

Your Ref : Please address any correspondence to Water Supply (Network) Department
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Date : 13 Apr 09 Email : loh_mun_wah@pub.gov.sg

Dear Sir/Madam

REVISED FLOW RATE REQUIREMENTS FOR TAPS, MIXERS AND SHOWERHEADS FOR WATER EFFICIENCY LABELLING SCHEMES

We have received many comments and suggestions from manufacturers and suppliers on the flow rate requirements for taps, mixers and showerheads for the Mandatory and Voluntary Water Efficiency Labelling Schemes. We would like to take this opportunity to thank all who have given their comments and suggestions. We have found the comments and suggestions helpful and useful in our review of the flow rates.

2 We are pleased to inform that we have completed the review of the flow rate requirements for taps, mixers and showerheads under the Mandatory and Voluntary Water Efficiency Labelling Schemes. The review has taken into consideration the comments and suggestions from manufacturers and suppliers. A final copy of the revised requirements is attached in Appendix A (taps & mixers) and Appendix B (showerheads) for your information and necessary action.

3 We will be updating the revised requirements into the Guidebook On Water Efficiency Labelling Scheme on the PUB website. You can also view and download the revised requirements in the Guidebook at <http://www.pub.gov.sg/wels/links>.

4 Please do not hesitate to contact me or Mr Victor Lau Kam Kok at Telephone Nos 67313518 or 67313850 respectively if you require further clarification.

5 Thank you and best regards.

Yours faithfully



LOH MUN WAH
SENIOR MANAGER (INSPECTORATE)
for DIRECTOR
WATER SUPPLY (NETWORK) DEPARTMENT

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Appendix A

REVISED FLOW RATE REQUIREMENTS FOR LABELLING OF WATER TAPS & MIXERS UNDER THE MANDATORY WATER EFFICIENCY LABELLING SCHEME (MWELS)

Products/ Fittings	Test Standards and Requirements For Water Efficiency ⁽⁺⁾	Flow Rate/Flush Volume Requirements for Water Efficiency Labelling
Shower Taps and Mixers	<p style="text-align: center;">For Shower Taps (cold water only), Self-Closing-Delayed-Action Shower Taps, Sensor (including Self- Closing-Delayed-Action) Shower Taps or Combination Shower Tap Assemblies:</p> <p style="text-align: center;">Either of the following –</p> <p style="text-align: center;">Annex A of SS448 : Part 3 : 1998 or Section 10.3 of BS5412 : 1996</p> <p style="text-align: center;">For mechanical shower mixers with a single or separate control device for adjusting flow rate and temperature:</p> <p style="text-align: center;">Section 10 of BS EN 817 : 2008 Or Section 10 of BS EN 817 : 1998 (For tests done before 1 Sep 09)</p> <p style="text-align: center;">For thermostatic mixers:</p> <p style="text-align: center;">Section 3, Clause 12 of BS 1415:Part 2:1986 Or Section 10 of BS EN 1287:1999</p> <p style="text-align: center;"><u>Flow Rate Requirements</u></p> <p>(a) The flow rates shall be measured in accordance with the standards stipulated above but at the following dynamic flow pressures: 50 kPa, 100 kPa, 150 kPa, 250 kPa, 350 kPa, 450 kPa, 500 kPa and 550 kPa.</p> <p>(b) The nominal flow rate shall be the mean of the average flow rates obtained at the following dynamic flow pressures: 150 kPa, 250 kPa, 350 kPa, 450 kPa and 500 kPa</p> <p>(c) The difference between the highest and lowest average flow rates determined in accordance with the standards stipulated above at each of the dynamic flow pressures of 150 kPa, 250 kPa, 350 kPa, 450 kPa and 500 kPa shall not exceed 2.0 litres/min.</p> <p>(d) The highest average flow rate determined in accordance with the standards stipulated above at each of the dynamic flow pressures of 150 kPa, 250 kPa, 350 kPa, 450 kPa and 500 kPa shall not exceed the upper limit of the flow range for the applicable rating (shown in the column on the right) for the determined nominal flow rate by more than 0.5 litres/min.</p>	<p style="text-align: center;"><u>Pressure Range from 1.5 to 5.0 bars</u></p> <p style="text-align: center;">Zero Tick : > 9 litres/min</p> <p style="text-align: center;">Good (1 Tick) : > 7 to 9 litres/min</p> <p style="text-align: center;">Very Good (2 Ticks) : > 5 to 7 litres/min</p> <p style="text-align: center;">Excellent (3 Ticks) : 5 litres/min or less</p>

	<p>(e) The lowest average flow rate determined in accordance with the standards stipulated above at each of the dynamic flow pressures of 150 kPa, 250 kPa, 350 kPa, 450 kPa and 500 kPa shall not be less than the lower limit of the flow range for the applicable rating (shown in the column on the right) for the determined nominal flow rate by more than 0.5 litres/min.</p> <p>(f) The water consumption of a tap equipment shall be taken to be the nominal flow rate determined in accordance with (b) above and shall be indicated on the Water Efficiency Label. The water efficiency rating of the tap equipment shall be determined in accordance with the flow ranges as shown in the column on the right for the water consumption based on the nominal flow rate. .</p> <p>(g) If a tap equipment does not comply with the requirements specified in (c), (d) and (e) above, its water efficiency rating shall be zero tick. In such an instance, the water consumption on the Water Efficiency Label for the tap equipment will not be indicated.</p> <p>(h) The recording of the average flow rates at 50 kPa, 100 kPa and 550 kPa are for data collection purposes only.</p>	
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Note:

⁽⁺⁾ Before a water fitting, appliance, apparatus or product model can be considered for registration under WELS, it is mandatory for the model to comply with and be supported with the relevant test certificates and reports showing compliance with PUB's stipulation of mandatory standards and requirements for that water fitting, appliance, apparatus or product. Hence, besides the submission of test certificates and reports for water efficiency for registration of the model, the supplier shall also submit the relevant test certificates and reports showing compliance of the model with PUB's stipulated mandatory standards and requirements for that water fitting, appliance, apparatus or product. PUB's stipulated mandatory requirements and standards for specific water fittings can be found at PUB's website at www.pub.gov.sg/general/Pages/FittingsandStandards.aspx.

**REVISED FLOW RATE REQUIREMENTS FOR LABELLING OF
WATER TAPS & MIXERS UNDER THE MANDATORY WATER
EFFICIENCY LABELLING SCHEME (MWELS)**

Products/ Fittings	Test Standards and Requirements For Water Efficiency⁽⁺⁾	Flow Rate/Flush Volume Requirements for Water Efficiency Labelling
Basin Taps & Mixers	<p>For Pillar Basin Taps, Self-Closing-Delayed-Action Basin Taps, Sensor (including Self-Closing-Delayed-Action) Basin Taps or Combination Basin Tap Assemblies:</p> <p style="text-align: center;">Either of the following –</p> <p style="text-align: center;">Annex A of SS448 : Part 3 : 1998 or Section 10.3 of BS5412 : 1996</p> <p>For mechanical basin mixers with a single or separate control device for adjusting flow rate and temperature:</p> <p style="text-align: center;">Section 10 of BS EN 817 : 2008 Or Section 10 of BS EN 817 : 1998 (For tests done before 1 Sep 09)</p> <p style="text-align: center;">For thermostatic mixers:</p> <p style="text-align: center;">Section 3, Clause 12 of BS 1415:Part 2:1986 Or Section 10 of BS EN 1287:1999</p> <p style="text-align: center;"><u>Flow Rate Requirements</u></p> <p>(a) The flow rates shall be measured in accordance with the standards stipulated above but at the following dynamic flow pressures: 50 kPa, 100 kPa, 150 kPa, 250 kPa, 350 kPa, 450 kPa, 500 kPa and 550 kPa.</p> <p>(b) The nominal flow rate shall be the mean of the average flow rates obtained at the following dynamic flow pressures: 150 kPa, 250 kPa, 350 kPa, 450 kPa and 500 kPa</p> <p>(c) The difference between the highest and lowest average flow rates determined in accordance with the standards stipulated above at each of the dynamic flow pressures of 150 kPa, 250 kPa, 350 kPa, 450 kPa and 500 kPa shall not exceed 2.0 litres/min.</p> <p>(d) The highest average flow rate determined in accordance with the standards stipulated above at each of the dynamic flow pressures of 150 kPa, 250 kPa, 350 kPa, 450 kPa and 500 kPa shall not exceed the upper limit of the flow range for the applicable rating (shown in the column on the right) for the determined nominal flow rate by more than 0.5 litres/min.</p>	<p style="text-align: center;"><u>Pressure Range from 1.5 to 5.0 bars</u></p> <p style="text-align: center;">Zero Tick : > 6 litres/min</p> <p style="text-align: center;">Good (1 Tick) : > 4 to 6 litres/min</p> <p style="text-align: center;">Very Good (2 Ticks) : > 2 to 4 litres/min</p> <p style="text-align: center;">Excellent (3 Ticks) : 2 litres/min or less</p>

	<p>(e) The lowest average flow rate determined in accordance with the standards stipulated above at each of the dynamic flow pressures of 150 kPa, 250 kPa, 350 kPa, 450 kPa and 500 kPa shall not be less than the lower limit of the flow range for the applicable rating (shown in the column on the right) for the determined nominal flow rate by more than 0.5 litres/min.</p> <p>(f) The water consumption of a tap equipment shall be taken to be the nominal flow rate determined in accordance with (b) above and shall be indicated on the Water Efficiency Label. The water efficiency rating of the tap equipment shall be determined in accordance with the flow ranges as shown in the column on the right for the water consumption based on the nominal flow rate. .</p> <p>(g) If a tap equipment does not comply with the requirements specified in (c), (d) and (e) above, its water efficiency rating shall be zero tick. In such an instance, the water consumption on the Water Efficiency Label for the tap equipment will not be indicated.</p> <p>(h) The recording of the average flow rates at 50 kPa, 100 kPa and 550 kPa are for data collection purposes only.</p>	
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**REVISED FLOW RATE REQUIREMENTS FOR LABELLING OF
WATER TAPS & MIXERS UNDER THE MANDATORY WATER
EFFICIENCY LABELLING SCHEME (MWELS)**

Products/ Fittings	Test Standards and Requirements For Water Efficiency⁽⁺⁾	Flow Rate/Flush Volume Requirements for Water Efficiency Labelling
Sink Taps and Mixers /Bib Taps	<p>For Bib Taps, Sink Taps (cold water only), Sensor Sink Taps or Combination Sink Tap Assemblies:</p> <p style="text-align: center;">Either of the following –</p> <p style="text-align: center;">Annex A of SS448 : Part 3 : 1998 or Section 10.3 of BS5412 : 1996</p> <p>For mechanical sink mixers with a single or separate control device for adjusting flow rate and temperature:</p> <p style="text-align: center;">Section 10 of BS EN 817 : 2008 Or Section 10 of BS EN 817 : 1998 (For tests done before 1 Sep 09)</p> <p style="text-align: center;">For thermostatic mixers:</p> <p style="text-align: center;">Section 3, Clause 12 of BS 1415:Part 2:1986 Or Section 10 of BS EN 1287:1999</p> <p style="text-align: center;"><u>Flow Rate Requirements</u></p> <p>(a) The flow rates shall be measured in accordance with the standards stipulated above but at the following dynamic flow pressures: 50 kPa, 100 kPa, 150 kPa, 250 kPa, 350 kPa, 450 kPa, 500 kPa and 550 kPa.</p> <p>(b) The nominal flow rate shall be the mean of the average flow rates obtained at the following dynamic flow pressures: 150 kPa, 250 kPa, 350 kPa, 450 kPa and 500 kPa</p> <p>(c) The difference between the highest and lowest average flow rates determined in accordance with the standards stipulated above at each of the dynamic flow pressures of 150 kPa, 250 kPa, 350 kPa, 450 kPa and 500 kPa shall not exceed 2.0 litres/min.</p> <p>(d) The highest average flow rate determined in accordance with the standards stipulated above at each of the dynamic flow pressures of 150 kPa, 250 kPa, 350 kPa, 450 kPa and 500 kPa shall not exceed the upper limit of the flow range for the applicable rating (shown in the column on the right) for the determined nominal flow rate by more than 0.5 litres/min.</p>	<p style="text-align: center;"><u>Pressure Range from 1.5 to 5.0 bars</u></p> <p style="text-align: center;">Zero Tick : > 8 litres/min</p> <p style="text-align: center;">Good (1 Tick) : > 6 to 8 litres/min</p> <p style="text-align: center;">Very Good (2 Ticks) : > 4 to 6 litres/min</p> <p style="text-align: center;">Excellent (3 Ticks) : 4 litres/min or less</p>

	<p>(e) The lowest average flow rate determined in accordance with the standards stipulated above at each of the dynamic flow pressures of 150 kPa, 250 kPa, 350 kPa, 450 kPa and 500 kPa shall not be less than the lower limit of the flow range for the applicable rating (shown in the column on the right) for the determined nominal flow rate by more than 0.5 litres/min.</p> <p>(f) The water consumption of a tap equipment shall be taken to be the nominal flow rate determined in accordance with (b) above and shall be indicated on the Water Efficiency Label. The water efficiency rating of the tap equipment shall be determined in accordance with the flow ranges as shown in the column on the right for the water consumption based on the nominal flow rate. .</p> <p>(g) If a tap equipment does not comply with the requirements specified in (c), (d) and (e) above, its water efficiency rating shall be zero tick. In such an instance, the water consumption on the Water Efficiency Label for the tap equipment will not be indicated.</p> <p>(h) The recording of the average flow rates at 50 kPa, 100 kPa and 550 kPa are for data collection purposes only.</p>	
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Note:

⁽⁺⁾ Before a water fitting, appliance, apparatus or product model can be considered for registration under WELS, it is mandatory for the model to comply with and be supported with the relevant test certificates and reports showing compliance with PUB's stipulation of mandatory standards and requirements for that water fitting, appliance, apparatus or product. Hence, besides the submission of test certificates and reports for water efficiency for registration of the model, the supplier shall also submit the relevant test certificates and reports showing compliance of the model with PUB's stipulated mandatory standards and requirements for that water fitting, appliance, apparatus or product. PUB's stipulated mandatory requirements and standards for specific water fittings can be found at PUB's website at www.pub.gov.sg/general/Pages/FittingsandStandards.aspx.

**REVISED FLOW RATE REQUIREMENTS FOR LABELLING OF
SHOWERHEADS UNDER THE VOLUNTARY WATER EFFICIENCY
LABELLING SCHEME**

Products/ Fittings	Test Standards and Requirements For Water Efficiency⁽⁺⁾	Flow Rate/Flush Volume Requirements for Water Efficiency Labelling
Showerheads	<p style="text-align: center;">Appendix B of AS/NZS 3662:2005</p> <p style="text-align: center;"><u>Flow Rate Requirements</u></p> <p>(a) The flow rates shall be measured in accordance with Appendix B of AS/NZS 3662 but at the following dynamic flow pressures: 50 kPa, 100 kPa, 150 kPa, 250 kPa, 350 kPa, 450 kPa, 500 kPa and 550 kPa.</p> <p>(b) The nominal flow rate shall be the mean of the average flow rates obtained at the following dynamic flow pressures: 150 kPa, 250 kPa, 350 kPa, 450 kPa and 500 kPa</p> <p>(c) The difference between the highest and lowest average flow rates determined in accordance with Appendix B of AS/NZS 3662 at each of the dynamic flow pressures of 150 kPa, 250 kPa, 350 kPa, 450 kPa and 500 kPa shall not exceed 2.0 litres/min.</p> <p>(d) The highest average flow rate determined in accordance with Appendix B of AS/NZS 3662 at each of the dynamic flow pressures of 150 kPa, 250 kPa, 350 kPa, 450 kPa and 500 kPa shall not exceed the upper limit of the flow range for the applicable rating (shown in the column on the right) for the determined nominal flow rate by more than 0.5 litres/min.</p> <p>(e) The lowest average flow rate determined in accordance with Appendix B of AS/NZS 3662 at each of the dynamic flow pressures of 150 kPa, 250 kPa, 350 kPa, 450 kPa and 500 kPa shall not be less than the lower limit of the flow range for the applicable rating (shown in the column on the right) for the determined nominal flow rate by more than 0.5 litres/min.</p> <p>(f) The water consumption of a showerhead shall be taken to be the nominal flow rate determined in accordance with (b) above and shall be indicated on the Water Efficiency Label. The water efficiency rating of the showerhead shall be determined in accordance with the flow ranges as shown in the column on the right for the water consumption based on the nominal flow rate.</p> <p>(g) The recording of average flow rates at 50 kPa, 100 kPa and 550 kPa are for data collection purposes only.</p>	<p style="text-align: center;"><u>Pressure Range from 1.5 to 5.0 bars</u></p> <p style="text-align: center;">Good (1 Tick) : > 7 to 9 litres/min</p> <p style="text-align: center;">Very Good (2 Ticks) : > 5 to 7 litres/min</p> <p style="text-align: center;">Excellent (3 Ticks) : 5 litres/min or less</p>

Note:

- (*) Before a water fitting, appliance, apparatus or product model can be considered for registration under WELS, it is mandatory for the model to comply with and be supported with the relevant test certificates and reports showing compliance with PUB's stipulation of mandatory standards and requirements for that water fitting, appliance, apparatus or product. Hence, besides the submission of test certificates and reports for water efficiency for registration of the model, the supplier shall also submit the relevant test certificates and reports showing compliance of the model with PUB's stipulated mandatory standards and requirements for that water fitting, appliance, apparatus or product. PUB's stipulated mandatory requirements and standards for specific water fittings can be found at PUB's website at www.pub.gov.sg/general/Pages/FittingsandStandards.aspx.