

WaterSense® Specification for Showerheads

Version 1.1

July 26, 2018

WaterSense Specification for Showerheads

1.0 Scope and Objective

This specification establishes the criteria for showerheads labeled under the U.S. Environmental Protection Agency's (EPA's) WaterSense program. It is applicable to showerhead fixture fittings, inclusive of showerheads, rain showers, and hand-held showers, as defined in the ASME A112.18.1/CSA B125.1 *Plumbing Supply Fittings* standard.¹

When used in this document the term "showerhead" shall also include rain showers and hand-held showers.

This specification does not cover body sprays, as defined in ASME A112.18.1/CSA B125.1.

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

2.0 General Requirements

- 2.1 Except as otherwise indicated in this specification, the showerhead shall conform to applicable requirements in ASME A112.18.1/CSA B125.1, including requirements for high-efficiency showerheads, rain showers, and hand-held showers.

3.0 Water-Efficiency Criteria

- 3.1 The maximum and minimum flow rates of the showerhead shall be tested in accordance with the high-efficiency showerheads and hand-held showers procedures in ASME A112.18.1/CSA B125.1 and shall meet the following criteria:
 - 3.1.1 The manufacturer shall specify a maximum flow rate value (rated flow) of the showerhead. This specified value must be equal to or less than 2.0 gallons per minute (gpm) (7.6 liters per minute [L/min]).
 - 3.1.2 The maximum flow rate shall be the highest value obtained through testing at flowing pressures of 20, 45, and 80 ± 1 pounds per square inch (psi) (140, 310, and 550 ± 7 kilopascal [kPa]), when evaluated in accordance with 10 CFR 429.29. This maximum flow rate shall not exceed the maximum flow rate value specified in Section 3.1.1.
 - 3.1.3 The minimum flow rate, when evaluated in accordance with 10 CFR 429.29 with the modifications included in Section 3.1.3.3 of this specification, shall not be less than:
 - 3.1.3.1 60 percent of the maximum flow rate value specified in Section 3.1.1 when tested at a flowing pressure of 20 ± 1 psi (140 ± 7 kPa).

¹ References to this and other standards apply to the most current version of those standards.

- 3.1.3.2 75 percent of the maximum flow rate value specified in Section 3.1.1 when tested at a flowing pressure of 45 ± 1 psi (310 ± 7 kPa).
- 3.1.3.3 For each basic model of showerhead, a sample of sufficient size shall be randomly selected and tested to ensure that the minimum flow rate for a basic model, as represented by the lower of the following, is greater than or equal to the minimum flow rate values specified in Sections 3.1.3.1 and 3.1.3.2 respectively:

- i) The mean of the sample, where:

$$\bar{x} = \frac{1}{n} \sum_{i=1}^n x_i$$

And, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the i^{th} sample;

Or,

- ii) The lower 95 percent confidence limit (LCL) of the true mean multiplied by 1.05, where:

$$LCL = \bar{x} - t_{0.95} \left(\frac{s}{\sqrt{n}} \right)$$

And, $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.95}$ is the t statistic for a 95 percent one-tailed confidence interval with n-1 degrees of freedom.

4.0 Spray Force Criteria

- 4.1 The spray force of the showerhead shall be tested in accordance with the spray force procedures for high-efficiency showerheads and hand-held showers included in ASME A112.18.1/CSA B125.1, and shall meet the following criteria:
- 4.1.1. The minimum spray force for high-efficiency showerheads and hand-held showers shall not be less than 2.0 ounces (0.56 newtons [N]) at a flowing pressure of 20 ± 1 psi (140 ± 7 kPa) at the inlet.
- 4.1.2. The minimum spray force for high-efficiency rain showers shall not be less than 1.4 ounces (0.40 N) at a flowing pressure of 20 ± 1 psi (140 ± 7 kPa) at the inlet.

5.0 Spray Coverage Criteria

- 5.1 The spray coverage of the showerhead shall be tested in accordance with the spray coverage procedures for high-efficiency showerheads and hand-held showers included in ASME A112.18.1/CSA B125.1, and shall meet the following criteria:
 - 5.1.1 The total combined maximum volume of water collected in the 2- and 4-inch (50-, 101-millimeter [mm]) annular rings shall not exceed 75 percent of the total volume of water collected, and;
 - 5.1.2 The total combined minimum volume of water collected in the 2-, 4-, and 6-inch (50-, 101-, 152-mm) annular rings shall not be less than 25 percent of the total volume of water collected.

6.0 Marking

- 6.1 Showerheads and associated packaging shall conform to the applicable marking and packaging requirements in ASME A112.18.1/CSA B125.1. The maximum flow rate shall be specified by the manufacturer, verified through testing, and in compliance with Section 3.1.1 of this specification.
- 6.2 Flow rate marking shall be in gpm and L/min in two or three digit resolutions (e.g., 2.0 gpm [7.6 L/min]).

7.0 Effective Date

This specification is in effect as of July 26, 2018.

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 A112.18.1/CSA B125.1 are included by reference.

ASME is the American Society of Mechanical Engineers

CFR is the Code of Federal Regulations.

CSA is the Canadian Standards Association.

Appendix A: Informative Annex for WaterSense Labeling

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

1.0 Scope Clarifications

1.1 Combination Showerheads

In cases where more than one showerhead or hand-held shower is provided in combination with others in a single device intended to be connected to a single shower outlet, the product and/or its packaging may be marked with the WaterSense label only if each showerhead (or hand-held shower) meets all of the requirements of this specification and the entire device meets the maximum flow rate requirement of this specification in all possible operating modes.

1.2 Shower Panels

In cases where one or more showerheads are provided in combination with a body spray, as is the case in shower panels or shower towers, the product and its packaging may be marked with the WaterSense label only if the entire shower panel/tower (i.e., showerhead and body spray combination) meets the maximum flow rate requirement, and at least one operating mode meets all of the requirements of this specification. If the shower panel/tower only operates in a single mode, then the entire shower panel/tower must meet the requirements of this specification.

2.0 WaterSense Partnership

The manufacturer² of the product must have a signed partnership agreement in place with EPA.

3.0 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*.

4.0 WaterSense Label Use

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

² 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.

- 4.2 Per the *WaterSense Program Mark Guidelines*, if product packaging contains both a WaterSense labeled showerhead and non-labeled products, the packaging must bear the WaterSense label and clearly indicate which items within the package have earned the WaterSense label.