

**WATER EFFICIENCY LABELLING SCHEME
(VOLUNTARY & MANDATORY)**

BY

PUB

REPUBLIC OF SINGAPORE

INTRODUCTION

1. Water Efficiency Labelling Scheme (WELS) sets out the requirements, guidelines and terms and conditions for water fittings, appliances, apparatuses and products to be labelled for water efficiency. The requirements, guidelines and terms and conditions shall be set and issued by PUB. WELS is administered by PUB.
2. The purpose of WELS is to:
 - a. Conserve water by further reducing water consumption through greater awareness and use of water efficient water fittings, appliances, apparatuses and products.
 - b. Provide water efficiency and performance information to purchasers of water fittings, appliances, apparatuses or products so that they can make a well informed purchasing decision.
 - c. Provide consumers with the necessary information on the water efficiency of the labelled water fitting, appliance, apparatus or product and allow them to compare it to other similar models in the market places, before deciding on the purchase.
 - d. Clearly differentiate the less water efficient water fittings, appliances, apparatuses or products from the more water efficient ones.
 - e. Encourage vendors to offer more water efficient water fittings, appliances, apparatuses and products in Singapore and mould consumer preference towards more water efficient water fittings, appliances, apparatuses and products.
 - f. Stimulate the introduction of cost-effective and water efficient technologies.
 - g. Promote the adoption of efficient and effective water-use technologies.
3. Meaning of the WELS label:
 - a. A water fitting, appliance, apparatus or product is WELS labelled if it is labelled in accordance with the requirements, guidelines and terms and conditions set out in this WELS Guidebook and the provisions in the Public Utilities (Water Supply) Regulations for WELS for water fittings, appliances, apparatuses or products of that kind.
 - b. Such requirements, guidelines, terms and conditions and provisions may relate to one or more of the following:
 - i. Testing of the water fitting, appliance, apparatus or product to meet stipulated outcomes, requirements and standards. Such outcomes, requirements and standards may not be limited to water efficiency.

- ii. Documents or other material used for, or provided in connection with, the supply of the water fitting, appliance, apparatus or product.
 - iii. The characteristics, contents, placement and quality of labels attached to water fittings, appliances, apparatuses or products or displayed on the packaging of the water fittings, appliances, apparatuses or products.
 - iv. Advertisement and promotion of the water fitting, appliance, apparatus or product.
4. PUB will oversee the registration of water fittings, appliances, apparatuses and products under WELS to which the labelling and standards provisions apply, and will monitor to enforce compliance with the scheme.
 5. Vendors (importers, parallel importers, retailers, manufacturers or new distributors) of all water fittings, appliances, apparatuses and products (including those that do not meet any water efficiency requirements) under the Mandatory Water Efficiency Labelling Scheme (MWELS) must apply to have their models labelled.
 6. Vendors (importers, parallel importers, retailers, manufacturers or new distributors) of those water fittings, appliances, apparatuses and products under the voluntary WELS may apply to have their models labelled.
 7. Applications for labels can be made to PUB (hereafter referred to as the "Registration Centre").
 8. The water fittings, appliances, apparatuses and products covered under MWELS include:
 - a. Shower Taps and Mixers (except concealed shower taps and mixers & concealed bath/shower taps and mixers)
 - b. Basin Taps and Mixers
 - c. Sink/Bib Taps and Mixers
 - d. Dual Flush Low Capacity Flushing Cisterns (Dual Flush LCFCs)
 - e. Urinal Flush Valves
 - f. Waterless Urinals

Concealed shower taps and mixers and concealed bath/shower taps and mixers will not be covered under MWELS for the time being. They can continue to be installed in new and existing developments and premises. However, they must be installed with constant flow regulators to ensure that the flow rates from the showers comply with the mandatory maximum allowable flow rates stipulated in the Singapore Standard CP 48 – Code of Practice for Water Services. The Code of Practice specifies that the maximum allowable flow rate for showers shall not exceed 9 litres/min except for hotels. The maximum allowable flow rate for showers in hotels shall not exceed 12 litres/min.

Bathtub taps and mixers will also not be covered under MWELS. Bath/shower taps and mixers (except concealed bath/shower taps and mixers) will be covered under MWELS. For bath/shower taps and mixers, MWELS will only be applicable to the shower flow rates. MWELS will not be applicable to the bath flow rate from bath/shower taps and mixers for filling of bathtubs.

9. The water fittings, appliances, apparatuses and products covered under voluntary WELS include:
 - a. Showerheads
 - b. Clothes Washing Machines
10. All water fittings, appliances, apparatuses and products to be labelled under the mandatory and voluntary WELS shall comply with the standards and requirements stipulated by PUB.
11. MWELS requires the water fittings, appliances, apparatuses and products covered to be MWELS labelled for the purposes of supply, sale, or offer, display or advertisement for supply or sale or installation or use of the water fittings, appliances, apparatuses and products in Singapore.
12. All water fittings, appliances, apparatuses and products that are required to be labelled under the MWELS will be rated. "Zero Tick" label shall apply to water fittings, appliances, apparatuses and products that do not meet 1 or more ticks requirements or have not undergone test for water efficiency. Details of ratings for the various water fittings, appliances, apparatuses and products are given in Appendix 1. The more the ticks, the better the water efficiency.
13. PUB reserves the right to amend existing and introduce new requirements, guidelines and terms and conditions to the WELS including requirements, guidelines and terms and conditions specific to particular water fittings, appliances, apparatuses and products under WELS.
14. PUB welcomes feedback to help improve this Guidebook. Kindly send your comments to the addresses listed below:

Inspectorate Branch
Water Demand Management & Inspectorate Division
Water Supply (Network) Department
PUB
40 Scotts Road, #10-01
Singapore 228231
Tel: 67313577/ 67313652/67313850
Fax: 67313015
Email: pub_waterfittings@pub.gov.sg

APPLICATIONS & NOTIFICATIONS

Application for Registration

1. To register a water fitting, appliance, apparatus or product model to be labelled, the supplier shall submit the application, a clear and well taken photograph of the water fitting, appliance, apparatus or product model and the required documents (relevant test reports and certificates to show proof of compliance in accordance with the standards and requirements stipulated by PUB) to the Registration Centre online. Upon clearance and registration by the Registration Centre, the supplier shall then print the Water Efficiency Labels in accordance to the specified requirements indicated in Appendix 2 for use with the water fitting, appliance, apparatus or product model registered.

Notification of Change in Particulars

2. A supplier whose water fitting, appliance, apparatus or product model has been registered, shall notify the Registration Centre of any change to any of the particulars (e.g. change in company name, etc) provided to the Registration Centre during application for registration of the model. The notification shall be made not less than 14 working days before the change. The supplier shall notify the Registration Centre with details of the changes online. Failure to comply may render the model registration null and void.

Notification of Modifications to Registered Water Fitting, Appliance, Apparatus or Product Model

3. Where any registered water fitting, appliance, apparatus or product model is modified in any way, the supplier of the model shall do the following, failing which, the model registration shall be deemed null and void:
 - a. notify the Registration Centre online with a detailed description of the modifications; and
 - b. where the modification alters the water efficiency of the registered model, re-test the model and submit to the Registration Centre, the relevant test certificates and reports showing the water efficiency as modified and such other information/details as the Registration Centre may require.

The Registration Centre may revise the water efficiency rating of the registered model based on the test certificates and reports and information/details submitted.

Change of Distributorship

4. When the distributorship of an existing registered water fitting, appliance, apparatus or product model is taken over from a current supplier, the supplier that takes over the distributorship shall notify the Registration Centre with an undertaking letter to undertake all declarations made by the previous supplier for the model taken over. To avoid unnecessary additional documentation, the new supplier may make use of previously submitted test reports if the previous supplier's agreement is obtained. For this purpose, an authorisation letter from the previous supplier is required. Otherwise, the registration of the model shall be deemed null and void and a fresh application for registration of the model shall be made by the new supplier.

TEST REPORTS

General

1. 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.
2. Upon submission of the test certificates and reports issued by the test laboratories, submission of test sample to the Registration Centre is normally not required. Nevertheless, the Registration Centre reserves the right to require sample and/or further documents in support of the application for registration or to examine the water fitting, appliance, apparatus or product listed in the test report or to request for test if necessary.
3. Wherever mentioned in this Guidebook, the term "accredited" should be taken as "accredited for testing to the test standards for the water fittings, appliances, apparatuses or products listed in items 8 and 9 of the introduction of this Guidebook".

Guidelines

4. Only the following reports shall be accepted by the Registration Centre for the purpose of registration under WELS:
 - a. Test reports issued by independent laboratories in Singapore which have been accredited under the "Singapore Laboratory Accreditation Scheme" (SINGLAS) for the test standards stipulated.

- b. Test reports issued by independent laboratories out of Singapore which have been accredited by the Partners under the Singapore Accreditation Council – Mutual Recognition Arrangement (SAC-MRA partners) for the test standards stipulated.

The list of recognised testing laboratories/national certification bodies is available from the Singapore Accreditation Council (SAC).

GUIDELINES FOR COMPLETING APPLICATION FORMS ONLINE

Applicant's Details

1. Name of the company (registered in Singapore) applying for the registration. The applicant must be a Singapore-based company registered with the Accounting and Corporate Regulatory Authority (ACRA) in Singapore.
2. Address of the company.
3. Unique Entity Number (UEN) of the company issued by the ACRA.
4. Name and title (designation) of the person appointed by the company to be in charge of submission of application as well as to liaise with the Registration Centre.

Manufacturer's Details

5. Name of the factory that manufactures the water fitting, appliance, apparatus or product. Attach a separate list if it involves more than one factory.
6. Address (including country) of the factory that manufactures the water fitting, appliance, apparatus or product.

Water Fitting, Appliance, Apparatus or Product Details

7. Brief description of the water fitting, appliance, apparatus or product.
8. Brand of the water fitting, appliance, apparatus or product to be marketed. If there is no brand name on the water fitting, appliance, apparatus or product, fill in the name of the manufacturer shown on the rating label.
9. Model number of the water fitting, appliance, apparatus or product to be marketed. The model number must be clearly shown on the rating label or the packaging. Registering of family series is not allowed even though the model number falls within this family series.

Test Certificates and Reports

10. All test certificates and reports for the water fitting, appliance, apparatus or product model shall be attached with the application and submitted together.

Applicant's Legal Statement

11. Fill in the name of the company, the name and the title (designation) of the person (who represents the Singapore company) who shall be responsible for the application. Terms and conditions shall be read and fully agreed upon before proceeding to submit an application.

THE WATER EFFICIENCY LABEL

Design of Label

1. The designs of the labels for the mandatory and voluntary WELS are given in Appendix 2. The labels shall be printed by the supplier whose water fitting, appliance, apparatus or product model has been registered in accordance with Figures 1 (for MWELS) and 2 (for voluntary WELS).

Use of the Water Efficiency Label

2. The water efficiency label shall be fixed to each water fitting, appliance, apparatus or product model or on its packaging at the point of sale or offer for sale such that it is prominent to let consumers view and compare with ease. The markings and information on the label shall not be removed, defaced or obscured in any manner that may confuse and/or mislead the consumer.
3. The water efficiency label shall not be defaced, obstructed, removed, misused, forged, falsified or altered.

Guidelines for the Use of the Water Efficiency Label in Advertisements and Publicity Materials

4. The water efficiency label shall be used only for the registered models.
5. Advertisements for water fittings, appliances, apparatus or products labelled under the MWELS in all forms of media including newspapers, brochures, catalogues, publicity materials, etc shall display the water efficiency label for each and every water fitting, appliance, apparatus or product model featured.
6. When used in advertisements and publicity materials, the water efficiency label for each registered model shall be separately displayed if there is more than one model being advertised or promoted.

7. The use of the water efficiency label in advertisements and publicity materials shall also comply with the following requirements:
 - a. The water efficiency label shall appear next to the water fitting, appliance, apparatus or product model featured so that it is easily identified with the model featured.
 - b. All information on the label shall be clearly visible and legible. Where it is impractical for the label to be of a size or quality sufficient for any of the information on the label to be clearly visible and legible, the relevant information shall be extracted and printed clearly and legibly alongside the label. The relevant information shall include the brand, model, water efficiency rating (number of ticks i.e. “0”, “√”, “√√” or “√√√” as well as wordings i.e. “Good”, “Very Good” or “Excellent”), water consumption and registration number.
8. Statements connoting that the product is “MEWR/ PUB tested” or “MEWR/ PUB certified” or “MEWR/ PUB approved” shall NOT be used. These statements are misleading.
9. If in doubt, manufacturers, suppliers and retailers may seek clearance for advertisements and publicity materials featuring the water efficiency label from PUB before publication and promotion. A sample of the advertisement/publicity material may be sent to the following address for clearance before publication and promotion:

Inspectorate Branch
Water Demand Management & Inspectorate Division
Water Supply (Network) Department
PUB
40 Scotts Road, #10-01
Singapore 228231
Tel: 67313577/67313652/67313850
Fax: 67313015
Email: pub_waterfittings@pub.gov.sg

REMEDIAL MEASURES IN CASE OF ERRONEOUS DATA

1. When any data declared by the supplier (and hence displayed on the water efficiency label) for any model is found to be in error, the registration shall be immediately null and void and the supplier shall immediately remove all erroneous labels from display and public circulation. The Registration Centre shall be notified immediately and a new submission made to re-register the model in question.
2. The supplier has the option of sending three further units of the model in question for third-party accredited testing. The testing facility will be responsible for the selection of the three test models. All testing shall be carried out at the expense of the supplier.

LISTING OF WATER EFFICIENT LABELLED MODELS

1. The list of all water fitting, appliance, apparatus and product models that have been registered for labeling can be viewed at www.pub.gov.sg.

ENQUIRIES

1. All enquiries on WELS can be addressed to PUB at the following address:

Inspectorate Branch
Water Demand Management & Inspectorate Division
Water Supply (Network) Department
PUB
40 Scotts Road, #10-01
Singapore 228231
Tel: 67313577/ 67313652/67313850
Fax: 67313015
Email: pub_waterfittings@pub.gov.sg

ENFORCEMENT

1. PUB will conduct regular spot checks on retailers and suppliers. Failure to comply with the requirements, guidelines and terms and conditions stipulated in this WELS Guidebook and the provisions for WELS in the Public Utilities (Water Supply) Regulations shall render the registration of the water fitting, appliance, apparatus or product model null and void. Anyone found contravening any of the requirements, guidelines and terms and conditions stipulated in this WELS Guidebook and the provisions for WELS in the Public Utilities (Water Supply) Regulations shall also be liable to prosecution under the Public Utilities (Water Supply) Regulations.

Appendix 1

DETAILS OF RATINGS

Products/ Fittings	Test Standards and Requirements For Water Efficiency ⁽⁺⁾	Flow Rate/Flush Volume Requirements for Water Efficiency Labelling
Shower Taps and Mixers	<p>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>Either of the following –</p> <p>Annex A of SS448 : Part 3 : 1998 or Section 10.3 of BS5412 : 1996</p> <p>For mechanical shower mixers with a single or separate control device for adjusting flow rate and temperature:</p> <p>Section 10 of BS EN 817 : 2008 Or Section 10 of BS EN 817 : 1998 (For tests done before 1 Sep 09 only)</p> <p>For thermostatic mixers:</p> <p>Section 3, Clause 12 of BS 1415:Part 2:1986 Or Section 10 of BS EN 1287:1999</p> <p><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><u>Pressure Range from 1.5 to 5.0 bars</u></p> <p>Zero Tick : > 9 litres/min</p> <p>Good (1 Tick) : > 7 to 9 litres/min</p> <p>Very Good (2 Ticks) : > 5 to 7 litres/min</p> <p>Excellent (3 Ticks) : 5 litres/min or less</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>(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. For Excellent or 3 Ticks rating, this lowest average flow rate shall not be less than 4.5 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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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. For Excellent or 3 Ticks rating, this lowest average flow rate shall not be less than 4.5 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>

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>Either of the following –</p> <p>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>Section 10 of BS EN 817 : 2008 Or Section 10 of BS EN 817 : 1998 (For tests done before 1 Sep 09)</p> <p>For thermostatic mixers:</p> <p>Section 3, Clause 12 of BS 1415:Part 2:1986 Or Section 10 of BS EN 1287:1999</p> <p><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><u>Pressure Range from 1.5 to 5.0 bars</u></p> <p>Zero Tick : > 6 litres/min</p> <p>Good (1 Tick) : > 4 to 6 litres/min</p> <p>Very Good (2 Ticks) : > 2 to 4 litres/min</p> <p>Excellent (3 Ticks) : 2 litres/min or less</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>(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. For Excellent or 3 Ticks rating, this lowest average flow rate shall not be less than 1.5 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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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>Either of the following –</p> <p>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>Section 10 of BS EN 817 : 2008 Or Section 10 of BS EN 817 : 1998 (For tests done before 1 Sep 09)</p> <p>For thermostatic mixers:</p> <p>Section 3, Clause 12 of BS 1415:Part 2:1986 Or Section 10 of BS EN 1287:1999</p> <p><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><u>Pressure Range from 1.5 to 5.0 bars</u></p> <p>Zero Tick : > 8 litres/min</p> <p>Good (1 Tick) : > 6 to 8 litres/min</p> <p>Very Good (2 Ticks) : > 4 to 6 litres/min</p> <p>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. For Excellent or 3 Ticks rating, this lowest average flow rate shall not be less than 2.5 litres/min or sink taps and 3.5 litres/min for bib taps.</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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Products/ Fittings	Test Standards and Requirements For Water Efficiency ⁽⁺⁾	Flow Rate/Flush Volume Requirements for Water Efficiency Labelling
Flushing Cisterns	SS 378 : 1996 - Volume of Discharge per Flush (Dual Flush Low Capacity Flushing Cisterns - Full Flush & Reduced Flush)	<p style="text-align: center;"><u>Per Flush</u></p> <p>Good (1 Tick) : > 4 to 4.5 litres (full flush) & > 2.5 to 3 litres (reduced flush)</p> <p>Very Good (2 Ticks) : > 3.5 – 4.0 litres (full flush) & > 2.5 to 3 litres (reduced flush)</p> <p>Excellent (3 Ticks) : 3.5 litres or less⁽⁺⁺⁾ (full flush) & 2.5 litres or less (reduced flush)</p>
Urinals and Urinal Flush Valves	Volume of Discharge Test (Please refer to PUB website at http://www.pub.gov.sg/general/Pages/FittingAndStandards.aspx)	<p style="text-align: center;"><u>Per Flush</u></p> <p>Good (1 Tick) : > 1 to 1.5 litres</p> <p>Very Good (2 Ticks) : > 0.5 to 1 litres</p> <p>Excellent (3 Ticks) : 0.5 litres or less⁽⁺⁺⁾ or Waterless Urinals</p>

Products/ Fittings	Test Standards and Requirements For Water Efficiency ⁽⁺⁾	Flow Rate/Flush Volume Requirements for Water Efficiency Labelling
Clothes Washing Machines	Section 11 of the International Electrotechnical Commission IEC 60456 : 2003 or its equivalent	<u>Per Kg Washload</u> Good (1 Tick) : > 12 to 15 litres Very Good (2 Ticks) : > 9 to 12 litres Excellent (3 Ticks) : 9 litres or less

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.

Suppliers can adopt the same flow rate test result/report for different models of taps and mixers without additional testing if they are of similar designs with the same flow rate performance. Taps and mixers of similar designs with the same flow rate performance include those which have the same body design but with different colours, finishing or handle designs that do not affect the hydraulic performance of the taps and mixers.

- (++) To pass laboratory simulation test on waste transportation efficiency in pipes prescribed by PUB if full flush volume is less than 3.5 litres.
- (**) To pass the Dye Test specified in Clause 10.5 of the ASME A112.19.2-2003 or Clause 8.5 of the ASME A112.19.2-2008/CSA B45.1-08 if flush volume is less than 0.5 litres.

DESIGN OF WELS LABELS

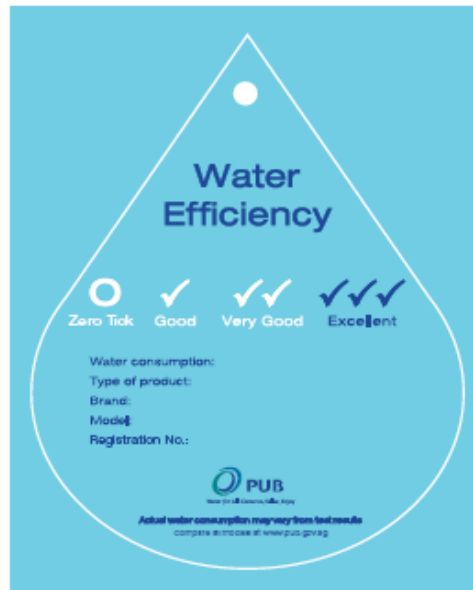


Figure 1: Water Efficiency Label for MWELS



Figure 2: Water Efficiency Label for Voluntary WELS

Both labels shall comprise the following

- a) The title “Water Efficiency”
- b) Ticks that indicate the water efficiency rating of the labelled water fitting, appliance, apparatus or product
- c) The water efficiency rating in words:
 - ❖ “Zero Tick” (Water Efficiency Label for MWELS only - applicable to water fittings, appliances, apparatuses or products which are unable to meet at least a 1 or more ticks requirement under the MWELS category)
 - ❖ “Good” (for water fittings, appliances, apparatuses or products with 1 Tick water efficiency rating)
 - ❖ “Very Good” (for water fittings, appliances, apparatuses or products with 2 Ticks water efficiency rating)
 - ❖ “Excellent” (for water fittings, appliances, apparatuses or products with 3 Ticks water efficiency rating)
- d) Water Consumption (“Not tested for water efficiency” to be indicated for water fittings, appliances, apparatuses or products with “Zero Tick” rating if they are not tested for water efficiency)
- e) Type of product (To indicate type of water fitting, appliance, apparatus or product)
- f) Brand name
- g) Model number
- h) Registration number (applicable to Water Efficiency Label for MWELS only)
- i) Serial number (applicable to Water Efficiency Label for voluntary WELS only)