Comments on the September 2009 Draft Specification for Showerheads

December 9, 2009

Commenter: Charles Gross
Affiliation: IAPMO R&T
Comment Date: September 27, 2009

IAPMO R&T respectfully submits the following comments regarding the WaterSense showerhead specs draft:

1. Sec. 3.1.1, the unit of flow rate Lpm should be revised to L/min.

2. Sec. 6.1 & 6.2, the unit of flow rate Lpm should be revised to L/min.

Please advise if this submittal should be sent to someone else's attention, or requires a different procedure.

Thank you again for your help.

Best Regards,

Charles Gross, Director of Product Certification
International Association of Plumbing & Mechanical Officials (IAPMO R&T)
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Commenter: David Broustis
Affiliation: Seattle Parks and Recreation
Comment Date: October 5, 2009

It wasn't clear if this was covered in the draft and test protocol: Please make sure WaterSense showerheads do not result in an energy penalty. Some low-volume showerheads on the market send a fine mist pattern that requires users to increase the water temperature to compensate for the heat loss of the water between the showerhead and someone's body.

- David Broustis
Seattle Parks and Recreation

Commenter: Chris Dundon
Affiliation: Contra Costa Water District
Comment Date: October 19, 2009

Template for Public Comment Submission on WaterSense Documents

Commenter Name: Chris Dundon

Commenter Affiliation: Contra Costa Water District

Date of Comment Submission: 10/19/2009

Topic: Draft Showerhead Specifications

Comment: The Testing and Criteria seem very well thought out. Contra Costa Water District has provided showerheads to customers for many years and we have received positive and negative feedback on the quality of the showerheads. Showerheads are a very "personal" device and as such, there will be strong opinions by users. I suggest that the EPA schedule and budget to conduct a customer satisfaction survey at some point in the future to evaluate customer's acceptance of the WaterSense labeled showerheads. I think your testing is good and hopefully will result in devices that are equal to or better than the standard. However, as you know it is vital that consumers do not have to give up quality for efficiency. Thanks. Chris Dundon, Water Conservation Supervisor, CCWD.

Rationale:

Suggested Change (or Language):

Commenter: Harold Haynes
Affiliation: Eco Luxury Showers
Comment Date: October 20, 2009

Are flow rates of 1.3 gpm and 1.5gpm that meet all other acceptable criteria, going to be graded accordingly?

Regards,
Harold Haynes
--
Eco Luxury Showers
The worlds best "eco friendly" Luxury Shower
www.ecoluxuryshowers.com

Commenter: Marie Cefalo
Affiliation: Public Works and Utilities Department, Town of Cary, NC
Comment Date: October 26, 2009

It is my request that this issue [showerheads and potential for thermal shock] continue to be evaluated and that the WaterSense label not be assigned to showerheads until a definitive research confirms or denies the threat of scalding when <2.5 gpm showerheads are installed. Thank you.

Marie Cefalo
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Commenter: Judi Ranton
Affiliation: Portland Water Bureau
Comment Date: November 4, 2009

Here's a few comments from one of my staff - a mechanical engineer - who reviewed the slide show from the webinar. Can you address both issues for us, please? Thank you.

From: Barrows, Rich
Sent: Wednesday, November 04, 2009 9:07 AM
To: Ranton, Judi
Subject: RE: Reminder: WaterSense Draft Specification for Showerheads Public Meeting

Here is a rather stuffy engineering comment:
- Strictly speaking, if the pressure is not specified as psig (pounds per square inch gage), then a manufacturer could meet the 2.0 gpm requirement at 80 psi with an instrument reading in absolute pressure which is 14.7 psi higher than an instrument reading in psig or 65.3 psig. Or more simply, 80 psia (pounds per square inch absolute) = 65.3 psig. I can maybe understand dropping the 'g' for the general public but an EPA specification should be more accurate. Maybe all the ANSI and ASME standards have made the same generalization but I'm not sure why, if they have.

- FYI. Flow from a fixed orifice nozzle will vary as the square root of the pressure drop. If a fixed orifice device flows 2.0 gpm at 80 psig, it will flow 50% of the flow or 1.0 gpm at 20 psig. With the spec requiring 60% of max flow at 20 psig, ensures that the showerhead must have some pressure compensation to increase the flow at lower pressures.

-Rich

Commenter: John Bertrand
Affiliation: Moen Incorporated
Comment Date: November 6, 2009

Template for Public Comment Submission on WaterSense Documents

Commenter Name: John Bertrand

Commenter Affiliation: Moen Incorporated

Date of Comment Submission: Nov. 6, 2009

Topic: Section A2.2(e**)**

Comment: Move performance requirement from Set-Up section to Section A2.5, Test Procedure. Incorporate into A2.5(f).

Rationale: Requirement is more logically located at the end of the test procedure.

Suggested Change (or Language):

~~(e) The showerhead spray force exceeds the minimum force specified in Section 4.1 when the fixture rotates within 0.1° of zero or past it.~~

Topic: Section A2.5(f)

Comment: Incorporate wording from A2.2(e).

Rationale: Performance requirement is better located at the end of the test. Used the word "meets" instead of "exceeds" since meets is acceptable also.

Suggested Change (or Language):

(f) ~~Evaluate and verify that the spray force meets the minimum value as specified in Section 4.1.~~ <u>The showerhead spray force meets the minimum force specified in Section 4.1 when the fixture rotates within 0.1° of zero or past it.</u>

Topic: Appendix C, Section 2.0

Comment: Delete this section until this aspect is better understood.

Rationale:

1) A minimum flow rate is not specified by the manufacturer, only a maximum flow rate. Therefore, a specified minimum flow rate is never verified to be able to comply with this requirement.
2) This marking requirement was deleted by vote of the showerhead task force members at the July JHTG for Showerheads meeting in Seattle.
3) This marking is intended to allow a consumer to match a showerhead to a similarly marked shower valve and therefore provide assurance that these will operate together safely. I believe this is misleading to the consumer since it is only one data point and does not account for the infinite combinations of supply pressures and distribution system variations. How does the showerhead/valve combination perform at 32 psi? or 63 psi? This marking is meaningless in retrofit situations unless someone also replaces the valve.
4) Most people will probably disregard this marking because:
   a) they won't understand it, or
   b) won't know what to do with the information, or
   c) can't do anything with the information (this is the case for the retrofit market since most people don't know what their shower valve is or if it would be compatible)

Suggested Change (or Language):

~~For showerheads that bear the WaterSense label, the product packaging shall be marked with the minimum flow rate value in gpm and Lpm at 45 psi, as specified by the manufacturer, verified through testing and in compliance with this specification.~~

Commenter: Sally Remedios
Affiliation: Delta Faucet
Comment Date: November 9, 2009

Attached are our comments on the EPA Specification for High Efficiency Shower Heads.

Unfortunately we are still having discussions on the coverage criteria that are creating an impasse on a proposal.

We have tried two alternate protocols, but both have their issues, such as allowing shower heads with high dissatisfaction ratings, OR disallowing shower heads with good ratings.

The attached document includes both criteria that have been considered.

Because of this we would like to have further discussions on the protocol and have the opportunity to review some additional test data and hopefully another customer satisfaction study.

We understand that EPA has a schedule for this program launch, but were wondering if this is at all flexible.

We have a conference call tomorrow with the PIER group doing their study and hope we can look at their data and find out their estimated completion date for their consumer research. Can we discuss this sometime this week?

Regards,

Sally.

WaterSense for Shower Heads
Comments – Nov. 2009

1.0 Add :When used in this document the term “shower head” shall also include hand-shower.
To save having to write out both devices throughout the document.

3.1.1 Add “with water flowing at 38±6°C (100±10°F) and maintained for 1 minute.
Note: this could be covered by ASME A112.18.1/CSA B125.1 reference to testing according to that standard, but it may be better reinforced here.

4.1.1 Add “of the shower arm” after the word “inlet”.
To better define where the pressure is measured.

5.0 Spray Coverage Criteria
Suggest revise the criteria as follows:

5.1.1 The volume of water collected in the 50 mm (2 in) ring shall lie within the range 5% to 35% of the total volume of water collected;

5.1.2 The volume of water collected in the 100 mm (4 in) ring shall lie within the range 10% to 70% of the total volume of water collected;
5.1.3 The volume of water collected in the 150 mm (6 in) ring shall lie within the range 10% to 70% of the total volume of water collected;
OR
5.1.1 The volume of water collected in the 100 mm (4 in) ring shall lie within the range 10% to 70% of the total volume of water collected;
5.1.2 The volume of water collected in the 150 mm (6 in) ring shall lie within the range 10% to 70% of the total volume of water collected;
5.1.3 The volume of water collected in the 200 mm (8 in) ring shall lie within the range 10% to 35% of the total volume of water collected;

6.0 Change title to:
~~Flow rate~~ Marking.
Include " the manufacturers identification" as well as the flow rate in 6.1 and 6.2.
Add
6.3 The product packaging shall be marked with the flow rate value at 45 psi as verified by testing.

Appendix A
Revise to read:
A2.2 Force Balance Method

(a) The force balance fixture must have a means for measuring the rotation of the target.
(b) The force balance fixture must be calibrated.

(e) The shower head (hand shower) spray force exceeds the minimum force specified in Section 4.1 when the target rotates to zero or past it.

A2.3

(a) Establish the zero angle position when the target is at ~~a~~ 45±1° to the horizontal and the target is at the point of balance
(b) Change "in perpendicular contact" to "perpendicular to"
(c) Delete
(d) Change 4.1 to 4.1.1.

Add "Target shall move more than "x" to verify the force balance fixture is working properly."

(g) and (h) Suggest delete.

A2.4
Delete (a) (b) and (c) Replace with "Install device as in Figure 1"

WaterSense for Shower Heads
Comments – Oct.2009 cont'd

A2.5 (c) ----" the shower head may be pivoted, while maintaining the 18 in spacing".

(e) Add
(f) Evaluate and verify that the target rotates to zero or past it"

(g) Record if pass or fail.

Figure 2
Add "Angle meter" to the 0.0±0.1° block.

Appendix B Spray Coverage Procedure
B2.1 Set-up
(c) Delete

B2.2 Delete (a) (b) (c) and (d)
Replace with "Install the device in accordance with Figure X"

B2.3 (c) --- " pressure is stabilized within ±7kPa (1psi) within 2 s"

Delete (e) and (f)

Revise (g) to become new (e) which reads" Collect, measure and record the volume of water in each annular ring

f) Determine the total volume collected in all the rings

(h) Calculate and record the percentage of the total recorded volume collected in each ring.

Delete (i)

New (i) Evaluate and verify that the spray coverage lies within the ranges specified in Section 5.1

Figure 4
Delete excess rings greater than 8 in size.

Suggested submission to EPA
Sally Remedios

Commenter: Mary Ann Dickinson
Affiliation: Alliance for Water Efficiency
Comment Date: November 9, 2009

PUBLIC COMMENT SUBMISSION ON EPA WATERSENSE DRAFT SHOWERHEAD DOCUMENTS

Commenter Name: Mary Ann Dickinson, President and CEO

Commenter Affiliation: Alliance for Water Efficiency

Date of Comment Submission: November 9, 2009

Topic: Support for the Specification

General Comment: The Alliance for Water Efficiency supports the adoption of the WaterSense specification for showerheads. We applaud EPA's efforts to address many of the more challenging issues previously identified, such as consumer satisfaction, user safety, and test apparatus design.

Topic: 1.0 Scope and Objective

Comment: Co-labeling of showerheads by WaterSense and Energy Star should be encouraged.

Rationale: The Alliance is pleased to learn that the WaterSense and Energy Star programs are jointly undertaking development of a specification for pre-rinse spray valves with the intention of co-labeling. We believe that the WaterSense showerhead specification is also an excellent candidate for co-labeling with Energy Star. Each program has its own network of practitioners and stakeholders, and where a common specification can save both energy and water while maintaining customer satisfaction, the agency's investment in specification development should be made available to both programs. Furthermore, the WaterSense Product Certification System will support the achievement of both water and energy savings for these products.

Topic: 2.3 Instructions for Overriding the Maximum Flow Rate

Comment: We support this provision and recommend that it be strengthened.

Rationale: Some manufacturers have developed highly visible instructions, often presented on the exterior of product packaging and intended to be read in-store, for removing flow restrictors for "cleaning" purposes or to prevent clogging. Such instructions may allow sale of products to defeat

the intent of reducing flow rates within a specified allowable performance standard. Because of the capacity of marketers to reword and revise the content and visibility of such messages, WaterSense must clearly state that it retains the right to revoke the use of the label for any product carrying instructions that market the opportunity for operation of the product above the maximum rated flow and not within the performance requirements.

Suggested Change (or Language): At the end of the paragraph, add: WaterSense reserves the right to review the content and placement of all instructions and to revoke the use of the label for any showerhead carrying instructions that appear to promote the opportunity or possibility of operating the product above the maximum rated flow.

Topic: Design Specification for Future Consideration

Comment: In the next iteration of the WaterSense specification for showerheads, consideration should be given to the costs and benefits of including a trickle valve in a revised specification.

Rationale: Some showerheads now come equipped with a valve, commonly known as a "soap up" valve or a "trickle valve," that allows the user to reduce the flow to a trickle while soaping up and to restore the flow to the preset level for rinsing off, all without requiring adjustment of the shower's hot and cold water supply valve(s). The valve enables the consumer, at his/her own initiative, to take personal action to further reduce water consumption. The use of soap-up valves should be facilitated by WaterSense, since their operation for even 1 or 2 minutes offers significant water and energy savings. (Applying the Supporting Statement's Appendix A savings assumptions for full product saturation, use of such valves by 10% of consumers for 90 seconds would yield water savings of more than 50 million gallons per day.) Such valves allow a trickle of water (≈ 0.25 gpm) to flow, which assists in maintaining temperature balance and reminds the consumer that the shower still needs to be turned off at the control valve. Trickle valves are a proven water saver. However, they can create an inter-connection between the hot and cold water distribution system which can waste energy (hot water). Pressure differences when the showerhead is on trickle mode can result in some hot water flowing into the cold water distribution system. More evaluation of the significance of this hot water loss is needed. As experience is gained with the initial specification and the acceptance of WaterSense labeled showerheads in the marketplace, WaterSense should evaluate the costs and benefits of inclusion of this feature in a revised specification.

Suggested Change (or Language):

Topic: Appendix B – Spray Coverage Procedure

Comment: In B2.3(g), additional clarity is needed to explain how water is to be collected for measurement from each annular ring.

Rationale: It is unclear how the measurement of water falling within each ring is to be accomplished. Is there to be a tap in each ring? Will each ring drain thoroughly enough during a reasonable period of time to provide sufficiently accurate and reproducible values for each ring? Alternatively, are the rings to contain interior markings to allow for measurement of water without the need for the apparatus to be drained?

Suggested Change (or Language):

Topic: Appendix C — Informative Annex for WaterSense Labeling

Comment: The term "informative" connotes that the content of Appendix C is optional. We recommend that the provisions of this appendix be moved to the main body of the specification, or at the very minimum, that the word "informative" be dropped.

Rationale: These labeling provisions, including the marking of the minimum flow rate at 45 psi, are important and should carry the same force as the other provisions listed in the main body of the specification.

Suggested Change (or Language):

Topic: Supporting Statement – Appendix A: Calculations and Key Assumptions

Comment: The cost-effectiveness discussion on pages 5 and 6 and the calculations presented in Appendix A depict an early retirement scenario. A cost-effectiveness evaluation for a new construction and normal replacement scenario would also be useful for conservation program managers, builders, and consumers, and should be added to the Supporting Statement when finalized.

Rationale: Assumptions for new construction and normal replacement would focus on the costs and benefits of a WaterSense compliant product compared to a minimally compliant product with comparable finish and features. Thus, the estimated incremental cost of a WaterSense showerhead would be compared with the cost of an otherwise comparable EPAct-compliant showerhead, since in this scenario the purchaser is in the market for a new showerhead anyway. Likewise, the water and energy savings of the WaterSense product would be compared with the expected water and energy performance of a new EPAct-compliant showerhead. In this case, the incremental cost will be significantly lower than the total product cost ($15) used in Appendix A. The potential savings will also be lower, since the figure cited in Appendix A for the flow rate of the average showerhead was based on a large sample of showerheads in operation in 1999, which included a mixture of EPAct-compliant and non-compliant showerheads. Because the number of units sold for new construction and normal replacement is typically larger than the number of units sold for early

retirement, the cost-effectiveness calculations for showerheads, and indeed for all WaterSense products, should include estimates for both deployment scenarios.

Suggested Change (or Language):

Commenter: Robert Mowris
Affiliation: Robert Mowris & Associates
Comment Date: November 10, 2009

Here is the laboratory test data for coverage for the 22 ERG samples (see e-mail below to Sally). Here is the proposed coverage test requirement: water collected in 4 inch ring shall be 10 to 70% of total flow, water collected in 6 inch ring shall be 10 to 70% of total flow, and water collected in 8 inch ring shall be 10 to 35% of total flow.

Respectfully,
Robert Mowris, P.E.
Robert Mowris & Associates
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From: Robert Mowris & Associates [mailto:robert.mowris@rma-energy.com]
Sent: Tuesday, November 03, 2009 2:39 PM
To: 'Remedios, Sally'
Cc: 'Trendelman, Carl'; 'Brian M. Woody'
Subject: Coverage Criteria

Sally,

Thanks to you and Carl Trendelman for calling today. Brian Woody and I spent time working on the coverage criteria with Carl. We developed revised criteria that correlates better to satisfaction scores and "no buy" as follows. Proposed requirement: water collected in 4 inch ring shall be 10 to 70% of total flow, water collected in 6 inch ring shall be 10 to 70% of total flow, and water collected in 8 inch ring shall be 10 to 35% of total flow.

The 4," 6," and 8" criteria screens out 9 of 23 units, with 8 failures as judged by satisfaction ratings. The remaining unit has a rated flow of 1.5 gpm at 80 psig but actually has a measured flow of 2.2 gpm at 80 psig (so this is also a failure). The 4," 6," and 8" criteria does not screen 6 "no buy" failures, but does capture 8 "no buys." The 2," 4," and 6" criteria does not correlate to the satisfaction scores or "no buy" scores. We agreed to do a telephone conference call again next Tuesday at 12PM PST with Carl to further refine our analysis and share data in order to better define the showerhead specifications. Thanks and best wishes.

Model	Coverage Satisfaction Score	No Buy %	2", 4", 6" Criteria	4", 6", 8" Criteria
A	2.17	67%	No	Yes
B	2.43	100%	Yes	No
C1	2.67	83%	Yes	Yes
C2	2.67	83%	No	Yes
D	1.25	100%	No	Yes
E	1.50	25%	Yes	No
F	2.14	71%	No	Yes
G	2.33	83%	No	Yes
H	2.00	63%	No	No
I	2.50	75%	Yes	Yes
J	2.33	83%	No	Yes
K	1.20	40%	Yes	No
L	1.57	14%	Yes	No
M	1.14	14%	Yes	No
N	2.00	60%	Yes	No
O	1.63	63%	Yes	No
P	1.83	83%	No	Yes
Q	1.00	43%	No	Yes
R	1.44	11%	No	No
S	1.00	0%	No	No
T	2.43	100%	No	No
U	2.14	57%	Yes	No
V	1.40	20%	No	No

Respectfully,

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Commenter: Paul Cutler
Affiliation: AM Conservation Group, Inc.
Comment Date: November 16, 2009

Water Sense

Good Afternoon,

We've been selling water and energy efficient showerheads for over 20 years. Over that time, we've supplied some of the largest and most successful efficiency programs in US history. I've provided a link to our website. http://www.amconservationgroup.com/

We began successfully selling 2.0 GPM maximum flow showerheads over 5 years ago and discontinued selling 2.5 GPM showerheads shortly thereafter.

Could you please advise where the criteria came from that has become the draft specifications for Water Sense compliant showerheads and what specific model showerheads meet the specifications?

I'm trying to identify whether our tried and true water efficient showerheads that meet the flow requirements also meet the spray criteria. It would be unfortunate if they did not since we and others have been successfully selling water efficient showerheads that flow at 2.0 GPM max that have been well received. I may be able to identify whether our showerheads are likely to meet spray criteria by virtue of knowing which models are known to.

Also of concern is the testing. There are a lot of small businesses involved in efficiency. Often testing labs have a tendency to run away with costs for testing which can sideline small businesses involved in water efficiency. Is the testing going to be one time or multiple times?

With Regards,

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