valves can be labeled together as a complete system or separately as a fixture or flushometer valve. If labeled separately, the manufacturer of each part shall clearly indicate on product documentation that the part should be used with a WaterSense labeled counterpart that has a compatible flush volume in order to ensure that the complete system meets the requirements of this specification for water efficiency and performance.

### 4.0 WaterSense Label Use

Per the *WaterSense Program Mark Guidelines*, manufacturers must include the WaterSense label on product packaging for all products certified to meet this specification. Manufacturers should also display the WaterSense label on product documentation and in association with any labeled products listed on the organization's website.

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<sup>6</sup> Manufacturer, as defined in the *WaterSense Program Guidelines*, means: "Any organization that produces a product for market that might be eligible to meet WaterSense criteria for efficiency and performance. Manufacturers may also produce 'private label' products that are sold under the brand name of a separate organization, which is treated as a separate partner/application from the original product manufacturer." In the case of private labeling, the private labeling organization that ultimately brands the product for sale must have a signed WaterSense partnership agreement in place with EPA.