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Water efficiency labelling programmes — requirements with guidance for implementation

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National foreword

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Water efficiency labelling programmes – Requirements with guidance for implementation

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Project Committee ISO/PC 316, *Water efficient products - Rating*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

The purpose of ISO 31600 is to provide a set of best practices and guidance for the preparation and implementation of a water efficiency labelling programme for plumbing products and water using appliances. A key focus is to provide the criteria for developing countries to establish an effective water efficiency labelling standard that will save water resources.

This project was approved on the basis that consumer empowerment through the communication of a product's water efficiency is a proven way of saving both water and energy. Several countries around the world already have well-established and effective water efficiency labelling programmes which empower consumers to make choices favouring more water efficient fixtures and appliances without compromising on human hygiene and sanitation. These existing labelling programmes were consulted in the development of this document.

ISO 31600 aims to globally encourage the development of national standards for water efficiency labelling, which will further lead to development and marketing of water efficient products, and enable consumers to make an informed choice, positively influencing manufacturers to improve the performance of their products through consumer demand. This document does not seek to establish ways to use water efficiency labelling in policies or programmes. The intention is to provide an understanding of the essential requirements for the development of an effective water efficiency labelling programme.

This document refers to existing national standards for the determination of water consumption and other important test procedures and requirements that form the critical underpinnings of a water efficiency labelling programme. Countries without national standards for products may formulate their own national standard either by adopting a national standard from a supporting country or by preparing an indigenous standard, to meet the requirements in Clause 4.

NOTE National regulations can also apply.

This document contains five informative annexes, with Annex A providing suggested universal tests for the determination of water consumption and Annexes B to E providing descriptions of a number of existing schemes/programmes. Countries that do not have an existing water efficiency labelling programme may consider these examples to select and adopt those best suited for their markets and conditions when developing their own water efficiency labelling programme.

Application of this document presupposes awareness of water efficiency programmes and regulations in the applicable country.

An overview of how to use this document, including the pathway to demonstrate conformance, is provided in Figure 1.

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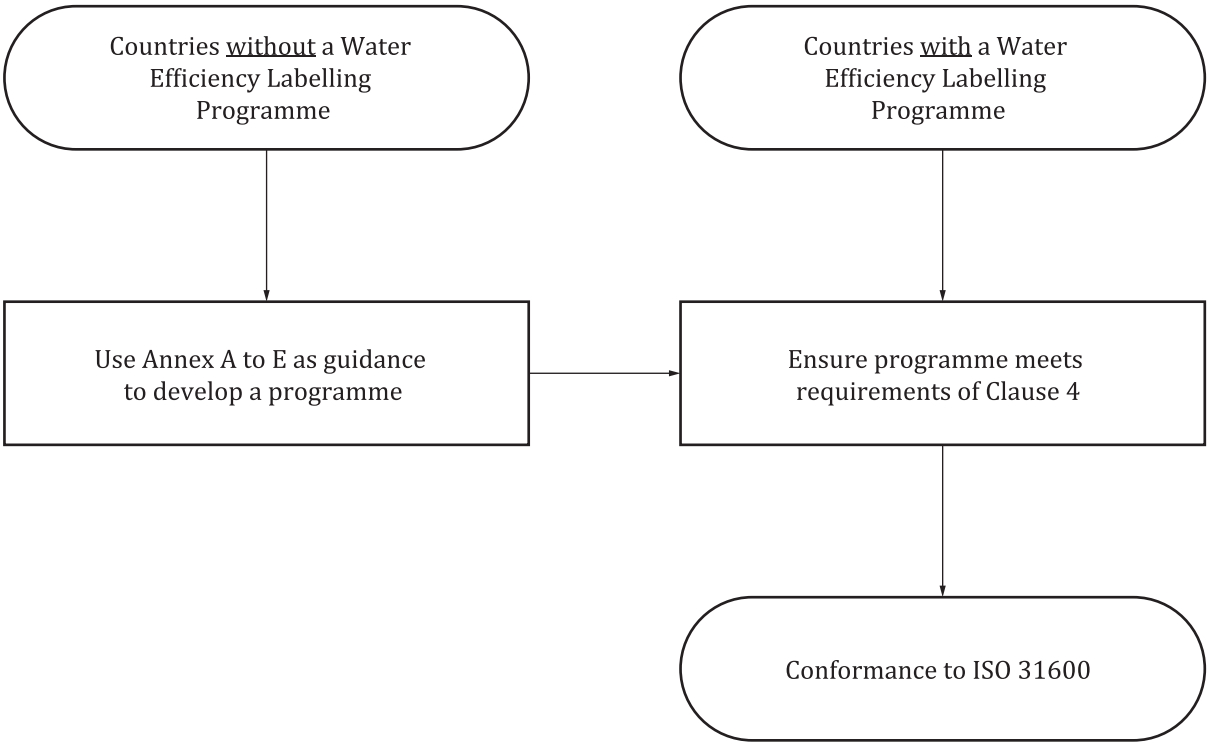

Figure 1 — Pathway to ISO 31600 conformance

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Water efficiency labelling programmes – Requirements with guidance for implementation

1 Scope

This document specifies requirements for a water efficiency labelling programme for plumbing products and water using appliances along with guidance for their implementation.

This document applies to the following products:

a) showers;

b) tap (faucet) equipment;

c) flow regulators (flow controllers);

d) water closet (toilet) equipment;

e) urinal equipment;

f) dishwashers;

g) clothes washing machines;

h) the dryer function of combination washer/dryers, where they use water to dry a load.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1 General terms

3.1.1
water efficiency
accomplishment of a function, task, process, service or result, with the minimum amount of water needed for the safe operation of the product

[SOURCE: ISO 24513:2019, 3.4.7, modified — At the end of the definition, "practicable" has been replaced by "needed for the safe operation of the product".]

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3.1.2
banded (tiered) labelling programme
programme that allows products to be labelled with various rated levels of water consumption

Note 1 to entry: Products can be differentiated by various visual means, e.g. stars or other markings, for identifying incremental levels of *water efficiency* (3.1.1). See Annex E for examples of existing water efficiency programme labels.

3.1.3
single threshold labelling programme
programme that requires all labelled products to meet a single water consumption requirement, typically expressed as a maximum

Note 1 to entry: Labelled products may or may not include the product's *water efficiency* (3.1.1) rating. See Annex E for examples of existing water efficiency programme labels.

3.1.4
shower assembly
combination of a shower control (valve) complete with shower hose (flexible or rigid) and shower outlet

3.1.5
shower outlet device
device through which water is intended to pass to form spray for bathing purposes

EXAMPLE showerheads, handheld showerheads, body sprays and rain shower outlet devices

Note 1 to entry: A shower outlet device can be sold separately or as part of a shower assembly.

3.1.6
tap(s)
faucet(s)
device through which water is intended to pass with an inlet and connection, and a control (valve) for drawing or regulating the flow of water

Note 1 to entry: A typical application for a tap (faucet) is over a *basin (lavatory)* (3.2.6), sink or laundry tub.

3.1.7
flow regulator
flow controller
flow control device used to control the rate of water flow in a *tap (faucet)* (3.1.6), *shower outlet device* (3.1.5) or *shower assembly* (3.1.4)

Note 1 to entry: Device can be sold separately or located within (upstream of the outlet) or at the very end (forming part of the outlet) of the water flow passage through a product.

Note 2 to entry: When sold separately, they are typically sold as part of an aerator subassembly or as a stand-alone component intended to be installed in a shower outlet device or shower assembly solution.

3.1.8
water closet
toilet
sanitary plumbing fixture that consists typically of a water-flushed bowl connected to a drainage system and fitted with a device for flushing water to cleanse the bowl after defecation and urination

3.1.9
urinal
sanitary plumbing fixture typically connected to a water flushing device for the reception and flushing away of urine into a drainage system

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3.1.10
pressure flush valve
flushometer valve
device that controls the release of water to flush a *urinal* (3.1.9) or *water closet (toilet)* (3.1.8)

3.2 Pressure

3.2.1
pressure
measured force behind water system delivered through a plumbing system

Note 1 to entry: The plumbing system water supply of each country will determine the amount of pressure delivered to a water using outlet or fixture.

3.2.2
high pressure
hot-water and cold-water static supply pressures at or above a stated pressure for the country of intended installation

Note 1 to entry: This is typically in a fully pumped plumbing system installation.

3.2.3
low pressure
hot water and cold-water static supply pressures below a stated pressure for the country of intended installation

Note 1 to entry: This is typically in gravity fed plumbing system installations.

3.2.4
static pressure
measure of the at rest pressure in a plumbing system

3.2.5
dynamic pressure
pressure in a plumbing system under flow conditions

3.2.6
basin
lavatory
fixture for holding water for washing the hands or face, whether with one *tap (faucet)* (3.1.6) to allow a single user or a number of taps (faucets) spaced to allow simultaneous users

Note 1 to entry: The term lavatory is used in some countries, but can also refer to the room in which *water closets (toilets)* (3.1.8) or *urinals* (3.1.9) can be positioned, along with a basin for washing of hands.

4 Water efficiency labelling programme requirements

To demonstrate conformance to this document, the water efficiency labelling programme shall:

a) For the product, include or reference to (a) national standard(s);

NOTE 1 A national standard(s) provides the foundation for enabling a water efficiency labelling programme and can cover requirements for inherent product characteristics, e.g. public health and safety, material requirements, interchangeability, durability (life testing), performance requirements, and minimum conformance marking and/or labelling requirements.

NOTE 2 Reference can also be made to national regulations.

b) Include aspects of water efficiency test(s) requirements for the product or reference the applicable water efficiency test in the national standard(s);

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c) Have a method to evaluate and determine a product's water efficiency or water efficiency rating based on the results of the water efficiency test(s) as per Clause 4 b);

d) Have a labelling method that identifies the product as being water efficient based on the assessment provided as per Clause 4 c).

NOTE 3 For guidance on the requirements for setting up a complete water efficiency labelling programme, see Annex A.

NOTE 4 For information and guidance on the above requirements and water efficiency tests as applied to existing water efficiency labelling programmes, see Annex B for plumbing products and Annex C for water using appliances.

NOTE 5 For information on conformity assessment procedures for products of a water efficiency labelling programme, see Annex D.

NOTE 6 For examples of labels for a water efficiency labelling programme, see Annex E.

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Annex A
(informative)

General guidance for a water efficiency labelling programme

A.1 General

This annex provides the aspects of water efficiency tests for plumbing products and water using appliances that form part of a water efficiency labelling programme. Best practice options are provided, including existing test methodologies and test methods based on parameters as specified in this annex. This annex allows a country to evaluate the most suitable water efficiency labelling programme criteria for that country.

This annex sets the basic principles for what is required for a water efficiency labelling programme that meets the requirements of this document. The use of this annex provides the necessary criteria for the development of a water efficiency labelling programme based on best practices. It provides the methodology parameters to achieve determination of a product's/appliance's water efficiency. Water efficiency testing criteria are provided for guidance and use in this annex.

A.2 Generic labelling programme guidelines

A.2.1 Banded (tiered) and single threshold labelling programmes

A.2.1.1 General

Developers of water efficiency labelling programmes may choose between developing a banded (tiered) labelling programme or a single threshold labelling programme. Both have advantages, as detailed below. Both types of programmes have proven to be effective at improving water efficiency at national levels.

A.2.1.2 Banded (tiered) labelling programmes

Banded (tiered) labelling programmes offer the following advantages:

a) Allow for the use of product with different rated levels of water consumption to support varied water infrastructure needs of the country of intended installation (e.g. to support drainline transport of solid waste in building drains or sewers);

b) Provide manufacturers with an incentive to achieve higher levels of efficiency.

A.2.1.3 Single threshold labelling programmes

Single threshold labelling programmes offer the following advantages:

a) Allow for more precise forecasts of water use as all newly installed products provide the maximum allowed water efficiency level, or less;

b) Allow manufacturers to focus product development efforts on a single, maximum level of efficiency;

c) Allow programme developers to update programme requirements as improved technologies enter the marketplace.

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A.2.2 Water efficiency rating systems

A.2.2.1 Objective

A rating system in a water efficiency labelling programme is intended to differentiate the more water efficient product/appliance from less efficient models and to provide water efficiency information of the model.

NOTE As mentioned in Clause 4 d), the label can or cannot include the product's water efficiency rating. The clauses in this Annex serve as a guidance for other countries that intend to develop their own rating system and labelling system.

A.2.2.2 Rating systems

A rating system can consist of a number of metrics applicable to the plumbing fitting or appliance being rated.

Typically, this is based on the consumption of water in relation to the specific use, for example:

a) Litres per minute [typically used for taps (faucets) and showerheads];

b) Litres per cycle, load, place setting, or other such basis for comparison [typically used for clothes washers, dishwashers and metering taps (faucets)];

c) Litres per flush [typically used for water closets (toilets) and urinals].

Additional metrics can be used to help qualify the rating of the water consumption:

— Maximum water consumption;

— Minimum water consumption;

— The test pressure at which a flow rate was determined [typically used for taps (faucets) and showerheads];

— Minimum and / or maximum place settings (typically used for dishwashers).

An example of a rating system in a banded (tiered) labelling programme for basin taps (faucets) is illustrated in Table A.1.

Table A.1 — Basin taps (faucets) rating system example

Rating	Flow rate Q (l/min)
1	$7{,}5 \leq Q \leq 9{,}0$
2	$6{,}0 \leq Q < 7{,}5$
3	$4{,}5 \leq Q < 6{,}0$
4	$1{,}5 \leq Q < 4{,}5$

NOTE 1 'Rating 4' is the most water efficient.

NOTE 2 'Rating 1' is the least water efficient.

NOTE 3 '9,0 l/min' is the maximum water consumption.

NOTE 4 '1,5 l/min' is the lowest water consumption.

NOTE 5 'l/min' is the water consumption unit.

NOTE 6 '$4{,}5 \leq Q < 6{,}0$' is the water consumption range.

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A.2.3 Water consumption

A.2.3.1 Determination of water consumption

The water consumption of the product should be determined in accordance with the following subclauses for plumbing products:

— A.4 Shower Outlet Devices and Shower Assembly Solutions;

— A.5 Taps (faucets);

— A.6 Flow regulators (flow controllers);

— A.7 Water closets (toilets);

— A.8 Urinals.

The water consumption of the product should be determined in accordance with the following subclauses for water using appliances:

— A.9 Dishwashers;

— A.10 Clothes washers;

— A.11 Combination washers / dryers.

A.2.3.2 Rating of product/appliance

The rating of a product/appliance should be determined in accordance with the rating system specified in A.2.2.

A.2.4 Labelling guidelines

A.2.4.1 Labels

Every model should be issued with a water efficiency label. Every label should meet the minimum requirements as specified in A.2.4.2 and A.2.4.3.

NOTE See Annex E for examples of existing water efficiency programme labels.

A.2.4.2 Label specifications

The specifications of a label should consist of the following:

a) Rating representation, e.g. pass, meets, conforms, star rating, tick;

b) Design of label;

c) Font type e.g. Arial;

d) Font size;

e) Language, e.g. all information in English;

f) Water efficiency label information (see A.2.4.3).

A.2.4.3 Label information

A label should contain the following information:

a) Water efficiency rating;

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b) Product brand;

c) Product model number;

d) Water consumption;

e) Type of product;

f) Number of place settings (applicable for dishwashers);

g) Rated capacity (applicable for washing machine and washer/dryer).

A.2.4.4 Additional label information

The following additional information can be included on the label:

a) Standard number (e.g. ISO 31600:2022);

b) Name of supplier;

c) Recommended wash programme (applicable for clothes washing machines);

d) Intended application, e.g. shower outlet;

e) Label dimensions;

f) Colour specifications and minimum resolutions, e.g. pantone codes;

g) Registration number or unique number issued to the model, QR code or its equivalent;

h) Any other information.

A.2.4.5 Printed labels

The label should be produced or printed in full or proportionately larger, in accordance with any applicable national label specifications, or in any case of a size such that it can be reasonably read and comprehended by consumers.

A.2.4.6 Display of label

The water efficiency labelling programme should detail the appropriate manner the label is displayed at the point of sale. The label may be affixed securely on the physical model or placed near to the product/appliance or on its packaging at point of sale. For product sold at retail, the label should be affixed in a prominent position for consumers to view the water efficiency information and compare with ease.

A.2.4.7 Use of label in advertisements

The water efficiency labelling programme should detail the appropriate manner for the use of the label in product advertisements or marketing.

Where it is not feasible to place all water efficiency information as specified in A.2.4.3 for each model in a printed advertisement, for example, due to space constraints, the advertisement for the model should contain the following:

a) Water efficiency rating;

b) Product brand;

c) Product model number.

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The following additional information can be included on the label:

— Registration number or unique number issued to the model or its equivalent.

A.2.4.8 Modification of a labelled product/appliance

Where there is any change to the critical components of the product that affects its performance and water efficiency, the model should be retested and recertified.

A.2.5 Additional guidance on labelling

Countries that intend to develop their own water efficiency labelling programme are recommended to include the following provisions:

a) requirements to maintain a proper record system of the labels issued to the products for traceability and for review of the water efficiency labelling programme;

b) rules and requirements regarding changes of ownership of the manufacturer, supplier or importer of the labelled product/appliance;

c) rules and requirements on modifications of labelled products that can affect the validity of the label;

d) rules and requirements on altering, falsifying or forging of the label;

e) rules and requirements to monitor the ongoing conformance of products to the labelling programme requirements. General information on the various approaches that countries or regions have taken for this is provided in Annex D.

A.3 General requirements for plumbing products

A.3.1 General

This subclause applies to:

— A.4 Shower Outlet Devices and Shower Assembly Solutions;

— A.5 Taps (faucets);

— A.6 Flow regulators (flow controllers);

— A.7 Water closets (toilets);

— A.8 Urinals.

A.3.2 Conformance to national standard(s)

As a prerequisite, all labelled plumbing products and all components included as part of a labelled product assembly should conform to all the requirements contained in the applicable national standard(s) of the country of intended installation.

NOTE National regulations can also apply.

A.3.3 Instructions

The water efficiency labelling programme should require that all labelled products not be packaged, marked, nor provided with instructions directing the user to an alternative water use setting that would override the rated flow rate or water consumption volume, as established by the water efficiency labelling programme. All included instructions related to the maintenance of the product should direct

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the user on ways to maintain the labelled product at the rated flow rate or water consumption volume of the product.

A.4 Shower outlet devices and shower assembly solutions

A.4.1 General

This subclause applies to:

— Shower outlet devices;

— Shower assembly solutions.

A.4.2 Included components

Shower assembly solutions should include a shower control valve [tap (faucet)] and a shower outlet device. Where handheld shower outlet devices are supplied, a compatible flexible hose should also be supplied. All components included with the shower assembly should be installed according to the manufacturer's instructions.

A.4.3 Essential testing

A.4.3.1 General

The following test is considered essential for shower outlet devices and should be included in a water efficiency labelling programme.

A.4.3.2 Determination of shower outlet device flow rate test

The flow rate of the shower outlet device should be determined by the test procedures detailed in the applicable national standard(s) of the country of intended installation. Flow rates should be expressed in terms of litres per minute (l/min).

NOTE National regulations can also apply.

A.4.4 Additional suggested testing

A.4.4.1 General

The following tests are offered for consideration for inclusion in a water efficiency labelling programme. It is possible that they will not be appropriate in all regions.

NOTE 1 The Determination of Spray Coverage and Spray Force tests are only recommended for regions having predominately pressurized (e.g. water utility supplied) plumbing systems. It is possible that it will not be appropriate for regions that have predominately low pressure (e.g. roof cistern supplied) plumbing systems.

NOTE 2 Examples of existing water efficiency labelling programmes for plumbing products and water using appliances are provided in Annexes B and C respectively.

A.4.4.2 Determination of spray coverage

A spray coverage performance test for shower outlet devices should be determined when tested in accordance with the applicable national standard(s) of the country of intended installation.

NOTE 1 The intent of this test is to ensure that the shower outlet device provides an effective spray coverage pattern to facilitate bathing. Performance is recorded and expressed in terms of coverage over a defined area.

NOTE 2 National regulations can also apply.

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A.4.4.3 Determination of spray force test

A spray force test for shower outlet devices should be determined when tested in accordance with the applicable national standard(s) of the country of intended installation. Performance should be expressed in terms of newtons (N).

NOTE 1 The intent of this test is to ensure that the shower outlet device provides adequate force to facilitate bathing.

NOTE 2 National regulations can also apply.

A.4.4.4 Pressure independency (minimum flow rate) test

A means to measure the pressure independency of shower outlet devices should be determined when tested in accordance with the applicable national standard(s) of the country of intended installation.

NOTE 1 The intent of this test is to ensure that low water supply pressures do not adversely affect the performance of the shower outlet device.

NOTE 2 National regulations can also apply.

A.5 Taps (faucets)

A.5.1 General

This clause applies to:

— Manually and electronically operated bathroom taps (faucets) and bathroom tap (faucet) assemblies;

— Manually and electronically operated kitchen taps (faucets) and kitchen tap (faucet) assemblies;

— Manually and electronically operated bar sink taps (faucets) and bar sink tap (faucet) assemblies.

A.5.2 Included components

Where flow controls are supplied, they should be included in the tested assembly. All components included with the tap (faucet) assembly should be installed according to the manufacturer's instructions.

A.5.3 Essential testing

A.5.3.1 General

The following tests are considered essential for taps (faucets) devices and should be included in a water efficiency labelling programme.

A.5.3.2 Determination of water consumption

A.5.3.2.1 Flow rate test — Taps (faucets)

The flow rate of taps (faucets) should be determined by the test procedures detailed in the applicable national standard(s) of the country of intended installation. Flow rates should be expressed in terms of litres per minute (l/min).

NOTE National regulations can also apply.

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A.5.3.2.2 Consumption test — Metering tap (faucet)

The water consumption of metering taps (faucets) should be determined by the test procedures detailed in the applicable national standard(s) of the country of intended installation. Water consumption should be expressed in terms of litres per on-off cycle of the device.

NOTE National regulations can also apply.

A.5.3.2.3 Pressure independency (minimum flow rate test)

A means to measure the pressure independency of taps (faucets) should be determined in accordance with the applicable national standard(s) of the country of intended installation.

NOTE 1 The intent of this test is to ensure that low water supply pressures do not adversely affect the performance of the tap (faucet).

NOTE 2 National regulations can also apply.

This test is only recommended for regions having predominately pressurized (e.g. water utility supplied) plumbing systems. It is possible that it will not be appropriate for regions that have predominately low pressure (e.g. roof cistern supplied) plumbing systems.

A.6 Flow regulators (flow controllers)

A.6.1 General

This clause applies to separately sold flow regulators (flow controllers) used to control the rate of water flow in a tap (faucet), shower outlet device or shower assembly solutions, fitted as per the manufacturer's instructions.

Where local markets allow flow control devices to be sold separately, they are typically sold as part of an aerator sub-assembly for use on taps (faucets), or as a stand-alone component intended to be installed in a shower assembly solution. When fitting a flow regulator (flow controller) to a terminal fitting or any part of a system, it should be compatible with such a system, any fitting within the system such that the addition of the flow regulator (flow controller) does not adversely affect the safety or performance of the fitting or system for the purpose for which it was originally intended. Installation instructions should be included with separately sold flow control devices, and the flow rate specifications should be provided on the packaging.

A.6.2 Essential testing

A.6.2.1 General

The following test is considered essential for flow regulators (flow controllers) and should be included in a water efficiency labelling programme.

A.6.2.2 Determination of flow regulator (flow controller) flow rate test

The flow rate of flow regulators (flow controllers) should be determined by the test procedures detailed in the applicable national standard(s) of the country of intended installation. Flow rates should be expressed in terms of litres per minute (l/min).

NOTE National regulations can also apply.

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A.7 Water closets (toilets)

A.7.1 General

This clause applies to:

— "Seated-type" and "squat-type" water closets (toilets) and water closet (toilet) pans;

— Single and dual-flush volume cistern-type (tank-type) gravity water closets (toilets);

— Single and dual-flush volume cistern-type (tank-type) flushometer-tank (pressure-assist) water closets (toilets);

— Single and dual-flush volume pressure flush valve (flushometer valve) operated water closets (toilets);

— Electro-hydraulic water closets (toilets);

— Separately sold water closet (toilet) pressure flush valve (flushometer valves);

— Separately sold cisterns (tanks) and water closet (toilet) pans (bowls);

— Any other water closet (toilet) technology that meets the intent of this document.

A.7.2 Included components

All included components, including fill (inlet) valves, flush (outlet) valves, water closet (toilet) pressure flush valves (flushometer valves) and other components whether sold separately or as a combined system, should conform to all requirements contained in the applicable national standard(s) of the country of intended installation.

NOTE National regulations can also apply.

A.7.3 Essential testing

A.7.3.1 General

The following test is considered essential for all water closet (toilet) types and should be included in a water efficiency labelling programme.

A.7.3.2 Determination of water consumption (flush volume)

A.7.3.2.1 Water consumption test

The water consumption level of the water closet (toilet) or water closet (toilet) pressure flush valve (flushometer-valve) should be determined by the test procedures detailed in the applicable national standard(s) of the country of intended installation. The water consumption (flush volume) should be expressed in terms of litres per flush (lpf). All components included with the water closet (toilet) or water closet (toilet) pressure flush valve (flushometer-valve) assembly should be installed according to the manufacturer's instructions.

NOTE National regulations can also apply.

A.7.3.2.2 Determination of dual flush water closet (toilet) effective flush volume

For dual-flush water closets (toilets), an effective flush volume should be determined based on a ratio of reduced flushes to full flushes. The ratio of reduced flushes to full flushes should be determined by the test procedures detailed in the applicable national standard(s) of the country of intended installation.

NOTE 1 National regulations can also apply.

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NOTE 2 Some national regulations or national standard(s) do not provide a ratio for determining the effective flush volume of a dual flush water closet (toilet) and leave this requirement to the developers of the Water Efficiency Labelling Programme.

A.7.3.2.3 Independent testing of separately sold water closet (toilet) bowls (pans), cisterns (tanks), and water closet (toilet) pressure flush valves (flushometer valves)

Separately sold water closets (toilets) bowls (pans), cisterns (tanks) and water closet (toilet) pressure flush valves (flushometer valves) should be tested as a complete system or tested separately in accordance with the test procedures detailed in the applicable national standard(s) of the country of intended installation.

NOTE National regulations can also apply.

A.7.3.2.4 Product documentation for separately sold water closet (toilet) bowls (pans), cisterns (tanks) and pressure flush valves (flushometer valves)

If sold separately, the water efficiency labelling programme should require the manufacturer of each separately sold component to clearly indicate on product documentation that the part should be used with a labelled counterpart that has a compatible flush performance in order to ensure that the complete system meets the requirements of the water efficiency labelling programme.

A.8 Urinals

A.8.1 General

This clause applies to:

— Wall mounted and floor mounted urinals;

— Pressurized flushing devices that deliver water to urinals;

— Flush cistern (tank) flushing devices (gravity type) that deliver water to urinals;

— Separately sold urinal pressure flush valves (flushometer valves);

— Any other urinal technology that meets the intent of this document.

A.8.2 Included components

All included components, including urinal pressure flush valves (flushometer valves) and other components whether sold separately or as a combined system, should conform to all requirements contained in the applicable national standard(s) of the country of intended installation.

NOTE National regulations can also apply.

A.8.3 Essential testing

A.8.3.1 General

The following test is considered essential for all urinal types and should be included in a water efficiency labelling programme.

A.8.3.2 Determination of urinal water consumption (flush volume)

A.8.3.2.1 Water consumption test

The water consumption level of the urinal or urinal pressure flush valve (flushometer valve) should be determined by the test procedures detailed in the applicable national standard(s) of the country of

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intended installation. The water consumption (flush volume) should be expressed in terms of litres per flush (lpf). All components included with the urinal or urinal pressure flush valve (flushometer valve) assembly should be installed according to the manufacturer's instructions.

NOTE National regulations can also apply.

A.8.3.2.2 Independent testing of separately sold urinals and urinal pressure flush valves (flushometer valves)

Urinals and urinal pressure flush valves (flushometer valves) should be tested as a complete system or separately in accordance with the test procedures detailed in the applicable national standard(s) of the country of intended installation.

NOTE National regulations can also apply.

A.8.3.2.3 Product documentation for separately sold urinals and pressure flush valves (flushometer valves)

If sold separately, the water efficiency labelling programme should require the manufacturer of each separately sold component to clearly indicate on product documentation that the part should be used with a labelled counterpart that has a compatible flush performance in order to ensure that the complete system meets the requirements of the water efficiency labelling programme.

A.9 Dishwashers

A.9.1 General

This subclause should apply to dishwashers as described in IEC 60436 or the national standard(s) of the country of intended installation.

NOTE National regulations can also apply.

Water consumption and the water efficiency rating should be determined in accordance with A.9.2 and A.9.3 respectively.

A.9.2 Determination of specific water efficiency

The water consumption of a dishwasher should be determined under the same conditions used for the energy consumption tests as those specified in IEC 60436 or the applicable national standard(s) of the country of intended installation.

NOTE 1 National regulations can also apply.

NOTE 2 Some national regulations or national standard(s) can specify a different method to determine this requirement to the developers of the Water Efficiency Labelling Programme.

A.9.3 Rating

The water efficiency rating of a dishwasher can be determined using the following formula for the water consumption determined under A.9.2:

$$WE_{\mathrm{f}} = 1 + \frac{log_e\left(\frac{WC}{WC_{\mathrm{b}}}\right)}{log_e\left(1\text{-}WR_{\mathrm{f}}\right)}$$

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where

WE_f is the fractional water efficiency rating used to determine the efficiency indicator, rounded down to the nearest half rating increment;

WC is the water consumption of the model in litres, determined in accordance with A.9.2;

WC_b is the base water consumption = 2,5 + P × 1,6;

P = Maximum number of place settings of the dishwasher as specified by the manufacturer;

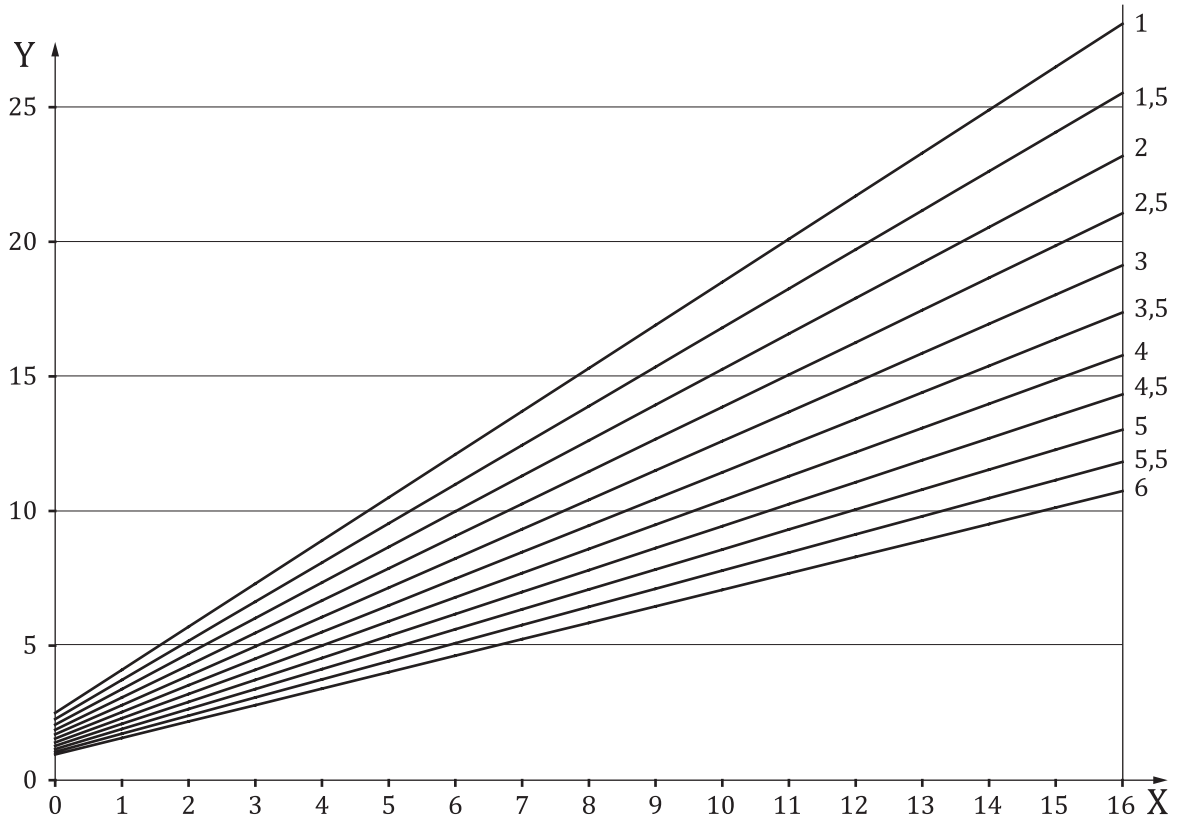
WR_f is the water reduction factor per additional increment e.g. (17,5 %) = 0,175.

If a dishwasher achieves less than 1 on the water efficiency rating, the rating of the dishwasher is null.

A.9.4 Determination of results

A graphical representation of the algorithm for dishwashers is shown in Figure A.1. This is for information only.

The maximum water consumption by efficiency rating and place setting for the algorithm is set out in Table A.2. This is for information only.



Key

X place settings

Y water consumption, l

Figure A.1 — Chart of ratings for dishwashers

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