



Development of European Ecolabel Criteria for Sanitary Tapware

TECHNICAL BACKGROUND REPORT

Renata Kaps, Oliver Wolf

May 2012

Development of European Ecolabel Criteria for Sanitary Tapware

Technical Background Report

DRAFT - WORK IN PROGRESS

Renata Kaps, Oliver Wolf

DG JRC (IPTTS) 2012

Table of contents

Introduction.....	6
1. Project background.....	8
2. Product definition and scope	10
3. Assessment and verification.....	12
4. Proposed ecolabel criteria	13
4.1 Criterion 1 - Water consumption and related energy saving.....	13
4.1.1 Criterion 1(a) – Maximum available water flow rate.....	14
4.1.2 Criterion 1(b) – Lowest maximum available water flow rate	18
4.1.3 Criterion 1(c) – Temperature management.....	20
4.1.4 Criterion 1(d) – Time control	22
4.2 Criterion 2 – Materials	24
4.3 Criterion 3 – Product quality and longevity	29
4.3.1 Criterion 3(a) General requirements	29
4.3.2 Criterion 3(b) – Exposed surface condition and quality of Ni-Cr coating	29
4.3.3 Criterion 3(c) – Reparability and availability of spare parts.....	30
4.3.4 Criterion 3(d) – Warranty	30
4.4 Criterion 4 – Packaging	31
4.5 Criterion 5 – User information.....	33
4.6 Criterion 6 – Information appearing on the EU Ecolabel	34
4.7 Further considerations.....	35
4.7.1 Issues to be considered in the criteria revision process	35
4.7.2 Manufacturing processes.....	36
4.7.3 Criterion regarding substances.....	37
5. Summary	39
APPENDIX I	40
APPENDIX II	42

List of Tables

Table 1 Maximum available water flow rates for "sanitary tapware"	15
Table 2 EN standards regarding the product group "sanitary tapware"	17
Table 3 Lowest maximum available water flow rates for "sanitary tapware"	18

DRAFT - WORK IN PROGRESS

Abbreviations

ACS	– Attestation de Conformité Sanitaire
AHWG	– Ad-hoc Working Group
ANQIP	– Portuguese National Association for Quality in Building Installations
ATA	– Attestation of Toxicological aspects
BAT	– Best Available Techniques
BMA	– Bathroom Manufacturers Association in the United Kingdom
BREF	– Reference Document on Best Available Techniques
CEN TC	– European Committee for Standardization-Technical Committee
CO ₂	– Carbon dioxide
DVGW	– German Technical and Scientific Association for Gas and Water
DWD	– Drinking Water Directive
EPA	– United States Environmental Protection Agency
EU	– European Union
GPP	– Green Public Procurement
ISO	– International Standardisation Organisation
kWh	– Kilowatt hour
l/min	– Litres per minute
LDPE	– Low-density polyethylene
MS	– Member State
psi	– Pounds per square inch
s	– Second
UBA	– German Federal Environment Agency
WELL	– Water Efficiency Label

Introduction

The European Ecolabel¹ is an element of the European Commission's action plan on Sustainable Consumption and Production and Sustainable Industrial Policy² adopted on 16 July 2008. This is a voluntary scheme established to encourage manufacturers to produce goods and services that are environmentally friendly. The EU Ecolabel flower logo should also facilitate consumers and organizations (i.e. public and private purchasers) recognizing the best performing in this respect products and making environmentally sound choices more easily. The EU Ecolabel covers already a wide range of products and services, and its scope is constantly being widened. The process of establishing the criteria proceeds at the European level following consultation with experts and all interested parties. A product or a service awarded with this label must meet high environmental and performance standards.

Green Public Procurement (GPP) is defined in the Commission Communication "Public procurement for a better environment"³ as "a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life cycle when compared to goods, services and works with the same primary function that would otherwise be procured." This is also a voluntary instrument, which public authorities can use to provide industry with incentives for developing and marketing more environmentally friendly products⁴.

The EU Ecolabel and GPP criteria have been developed in parallel in the framework of the Ecotapware project⁵.

The primary goal of establishing the criteria for sanitary tapware is the increase of water-efficiency of these products and the related water and energy savings in the use phase, as this phase has been identified to contribute most to the overall environmental impacts caused by this product group. Further, also other aspects related to the improvement of the environmental performance along the product life cycle are considered together with product quality aspects, which are considered relevant for the EU Ecolabel and GPP policy tools.

Establishing the ecological criteria for water-using products and appropriate promotion of the products awarded with the flower symbol (EU Ecolabel mark), if adopted by a wider range of producers and users, will contribute to more environmentally friendly products. This will in

¹ EU Ecolabel website http://ec.europa.eu/environment/ecolabel/about_ecolabel/what_is_ecolabel_en.htm.

² Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – on the Sustainable Consumption and Production and Sustainable Industrial Policy Action Plan, COM (2008) 397, available online: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0397:FIN:en:PDF>.

³ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Public procurement for a better environment, COM (2008) 400, available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0400:FIN:EN:PDF>.

⁴ GPP website http://ec.europa.eu/environment/gpp/what_en.htm.

⁵ The complete results of the study are available at the project's website: <http://susproc.jrc.ec.europa.eu/ecotapware/>.

consequence reduce the consumption of water and energy (mainly to heat the water, but also for water pumping and wastewater treatment). Further, this will also result in other environmental benefits, as lower air emissions related to energy production and consumption, higher resource efficiency, etc. Finally, the ecolabelled products should also bring private and public customers direct cost savings (expressed as lower expenses for water and related energy bills).

DRAFT - WORK IN PROGRESS

1. PROJECT BACKGROUND

The European Commission's Directorate General for the Environment has initiated a project directed towards developing a joint evidence base for the EU policy making in the area of water using products. This study has been carried out by the Joint Research Centre's Institute for Prospective Technological Studies (JRC-IPTS) and the AEA consultancy, in cooperation with all interested parties.

The purpose of this project is to develop the EU Ecolabel and Green Public Procurement criteria for sanitary tapware. In addition, the evidence base gathers information and data to assist the potential future development of other environmental policy instruments such as Implementing Measures under the Ecodesign Directive. However, Implementing Measures for taps and showerheads are not developed as part of this project but might be introduced in the future. The results of the study are available at the project's website (<http://susproc.jrc.ec.europa.eu/ecotapware/>).

In the framework of the criteria development process two Ad-hoc Working Group (AHWG) meetings took place:

- 1) 1st AHWG meeting was held on 22nd of March 2011 in Seville, Spain,
- 2) 2nd AHWG meeting was held on 19th and 20th of October 2011 in Brussels, Belgium.

The purpose of these meetings was the presentation of results of studies conducted in the framework of the Ecotapware project and a following discussion on them with all interested parties.

The discussions and stakeholders' feedback received during the meetings and additionally in a written form along the open consultation phase aid drafting the proposed Ecolabel criteria for the product group of "Sanitary Tapware".

In the framework of the project the following tasks have been concluded (and respective reports prepared):

- 1) Scoping,
- 2) Product definition,
- 3) Economic and market analysis,
- 4) User behaviour,
- 5) Base case assessment,

6) Best Available Techniques analysis.

All reports for these tasks constitute the Preliminary Report accompanying the Draft Criteria Proposal. They can be downloaded from the previously mentioned project's website.

One of the main outcomes of the environmental assessment of this product group is that the key environmental impacts along the product's life cycle are related to the consumption of water and related energy to heat the water. Establishing Ecolabel criteria to award the most water efficient products is expected to result particularly in reduction of water and related energy consumption, and consequently in reduction of environmental impacts caused by energy production and consumption, water supply and wastewater treatment.

It should be emphasized that the environmental impacts in the use phase depend strongly on user behaviour, which differs significantly between countries and regions due to a wide variety of factors. With regard to this fact in the framework of the project various assumptions had to be made and this should be kept in mind while analysing the project's results. Further, it should be remembered that sanitary tapware constitutes only a final element of the whole water distribution system and their influence on the overall consumption of water and in particular energy for water heating is limited. Finally, while developing the criteria, not only the environmental aspects shall be considered; ensuring the appropriate drinking water quality and safety issues (e.g. prevention against scalding), as well as ensuring end-user comfort are also of high relevance.

DRAFT - WORK IN PROGRESS

2. PRODUCT DEFINITION AND SCOPE

The definition of the product group of "sanitary tapware" has been made based on the available national and international classifications, standards and legal acts. The preliminary definition and proposed scope of the product group has been discussed further with the stakeholders using the Questionnaire 1 and at the 1st and 2nd AHWG meetings. The preliminary definitions⁶ have been revised in the light of the feedback received⁷ and the current version is presented below.

Proposed group definition and scope

The product group "sanitary tapware" shall comprise: household taps, showerheads and showers which are mainly used to derive water for personal hygiene, cleaning, cooking and drinking, including when they are marketed for non domestic use.

The products covered by the scope of this product group can be defined as follows:

- (1) "tap" means a directly or indirectly, mechanically and/or automatically operated valve from which water is drawn;
- (2) "showerhead" means
 - (a) a fixed overhead or side shower outlet, body jet shower outlet or similar device which may be adjustable, and which directs water from a supply system onto the user; or
 - (b) a moveable hand held shower outlet which is connected to a tap with a shower hose and can be hung directly on the tap or on the wall with the aid of an appropriate support;
- (3) "shower" means a combination of showerhead and interrelated control valves and/or devices packaged and sold as a kit;

Included in the product group is sanitary tapware used typically for domestic functions. Nevertheless, the scope is not restricted to the use of products for domestic use only. It covers also products for similar non-domestic uses e.g. in schools, sport centres etc.

Excluded from the scope of this product group are bathtub taps, double lever/handle showers and non-domestic special purpose sanitary tapware.

Further, for the purpose of this Ecolabel Decision, the following definitions shall apply:

⁶ Presented in the Technical Background Reports for the 2nd AHWG meeting and available at the project's website: <http://susproc.jrc.ec.europa.eu/ecotapware/stakeholders.html>.

⁷ The main change is related to the inclusion of the definition of the entire shower system in the scope of the study, i.e. "the combination of a showerhead and other interrelated control valves and/or devices packaged and sold as a kit" and the inclusion of electric showers.

- (4) "double lever/handle shower" means a shower equipped with separate levers or handles for the control of the supply of cold and hot water;
- (5) "electric shower" means a shower equipped with a device to locally heat water for the shower using electrical power;
- (6) "non-domestic special purpose sanitary tapware" means sanitary tapware which requires unrestricted water flow in order to fulfil the intended non-domestic function;
- (7) "water flow limiting device" means a technical device limiting water flow to a given volume and allowing a higher water flow only where activated by the user for a chosen period of time within a single use;
- (8) "maximum available water flow rate" means the highest available water flow rate from the system or individual fitting;
- (9) "lowest maximum available water flow rate" means the lowest water flow rate from the system or individual fitting available at full opening of the valve;
- (10) "security technical feature" means a device forming part of a sensor controlled sanitary tapware which is used to prevent continuous water flow by stopping the water supply after pre-set time even if there is a person or an object present within the sensor range.

3. ASSESSMENT AND VERIFICATION

The specific assessment and verification requirements are indicated within each criterion.

Where the applicant is required to provide declarations, documentation, analyses, test reports, or other evidence to show compliance with the criteria, these may originate from the applicant or his supplier or both.

Where possible, the testing shall be performed by laboratories that meet the general requirements of European Standard EN ISO 17025⁸ or equivalent.

Where appropriate, test methods other than those indicated for each criterion may be used if the competent body assessing the application accepts their equivalence.

For a more detailed verification procedure please see Appendix I.

⁸ ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories.

4. PROPOSED ECOLABEL CRITERIA

The following section presents the criteria proposed for the product group under study. Their selection is based on JRC IPTS work conducted in the frame of Ecotapware project⁹, stakeholders' written feedback and the discussions conducted at the 1st and 2nd AHWG meetings for the criteria development. Further, taking into account the recommendation of the EU Ecolabel Regulation¹⁰ to seek for harmonisation of the EU Ecolabel scheme and national ecolabelling schemes in Member States (MS), existing national and also industrial criteria schemes were considered.

Criteria are proposed for the following aspects:

- 1) Water consumption and related energy saving
- 2) Materials
- 3) Product quality and longevity
- 4) Packaging
- 5) User information
- 6) Information appearing on the EU Ecolabel

Single criteria and the rationale for their definition are presented in the following sections.

4.1 Criterion 1 - Water consumption and related energy saving

The environmental impact assessment along the product group life cycle, conducted in the frame of the Ecotapware project, showed that the highest environmental benefit which can be achieved in reference to sanitary tapware is related to water saving and consequently also to the reduction of energy consumption for water heating. This reduction results in resource saving, but also in decrease of environmental impacts related to water supply and wastewater treatment (e.g. energy consumption related with abstraction, treatment, pumping, distribution in public water supply systems and later drained and treated in public waste water treatment systems¹¹). Further, reducing primary resource depletion due to energy production and the reduction of emissions related to energy generation and consumption is

⁹ For details please see the project's website: <http://susproc.jrc.ec.europa.eu/ecotapware/>.

¹⁰ Regulation (EC) No 66/2010 of the European Parliament and of the Council of 25 November 2009 on the EU Ecolabel, available online at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:027:0001:0019:EN:PDF>.

¹¹ For example, according to stakeholder's feedback, water supply and treatment in Portugal consumes 1.7 kWh/m³.

of importance. More water and energy efficient products will also bring economic benefits for end-users reducing their expenses on water and energy bills.

Calculation of the theoretical saving potential due to application of water-efficient sanitary tapware has been conducted in the frame of the Ecotapware project. It has been estimated that installation of water-saving products would bring a statistical EU 27 household saving of approximately 10 000 litres of water from taps and nearly 3300 litres from showers per year. Additionally, the annual energy saving would amount to approximately 350 kWh and 140 kWh, respectively. The estimated saving potential for the entire EU 27 would amount, depending on the assumptions made, between 73 and 124 TWh for all sanitary tapware used currently in the domestic and non-domestic sectors. It has to be remembered that these values were obtained from calculations, where a high number of assumptions had to be used due to data unavailability. Nevertheless, these estimations arrive at values that clearly indicate the high water and energy saving potential of this product group¹².

The criteria proposed in the frame of the first criteria area, i.e. water consumption and energy saving, aim at reducing both – water and related energy consumption through application of already known and innovative technologies which are related to regulation of water flow rates, to temperature setting and limiting the time of single water use (with regard to non-domestic applications for multiple users and frequent use).

Nevertheless, it must be kept in mind that though water-saving products shall aim at reducing environmental impacts from water and energy consumption in domestic and non-domestic premises, but at the same time they have to also ensure end-user comfort and fulfilling their needs, prevention of hygienic problems in drinking water supply and distribution, and they have to ensure safety of use (i.e. prevention against scalding).

4.1.1 Criterion 1(a) – Maximum available water flow rate

Proposed criterion

The maximum available water flow rates of the sanitary tapware, independent of the water pressure, shall not exceed the values presented in Table 1.

¹² For details please see the Technical background report for the 1st AHWG meeting, available at: <http://susproc.jrc.ec.europa.eu/ecotapware/stakeholders.html>.

Table 1 Maximum available water flow rates for "sanitary tapware"

Product sub-group		Water flow rate [l/min]
Kitchen taps	without flow limiting device	6.0
	with flow limiting device ^[1]	8.0
Basin taps	without flow limiting device	6.0
	with flow limiting device ^[1]	8.0
Showers and showerheads ^[2]		9.0

^[1] The flow limiting device must allow for setting the default water flow rate (water-saving setting) at the value of max of 6/min. The maximum available water flow rate shall not exceed 8 l/min¹³.

^[2] Showerheads and showers with more than one spray pattern shall fulfil the requirement for the setting with the highest water flow.

Rationale

The outcomes of this study and the review of existing research confirm that the issue of increasing water efficiency is the most important in the life cycle of this product group. This is related to the long life-time of the products. The proposed criterion is set in order to contribute to reducing water consumption in domestic and non-domestic premises. Further, it is expected to contribute to decreasing consumption of energy to heat the water and cutting related CO₂ emissions due to decreased consumption of hot water, as well as energy required for supply and wastewater treatment.

Due to variability of uses of the products and the related needed flow rates, in the process of stakeholders' consultation it was decided to divide the product group into three sub-groups:

- (a) kitchen taps,
- (b) basin taps,
- (c) showerheads and showers,

and to define the maximum water flow rates separately for each of them.

The "maximum available water flow rate" is defined as the highest available water flow rate from the system or individual fitting. For pillar taps and divided spout outlet kitchen taps, the flow rate shall be the summation of the two flows, i.e. the total flow to basin or sink, even if the sanitary tapware has separate outlets for hot and cold water.

The proposed maximum flow rate values are the outcomes of the technical analysis made, the stakeholders' consultation and the review of existing national and industrial labelling schemes for this product group. The stakeholder emphasized that the limits to the reduction

¹³ Active user intervention shall be required to activate higher water flow for a chosen period of time within a single use.

of the water flow like e.g. the end-user comfort and satisfaction, as well as health and safety aspects (i.e. sanitation, protection against scalding) shall also be taken into account.

It was indicated that the most appropriate flow rate for basin taps, ensuring end-user comfort and allowing at the same time for rational water consumption, is the value of 6 l/min. In reference to kitchen taps the same water flow value was proposed. Nevertheless, it has also been recognised that in both, kitchens and bathrooms, end-users may also need higher water flow rates for specific uses, i.e. depending on the performed activity (e.g. for washing hands lower flow rates are sufficient, while e.g. in order fill in quickly a pot or a container, a higher water flow rate would be needed). Thus, applying an option of activating a higher flow rate was conceived as a suitable solution. Two maximum available water flow rates are proposed for **basin and kitchen taps** in the current criteria document:

- 6 l/min for products without a possibility of reducing the maximum flow rate to a water-saving mode, i.e. without the flow limiting device,
- 8 l/min for products which allow increasing the flow rate to maximum of 8 l/min, i.e. with the flow limiting device,

The water flow limiting device shall allow for setting the default water-saving mode to a maximum value of 6 l/min. If a higher water flow is required (e.g. to fill a vessel quickly) active user intervention is necessary to overcome this limitation and to activate the higher water flow for a chosen period of time within a single use.

Technical solutions which allow for activating a higher water flow rate include booster buttons (eco-boosters) or mixers with 2-step cartridge (so called taps with water brakes). The tapware flow rate setting returns to the default position when the user shuts off the water or switches off the eco-booster option. More details regarding these technologies can be found in Best Available Techniques (BAT) report of the Ecotapware project¹⁴.

The most appropriate flow rate for **showers and showerheads**, ensuring on the one hand end-user comfort and allowing on the other hand for rational water consumption, was considered the proposed value of 9 l/min. The large majority of stakeholders agreed with this proposal.

Assessment and verification

The following assessment and verification is proposed for this criterion:

The applicant shall declare the product's compliance with the requirement and specify the maximum water flow rate (in l/min) of the product submitted for the labelling procedure

¹⁴ See chapters 3.1.3 Ecobuttons and Chapter 3.1.4 Taps with water brakes of the report Best Available Technology (BAT), available online at: <http://susproc.jrc.ec.europa.eu/ecotapware/stakeholders.html>.

together with results of tests conducted in accordance with testing procedure indicated in respective EN standards for the given kind of product (see Table 2). The testing shall be conducted at a pressure of 1.5, 3.0 and 4.5 bar (± 0.2 bar) for products claimed to be suitable for high pressure installations (typically 1.0 to 5.0 bar) or at pressure of 0.2, 0.3 and 0.5 bar (± 0.2 bar) for products claimed to be suitable for low pressure installations (typically 0.1 to 0.5 bar). A mean value of three measurements shall not exceed the maximum flow rate values indicated in Table 1. For pillar taps and divided spout outlet kitchen taps, the flow rate shall be the summation of the two flows, i.e. the total flow to basin or sink from the hot and cold water tapware. Additionally, for products with an option of economy setting (i.e. flow limiting device), a description of the device applied (i.e. its main technical parameters and installation, setting and use instructions) shall be submitted.

Table 2 EN standards regarding the product group "sanitary tapware"¹⁵

Number	Title
EN 200:2008	Sanitary tapware. Single taps and combination of taps for water supply systems of type 1 and type 2 – General technical specification
EN 816:1997	Sanitary tapware. Automatic shut-off valves (PN10)
EN 817:2008	Sanitary tapware. Mechanical mixing valves (PN10) – General technical specifications
EN 1111:1998	Sanitary tapware. Thermostatic mixing valves (PN10) – General technical specification
EN 1112:2008	Sanitary tapware. Shower outlets for sanitary tapware for water supply systems type 1 and type 2 – General technical specification
EN 1286:1999	Sanitary tapware. Low pressure mechanical mixing valves. General technical specification
EN 1287:1999	Sanitary tapware. Low pressure thermostatic mixing valves. General technical specifications
EN 15091:2006	Sanitary tapware. Electronic opening and closing sanitary tapware
EN 248:2003	Sanitary tapware. General specification for electrodeposited coatings of Ni-Cr

¹⁵ EN standards related to Electric showers are given in Appendix II.

4.1.2 Criterion 1(b) – Lowest maximum available water flow rate

Proposed criterion

The lowest maximum available water flow rates of the sanitary tapware, independent of the water pressure, shall not be lower than the values given in Table 3:

Table 3 Lowest maximum available water flow rates for "sanitary tapware"

Product sub-group	Water flow rate [l/min]
Kitchen taps	2.0
Basin taps	2.0
Showerheads and showers	4.5

For electric showers the lowest available maximum water flow rate, independent of the water pressure, shall not be lower than 3 l/min.

Rationale

For the need of these EU Ecolabel criteria the following definition is proposed:

“Lowest maximum available water flow rate” is the lowest water flow rate from the system or individual fitting available at full opening of the valve. For pillar taps and divided spout outlet kitchen taps, the flow rate shall be the summation of the two flows, i.e. flow to basin or flow to sink.

Setting the criterion on the lowest maximum available water flow rate (called also the minimum water flow rate) is related to the product safety and performance. The minimum flow rate shall ensure that the performance of an ecolabelled product is adequate under various household conditions and the flow is consistent across different pressure systems.

So far, the development of performance criteria for this product group has been conducted for showerheads, but not for taps. The requirements set in the US WaterSense scheme^{16,17} (i.e. spray force and spray coverage) and proposed by a study conducted by the Liverpool John Moores University for United Utilities¹⁸ (i.e. spray pattern (spray distribution), water temperature gradient and skin pressure – velocity of spray) have been presented in the working document for the 1st AHWG meeting¹⁹. Nevertheless, as no standardised EU 27 test

¹⁶ WaterSense – Specification for Showerheads, available online:

http://www.epa.gov/WaterSense/docs/showerheads_finalspec508.pdf.

¹⁷ WaterSense – Specification for Showerheads – Supporting Statement, available online:

http://www.epa.gov/WaterSense/docs/showerheads_finalsupstat508.pdf.

¹⁸ Critchley R., Phipps D., Water and Energy Efficient Showers: Project Report, United Utilities 2007, available online:

<http://www.unitedutilities.com/Documents/UULJMUwaterenergyefficientshowerFinalreport23rdMay2007.pdf>

¹⁹ For details please see the project's website: <http://susproc.jrc.ec.europa.eu/ecotapware/>.

methods are available so far, in the current document the requirements on the so called "fitness for use" criteria are not proposed. This area is recommended for consideration in the first criteria revision process, if such test methods are then available.

This current criterion shall ensure that ecolabelled products do not have features which can impede users' satisfaction due to too low water flow and to ensure safety (protection against scalding). After extensive stakeholders' consultation it was agreed to propose for basin and kitchen taps the value of 2 l/min for taps. For showers and showerheads the threshold of 4.5 l/min is chosen as the most appropriate.

Some stakeholders mentioned that higher values could be needed, particularly for the kitchen taps. It was also pointed out that the current EN standards (which are recommended for use, nevertheless; not obligatory in all EU 27 Member States) indicate for taps the value of 4 l/min. Thus, if fulfilling the EN standards is required in a given MS, the minimum water flow rate of the Ecolabelled product put on the market in this country shall not be lower than 4 l/min. This is, nevertheless, not in contradiction with the criterion proposed, which requires the value of 2l/min or higher; which allows the manufacturer for a flexibility of choosing the values of the flow rate up to the level given before in Table 1 (the maximum available flow rate).

For electric showers (i.e. a shower equipped with open vented instantaneous water heater to locally heat shower water with electrical power) a lower value of 3 l/min is proposed, as agreed in the process of stakeholders' consultation. The electric showers, depending among other on seasonal temperature changes, can deliver the water flow rate of below 4.5 l/min. Such showers are mainly used in the United Kingdom, where they constitute approximately 50% of the showers sold there.

Assessment and verification

The following assessment and verification is proposed for this criterion:

The applicant shall declare the product's compliance with the requirement and specify the lowest maximum available water flow rate of the product submitted for the labelling procedure together with the results of tests conducted in accordance with the testing procedure indicated in respective EN standards for the given kind of product (see Table 2). 1.5, 3.0 and 4.5 bar (± 0.2 bar) for products claimed to be suitable for high pressure installations (typically 1.0 to 5.0 bar) or at pressure of 0.2, 0.3 and 0.5 bar (± 0.2 bar) for products claimed to be suitable for low pressure installations (typically 0.1 to 0.5 bar). A mean value of three measurements shall not be lower than the flow rate value given in Table 3. For pillar taps and divided spout outlet kitchen taps, the flow rate shall be the summation of the two flows, i.e. the total flow to basin or sink from the hot and cold water tapware.

4.1.3 Criterion 1(c) – Temperature management

Proposed criterion

Sanitary tapware shall be equipped with an advanced device or technical solution which allows for the management of temperature and/or hot water by the end-user, for example by limiting the water temperature or the supply of hot water, or by thermostatic adjustment.

The solution shall be specified to provide the user with accurate control over the temperature of the water from the tap or shower, independent of the heating system to which it is connected. Possible solutions may include, for example, a hot water barrier, a cold water supply in middle position and/or a thermostatic mixing valve.

Sanitary tapware designed to be fitted to a water supply that is already temperature controlled and showerheads shall be exempted from this criterion.

Rationale

This criterion aims at decreasing the consumption of hot water, i.e. reducing energy consumption to heat the water, and at subsequent reduction of the related environmental impacts connected with energy generation and consumption.

According to information of SwissEnergy²⁰ around 1.5 l of hot water is lost unused for every hand washing activity (i.e. very short time activity) due to the delay in supply of hot water. Also, for some applications, e.g. basin taps in public bathrooms, given temperature for hot water temperature, sufficient for the purpose of the activities, but still not impeding end-user comfort, could be pre-set, allowing to consume only as much energy for water heating as necessary. In accordance with the studies conducted by the Swedish Energy Agency, up to 40% of an average household energy consumption for hot water can be saved thanks to installation of energy-efficient sanitary tapware²¹.

The criterion on temperature management aims at driving technological development of the product group of sanitary tapware and supporting wider use of already existing solutions contributing to reducing the amount of energy which is consumed for heating water, and which in some cases is lost unused.

One of the possibilities to reduce the above mentioned energy loss, pointed by some stakeholders and recommended e.g. in the Austrian Ecolabel²² and in the Swiss Energy-Label for sanitary tapware (EnergieEtikette)²³, is the application of middle-position for cold

²⁰ SwissEnergy, 2011, Energy Label Regulation for Sanitary Fittings, available online: <http://www.bfe.admin.ch/>.

²¹ Swedish Energy Agency, 2011, Save energy with efficient tapware, received per e-mail, dated 14.10.2011.

²² The website of the Austrian Ecolabel is: <http://www.umweltzeichen.at/>.

²³ Meile O., Swiss Federal Office of Energy, Presentation sent by a stakeholder: Die neue EnergieEtikette: Kennzeichnung für Duschbrausen, Armaturen und Wassersparer.

water. It was however mentioned by other stakeholders that such a solution might not be suitable for every climatic conditions.

Energy saving can be also achieved through application of thermostatic mixing valves in showers. As in majority of cases the warm water is derived by users from showers, it is of particular importance that the desired water temperature is achieved quickly. Many stakeholders pointed out that use of double handle/lever products contributes to loss of water and energy, while thermostatic adjustment allows for their saving. Therefore, based on the feedback received double handle/lever showers were excluded from the scope of the current EU Ecolabel criteria for sanitary tapware.

One another solution to reduce the consumption of energy for water heating can be achieved by equipping the sanitary tapware with device which limits the temperature of hot water. If higher temperature is needed, active user intervention is necessary to override this barrier (used e.g. in thermostatic valves).

It is considered of special importance to ensure flexibility to manufacturers and foster development of new technologies; therefore it is suggested that this criterion shall not prescribe any particular technology. The decision how to fulfil this requirement shall be left to the manufacturer even if the User Manual will indicate example of technologies that are considered as meeting this criteria. In any case, it shall be demonstrated that for the product for which EU Ecolabel shall be awarded the temperature management aspect has been considered.

A voluntary labelling system to indicate the energy efficiency of sanitary tapware based on standardised test methods have been developed in 2010 under the leadership of the Swedish Standards Institute^{24, 25}. The standards for measuring energy efficiency have been presented and discussed during the 1st AHWG meeting. Due to the fact that these standards refer only to the single-lever tapware mixing valves and thermostatic mixing valves with showers, they could not be currently used for the evaluation of all products covered in the scope of the product group of “sanitary tapware” considered for the EU Ecolabel. Nevertheless, it might be worth observing the application and potential developments of these test methods and considering this issue in the process of revision of EU Ecolabel criteria for this product group in the future.

²⁴ Svensk Standard SS 82 00 00:Sanitary tapware – Method for determination of energy efficiency of mechanical basin and sink mixing valves.

²⁵ Svensk Standard SS 82 00 01:Sanitary tapware – Method for determining of energy efficiency of thermostatic mixing valves with showers.

Assessment and verification

The following assessment and verification is proposed for this criterion:

In the application submitted to the competent body, the applicant shall declare that the product complies with the requirement and provide documentation describing the technology or device applied in the product. Where the water supply is already temperature controlled, the applicant shall explain the specific technical property that makes the sanitary tapware suited for fitting to this form of system.

4.1.4 Criterion 1(d) – Time control

Proposed criterion

This criterion applies to sanitary tapware which is sold or marketed together with time control devices (i.e. devices which stop water flow after a certain time if they are not used, for example sensors which stop the water flow when a user leaves the sensor range, or after a set time period of use, for example, time limiters, which stop the water flow when the maximum flow time is reached).

For sanitary tapware equipped with time limiters, the pre-set maximum flow period should not exceed 15 seconds for taps and 35 seconds for showers. Nevertheless, the product shall be designed to allow the installer to adjust the flow time in accordance with the intended product's application.

For sanitary tapware equipped with a sensor, shut off delay time after usage shall not exceed 1 second for taps and 3 seconds for showers. Furthermore, the sanitary tapware equipped with a sensor shall have an in-built 'security technical feature' with a pre-set shut-off time of maximum 2 minutes to prevent an accident or continuous water flow from taps or showers when not in use.

Rationale

This criterion is intended only for non-domestic sanitary tapware (basin taps and showers) marketed by the manufacturer as intended for multiple users and high frequency use. End-users' needs in non-domestic premises are easier to be determined (e.g. time needed to wash hands in a public bathroom or for taking a shower in a swimming-pool), as the typical applications/functions the sanitary tapware have to fulfil are more "homogenous" than in the domestic sector.

Annual non-domestic water consumption in the EU 27 through using sanitary tapware is estimated to be approximately 3 615 Mio. m³ for taps and 362 Mio. m³ for showers²⁶. Regulating the water consumption and eliminating situations where a tap or a shower is left opened though its further use is not intended, as it sometimes happens in public premises, shall contribute to water and related energy savings in the non-domestic sector. Extent of water and related energy lost in this way is very difficult to estimate, even roughly, as it is mainly influenced by user behaviour. Nevertheless, in this way the user behaviour may be influenced.

Further, stakeholders' consultation indicated hygienic reasons for applying sensor solutions, which may be of importance in many public premises.

The question which appeared in this respect in the process of the open consultation is – whether this criterion shall further specify maximum values for time limiters or whether it shall be left the decision of the user/owner, depending on the intended function/application of the sanitary tapware. For example the recently developed WELL water-efficiency labelling scheme²⁷ sets the following values for self-closing valves: maximum of 10 seconds for basin taps and maximum of 20 seconds for showers. In public procurement criteria document published by WRAP in 2010²⁸ the proposed values are 20 seconds for taps and 2 minutes for showers. Thus, it can be seen that these values vary significantly.

The values proposed for the EU Ecolabel are the results of the discussion conducted during the 2nd AHWG meeting in Brussels and the further feedback received in this regard, and they indicate the maximum pre-set times for the different Ecolabelled sanitary tapware products. Nevertheless, in the user manual further instructions regarding setting the most appropriate time limits will be provided, to adjust the time best to the intended tapware application, depending on the function it will fulfil in given premises.

Furthermore, it was emphasized that the sanitary tapware equipped with a sensor shall have an in-built 'security technical feature' with a pre-set shut-off time of maximum 2 minutes to prevent an accident or continuous water flow from the product when not in use. This "Security technical feature" is defined as a device forming part of a sensor controlled sanitary tapware which is used to prevent continuous water flow by stopping the water supply after a pre-set time even if there is a person or an object present within the sensor range. This device is intended to reduce water consumption but could also, depending on the context,

²⁶ More details available in Discussion paper: The application of the Ecodesign Directive 2009/125/E to water-using products (WuP) – Identification of a suitable product group; available at: <http://susproc.jrc.ec.europa.eu/ecotapware/stakeholders.html>

²⁷ WELL - Water Efficiency Labelling Classification scheme for sanitary valves, 2010, available online at: http://www.well-online.eu/config/media/files/171_WELL%20Klassifizierungsscheme.pdf.

²⁸ In December 2010, WRAP in the UK published 'Procurement requirements for water efficiency' Available from: http://www.wrap.org.uk/downloads/2011_01_19_WRAP_water_eff_model_proc_reqs_v6_FINAL.fad042fd.10378.pdf.

reduce accidents and protect against vandalism. The flow of water can be restarted when there is a movement within the sensor range.

Assessment and verification

The following assessment and verification is proposed for this criterion:

The product or system shall be tested at the pressure range stipulated (3.0 bar (\pm 0.2 bar) for high pressure valves or 0.5 bar (\pm 0.2 bar) for low pressure valves) to verify that the time control shuts off within a 10% tolerance of that specified by the applicant. The applicant shall declare that the product complies with the requirement and specify the type of solution used within its technical parameters (a pre-set water flow time for time limiters, the shut-off delay time after usage for sensors), and provide the results of a test conducted in accordance with the standard EN 15091 for electronic opening and closing sanitary tapware or EN 816 for automatic shut-off valves to the competent body as part of the application.

4.2 Criterion 2 – Materials

Chemical and hygienic characteristics of materials

Proposed criterion

Substances and materials used in products coming into contact with drinking water, or impurities associated with them, shall not release into water intended for human consumption any compounds in concentrations higher than necessary for the purpose of their use and shall not, either directly or indirectly, reduce the protection of human health²⁹. They shall not cause any deterioration in the quality of water intended for human consumption with regard to appearance, odour or taste. Within the recommended limits for correct operation (i.e. conditions of use as laid down in the respective EN standards indicated in Table 2), the materials shall not undergo any change which would impair the performance of the product. Materials without adequate resistance to corrosion shall be adequately protected so that they do not present a health risk.

Rationale

Quality of drinking water can be affected by a set of different factors. Among them there are: the source of raw water, water treatment processes, materials, stagnation times of the distribution network, pipe materials used, and microbiological activity in water supply and

²⁹ Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption, Article 10, OJ L 330, 5.12.1998.

distribution systems. Quality of drinking water can be affected by dissolving of substances from materials due to interaction of the water and the materials. For example some metals used in the networks can dissolve to certain extent in acidic and soft, aggressive carbon dioxide containing water of low alkalinity (solution of substances depends e.g. on the water aggressiveness). Substances can also dissolve from organic materials present in networks. It concerns in particular additives from polymeric materials. These organic compounds act then as nutrients for microbes, which can result in faulty taste and odour or induce hygienic problems in the drinking water³⁰.

The EU Drinking Water Directive (DWD)³¹ sets requirements concerning the quality of water intended for human consumption. It sets limits of heavy metal (e.g. lead, copper, nickel) contents in drinking water. Sanitary tapware can constitute a source of low emissions of metal substances to drinking water, though their contribution is considered less relevant than of some other elements of water supply and distribution system, as e.g. of piping system.

DWD obliges Member States to take "all measures necessary to ensure that no substances or materials for new installations used in the preparation or distribution of water intended for human consumption or impurities associated with such substances or materials for new installations remain in water intended for human consumption in concentrations higher than is necessary for the purpose of their use and do not, either directly or indirectly, reduce the protection of human health provided for in this Directive". Further, these materials shall also not contribute to water quality unacceptable to consumers regarding organoleptic parameters, i.e. taste, smell, appearance.

At present there is a lack of harmonised European standards and methods for testing and authorising use of materials in contact with water intended for human consumption. Further, some stakeholders emphasized that there lacks mutual recognition of laboratory test results between most MS and the national differences are sometimes substantial. Works on harmonising these test methods have been conducted for many years in several frameworks. Efforts are made by the so called MS4 group. Germany, France, the Netherlands and the UK work at establishing a scheme for mutual acceptance of certificates between these four countries. The scope of this work shall cover specification of tests to be applied for materials in contact with water intended for human consumption and preparation of lists of approved substances and materials that can be used with limited further testing. This work is intended to constitute a basis for draft regulatory guidance to CEN and for a discussion in the Expert Working group.

³⁰ Rikka M. (Ed.): Drinking Water Quality and Network Materials in Finland. Summary Report. Finnish Institute of Drinking Water, Prizztech Ltd. 2008.

³¹ Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption, available online: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:1998:330:0032:0054:EN:PDF>

Work on several harmonised standards on testing methods for different materials in contact with drinking water is in advanced state of development in the CEN/TC 164 (or just completed). Among them there are e.g.:

- *prEN 16056 – Influence of metallic materials on water intended for human consumption – Method to evaluate the passive behaviour of stainless steel*
- *EN 16057 – Influence of metallic materials on water intended for human consumption - Determination of residual surface lead (Pb) - Extraction method*
- *EN 16058 – Influence of metallic materials on water intended for human consumption - Dynamic rig test for assessment of surface coatings with nickel layers - Long-term test method*

Nevertheless, they are still under approval and do not have the formal CEN vote or have just been approved just approved. After this vote National Standardisation Bodies will vote on their conversion to EN standards.

Works are also under development on hygiene standards in drinking water distribution, including hygienic assessment of plastic materials and other non-metallic materials, which shall be in the future harmonised within the EU 27. One of the currently drafted standards regards “Prediction of migration from organic materials using mathematical models”. Nevertheless, it should be noted that it will not be available before the beginning of 2014.

So far, most Member States have their own requirements and testing procedures and differences between these various systems exist. Some MS require mandatory certification, while in other countries it is voluntary. Several examples illustrating the variability of systems functioning in the EU 27 are given below³².

For example in the UK³³ testing of non-metallic materials and components (e.g. plastics and elastomeric materials) to ensure conformity with the current requirements for odour, flavour, and growth of aquatic microorganisms tests are conducted in accordance with BS 6920:2000³⁴. The tests shall be undertaken in a laboratory accredited under ISO 17025. The UK does currently not have an equivalent test standard for metallic products. Previously, BS 7766³⁵ was used to determine the release of metals into water; nevertheless, it has now been withdrawn due to lacking reproducibility of the results. At present there are no regulatory test requirements for metallic materials of sanitary tapware and the approval in

³² For details please see: Regulations and standards – Water Treatment Equipment, European Water Treatment Association, available online: <http://www.ewta.eu/assets/Uploads/EU-Directory-of-Regulations-and-Standards.pdf>.

³³ Drinking Water Inspectorate's website: <http://dwi.defra.gov.uk/drinking-water-products/approved-products/index.htm>.

³⁴ British Standard 6920:2000 - Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of water.

this respect is not required. The new developed in CEN EN 15664³⁶ series of standards are awaited, however it is not clear how their results will be used then and the requirements set. On the other hand there are requirements set for all stainless steel products used in contact with drinking water. They must be approved under the relevant regulations, unless considered to be a low-risk product/application. Approval for a range of stainless steel materials with specific grades (tested in accordance with BS 7766³⁵) is given.

In France, on the other hand product, registration is mandatory and both metallic and non-metallic materials are controlled and must be certified in accordance with ACS standard³⁷: organic materials shall be included in a Positive List, while metals are assessed depending on their composition.

In Germany, though formally certification is not required, in praxis it is conducted. Products must comply with requirements given in several guidelines. Plastic products/materials have to conform to the KTW guidelines³⁸, recommendations issued by the Federal Environment Agency (UBA)³⁹, and all non-metallic materials must be listed in the Positive List. Organoleptic properties, migration, TOC, chlorine demand and microbial growth are tested. Metallic materials appropriate for contact with drinking water shall be listed the in special recommendation. At present a draft list of these materials suitable for contact with drinking water exists in Germany. The Federal Environment Agency does not license or certify products. It develops the basis for setting standards for the hygienic assessment of materials. Certification of products in contact with drinking water in Germany is conducted by the German Technical and Scientific Association for Gas and Water (DVGW).

In Austria the materials must be registered in the Austrian Positive List and comply with the KTW recommendation. The procedure of testing is similar as in Germany with the exception of the microbiological test, which is not required. It is also interesting to add that there is a mutual recognition of test results agreed between Austria, Germany, Switzerland and the Netherlands.

In Netherlands products in contact with drinking water must be certified with Attestation of Toxicological aspects (ATA). Organoleptic, microbiological and migration tests are conducted and there exists also a Positive List.

³⁵ British Standard 7766:1994 – Specification for assessment of the potential for metallic materials to affect adversely the quality of water intended for human consumption.

³⁶ CEN EN 15664: Influence of metallic materials on water intended for human consumption - Dynamic rig test for assessment of metal release.

³⁷ ACS standard – Attestation de Conformité Sanitaire, <http://www.sante.gouv.fr/attestation-de-conformite-sanitaire-acs.html>.

³⁸ Testing Guideline for Organic Materials (KTW), available online: <http://www.umweltbundesamt.de/wasser-e/themen/trinkwasser/verteilung.htm>.

³⁹ For details see the Federal Environmental Agency website: <http://www.umweltbundesamt.de/wasser-e/themen/trinkwasser/verteilung.htm>.

Voluntary certification is set in Belgium, where plastic materials are checked against a Positive List and tested according to the national standard for general hygiene, migration and microbial growth. Positive lists of materials exist also in other countries like the Czech Republic, Denmark or Spain.

Different approaches are applied in this respect in the national Ecolabel schemes. For example in the Catalan Ecolabel⁴⁰ the criterion concerning chemical and hygienic behaviour of materials is defined as given in the above proposed criterion formulation. The verification and assessment of this criterion is done in the form of manufacturer's (and/or suppliers') declaration of conformity and approval of respective documentation attached. The same formulation is contained in the Austrian Ecolabel⁴¹ and in the newly developed Blue Angel⁴². Additionally, as already mentioned before, the German Environmental Agency issues guidelines on hygienic assessment of materials in contact with water intended for human consumption⁴³. Compliance verification and assessment in the Blue Angel is conducted by evaluating laboratory tests, indicated in these guidelines, submitted by manufacturer and conducted in laboratories that meet the general requirements of EN ISO 17025 or certificates of a respective certified institution.

With regard to lack of harmonised EU testing methods and unified requirements concerning which substances and materials shall be tested a question appeared: how shall the assessment and verification procedure for a common criterion for hygienic materials quality be formulated. Work under the current criteria development process and the extensive stakeholders consultation during the AHWG meetings resulted in choosing the second of the below proposed options:

Option 1 – The applicant shall declare the product's compliance with the respective legal requirements in those countries where it is put on the market.

Option 2 – The applicant shall declare the product's compliance with the requirement and provide a copy of certificate stating that the product is suited for contact with drinking water (with regard to hygienic requirements) from one of the laboratories accredited by the Member States.

⁴⁰ Resolución MAH/2407/2009, de 29 de abril, por la que se establecen los criterios ambientales para el otorgamiento del distintivo de garantía de calidad ambiental a los productos y a los sistemas que favorecen el ahorro de agua. Diari Oficial de la Generalitat de Catalunya 5460 (2009) 66627-66632. Available at: http://www.mediambient.gencat.cat/cat/empreses/ecoproductes_i_ecoserveis/pdf/criteris_ambientals/cast/040.pdf.

⁴¹ The website of the Austrian Ecolabel is: <http://www.umweltzeichen.at/>.

⁴² The website of the Blue Angel is: <http://www.blauer-engel.de/>.

⁴³ Recommendations of the German Federal Environmental Agency are available online at: <http://www.umweltbundesamt.de/wasser-e/themen/trinkwasser/verteilung.htm>.

Option 3 – It could be considered to postpone inclusion of this criterion to the next revision process, when the harmonised testing methods shall already be available.

It was agreed that the current work on the EU Ecolabel criteria development has neither the mandate nor the resources to develop EU wide harmonised standards. Such an approach could be even counterproductive if conflicting with the MS4 activities. Nevertheless, this issue shall be again taken into consideration in the first criteria revision process, if the EU harmonised and applicable standards testing sanitary tapware products in contact with drinking water or the related materials used for their manufacturing are available.

Assessment and verification

The following assessment and verification is proposed for this criterion:

The applicant shall declare that the product complies with the requirement and provide a copy of a certificate stating that the product is suited for contact with drinking water (with regard to hygienic requirements) from one of the laboratories accredited by the Member States as part of the application.

4.3 Criterion 3 – Product quality and longevity

4.3.1 Criterion 3(a) General requirements

Proposed criterion

The product shall comply with the general requirements of the respective EN standards listed in Table 2 or with the corresponding mandatory national legal regulations. The requirement regarding water flow rates is excluded from this criterion.

Where applicable, cleaning of the product elements, which may be necessary under normal use conditions, shall be possible with use of simple tools or agents.

4.3.2 Criterion 3(b) – Exposed surface condition and quality of Ni-Cr coating

Proposed criterion

A sanitary product which has a metallic Ni-Cr coating (regardless of the nature of the substrate material) shall comply with the standard EN 248⁴⁴.

⁴⁴ EN 248:2003 Sanitary tapware. General specification for electrodeposited coatings of Ni-Cr.

4.3.3 Criterion 3(c) – Reparability and availability of spare parts

Proposed criterion

The product shall be designed in such a way that its exchangeable components can be replaced easily by the end-user or a professional service engineer, as appropriate. Information about which elements can be replaced shall be clearly indicated in the information sheet attached to the product. The applicant shall also provide clear instructions to enable the end-user or trained experts, as appropriate, to undertake basic repairs.

The applicant shall further ensure that spare parts are available for at least seven years from the end of production.

4.3.4 Criterion 3(d) – Warranty

Proposed criterion

The applicant shall give a warranty for repair or replacement of minimum four years.

Rationale

Product shall fulfil the general quality requirements which contribute to its proper functioning over its lifetime. The EN standards mentioned in Table 2 include (where appropriate, i.e. depending on the product type) requirements and test methods for evaluating the following aspects: leaktightness, mechanical characteristics, hydraulic characteristics, acoustic characteristics and maintenance⁴⁵. With regard to showerheads with spray device for jet, the last mentioned aspect refers e.g. to the possibility of removing the device by use of simple tools in order to enable cleaning of the product (when necessary) and its long-term appropriate functioning.

Further, as most surfaces of sanitary tapware are covered with Ni-Cr coatings in order to ensure adequate condition and quality of the exposed surfaces of sanitary tapware the criterion 6(b) is proposed. Two characteristics are tested in accordance with the EU harmonised standard EN 248:2003 "Sanitary tapware – General specification for electrodeposited coatings of Ni-Cr": resistance to corrosion and adherence. These tests aim to evaluate and ensure the appropriate quality of the coating.

Moreover, from the point of view of saving raw materials needed for manufacturing sanitary tapware and to reduce emissions and other environmental impacts related to the production phase, the issue of lifetime extension is of importance. In order to ensure longevity of the products, they shall be designed in a way which allows end-user/installer to replace the

⁴⁵ A table indicating which tests should be conducted for various kinds of products with indication of the respective EN standards will be available in user manual.

elements which may have a shorter lifetime (e.g. seals) and repair them easily with use of simple tools. This aspect shall be taken into account in the design phase.

With this regard, it is further required that spare parts are available to purchase for end-users, even several years after production of a given product model is stopped. Based on the stakeholders' feedback the period of seven years was chosen.

Additionally, it was indicated that producers shall ensure warranty conditions valid at least four years, as all products of this product group have relatively long lifetime.

Assessment and verification

The following assessment and verification is proposed for this criterion:

The applicant shall declare that the product complies with these requirements and provide samples of the product information sheet and warranty terms to the competent body as part of the application.

With regard to points (a) and (b) the applicant shall additionally provide the competent body with the results of tests conducted in accordance with the standards listed in Table 2 as regards point (a) and the standard EN 248 as regards point (b) as part of the application.

4.4 Criterion 4 – Packaging

Proposed criterion

Packaging shall meet the following requirements:

- (a) all packaging components shall be easily separable by hand into individual materials in order to facilitate recycling,
- (b) where used, cardboard packaging shall consist of at least 80 % recycled material.

Rationale

Based on the information received from the retail stores and suppliers in the framework of the project, sanitary tapware is predominately supplied in cardboard packaging. Additionally some smaller amounts of plastic, e.g. LDPE bags, are used⁴⁶. Due to the long lifetime of this product group (approximately 16 years for taps and 10 years for showerheads and showers in the domestic sector, 10 and 7 years, respectively, in the non-domestic sector⁴⁷), packaging does not play very important role in these products' life cycle, as it was demonstrated in the conducted technical analysis.

⁴⁶ Please see the Base-case assessment report, available at: <http://susproc.jrc.ec.europa.eu/ecotapware/stakeholders.html>

General regulations concerning the management of packaging and packaging waste to are covered by the Directive 94/62/EC⁴⁸. Nevertheless, as also mentioned during the AHWG meetings, packaging is a horizontal issue, and even if not very relevant for a certain product group, the total mass of packaging used in EU 27 is very significant and the EU Ecolabel criteria shall also cover requirements on packaging and packaging waste and signal to consumers importance of this issue. Further, it was emphasized that packaging is the first element which a consumer sees, and ecolabelled products, as environmentally preferable products, shall also be distributed in appropriate environmentally friendly packaging, which facilitates also its sound waste management (e.g. easy collection, separation and recycling).

It was agreed that the generally applicable criteria set in EU Ecolabel decisions for other product groups, in particular for long-life products, shall be proposed for the Ecolabel criteria for sanitary tapware.

Assessment and verification

The applicant shall declare that the product complies with the requirement and provide the competent body with a sample(s) of the packaging as part of the application.

⁴⁷ Please see the Market and economic analysis & Consumer behavior report, available at:

<http://susproc.jrc.ec.europa.eu/ecotapware/>

⁴⁸ European Parliament and Council Directive 94/62/EC of 20 December 1994 on packaging and packaging waste, available online at: http://europa.eu/legislation_summaries/environment/waste_management/l21207_en.htm

4.5 Criterion 5 – User information

Proposed criterion

The product shall be accompanied by relevant user information which provides advice on the product's proper and environmentally friendly use as well as its maintenance. It shall bear the following information in print (on the packaging and/or on documentation accompanying the product) and/or in electronic format:

- (a) information that the main environmental impact is related to the use phase of the product, i.e. to consumption of water and related energy for water heating and advice on how rational use can minimise the environmental impact,
- (b) information that the product has been awarded the EU Ecolabel, together with a brief, specific explanation as to what this means in addition to the general information provided alongside the EU Ecolabel logo,
- (c) the maximum flow rate in l/min (tested as indicated in Criterion 1(a)),
- (d) installation instructions, including information on the specific operating pressures that the product is suitable for,
- (e) advice concerning the issue of water stagnation and a related warning against drinking tap water after a longer stagnation time (applicable particularly for kitchen taps),
- (f) recommendations on the proper use and maintenance (including cleaning and decalcification) of the product, mentioning all relevant instructions, particularly:
 - (i) advice on maintenance and use of products,
 - (ii) information about which spare parts can be replaced,
 - (iii) instructions concerning the replacement of washers if taps drip water,
 - (iv) advice on cleaning sanitary tapware with appropriate materials in order to prevent damage to their internal and external surfaces.

For sanitary tapware (except showerheads) which is not equipped with time control devices, the following text shall be visibly reproduced on the packaging of the product:

"This EU Ecolabel product is intended for domestic use. It is not intended for use in a non-domestic environment for multiple and frequent use (e.g. public facilities in schools, offices, hospitals, swimming-pools)".

For sanitary tapware which is equipped with time control devices, the following text shall be visibly reproduced on the packaging of the product:

"This EU Ecolabel product is particularly intended for use in non-domestic environment for multiple and frequent use (e.g. public facilities in schools, offices, hospitals, swimming-pools)".

Rationale

Due to the fact that the key factor in the area of sustainable water consumption with regard to use of sanitary tapware is the end-user behaviour, appropriate consumer information is of high importance. Thus, beside installation and maintenance instructions (as described above), information concerning rational water consumption and recommendations concerning potential saving in general and with regard to the given product use shall be attached to the product. This information shall also contain reference to the potential of saving energy to heat the water and the explanation about other environmental impacts which can be reduced due to rational water and in particular hot water consumption.

Further, importance of exchanging used parts and preventing dripping water from sanitary tapware shall be emphasized as these can contribute to high losses of completely unused water, which can however easily be avoided.

Information concerning the suitability of product for a given pressure system shall also be highlighted (if appropriate) and consequences of installing improper appliances to the existing system shall be pointed out.

Finally, it has been also proposed to add on the products' packaging or accompanying information additional notice regarding product's suitability for domestic use or non-domestic applications (for multiple users and frequent use) in order to promote using in the non-domestic premises products, which are equipped with time limitation devices and in this manner to contribute to reduction of single water use in this sector.

Assessment and verification

The following assessment and verification is proposed for this criterion:

The applicant shall declare that the product complies with the requirement and provide the competent body with a sample or samples of the user information and/or a link to a manufacturer's website containing this information as part of the application.

4.6 Criterion 6 – Information appearing on the EU Ecolabel

Proposed criterion

The optional label with text box shall contain the following text:

- Improved water efficiency
- Increased energy saving potential
- Extended lifetime

The guidelines for the use of the optional label with the text box can be found in the "Guidelines for the use of the EU Ecolabel logo" on the website:

<http://ec.europa.eu/environment/ecolabel/promo/pdf/logo%20guidelines.pdf>.

Rationale

The Ecolabel placed on the packaging shall contain clear message indicating the advantages related to the purchase and use of ecolabelled products. It shall constitute an incentive to choose the product due to its preferable environmental performance in comparison with other products. The information which appears on the Ecolabel shall refer to improved water efficiency and lower energy consumption due to considering in the product design the issue of temperature management.

Assessment and verification

The following assessment and verification is proposed for this criterion:

The applicant shall provide a sample of the printed paper product showing the label, together with a declaration of compliance with this criterion.

4.7 Further considerations

4.7.1 Issues to be considered in the criteria revision process

As already mentioned before, there are some aspects which are recommended for consideration in the future process of revision of the EU Ecolabel criteria for this product group. They are briefly mentioned below:

1) Establishing "fitness for use" criteria"

Currently, there lack EU harmonised testing methods to evaluate the fitness for use of the sanitary tapware. As mentioned in the section 4.1.2 such testing methods are only available for showers and showerheads, nevertheless, they are neither standardised in the EU Member States, nor widely used so far. There lack completely testing methods for taps. Due to this fact it has been decided to propose in the current criteria set establishing the requirement of the minimum water flow rate, which shall ensure end users comfort and meeting their needs. Nevertheless, the values proposed allow also on water saving.

2) Assessment and verification procedure for the criterion 2 – Material requirements – Chemical and hygienic characteristics of materials

As explained in section 4.2 with regard to lack of harmonised EU testing methods and unified requirements concerning which substances and materials shall be tested it has been proposed to set the current assessment and verification of the above criterion as follows: "the applicant shall declare that the product complies with the requirement and provide a copy of a certificate stating that the product is suited for contact with drinking water (with regard to hygienic requirements) from one of the laboratories accredited by the Member States as part of the application".

This option shall ensure that all the ecolabelled products are tested or the materials used for their manufacturing are allowed for contact with drinking water, independent if such testing or approval is required in a given Member State.

Nevertheless, this issue shall be again taken into consideration in the first criteria revision process, if the EU harmonised and applicable standards for testing sanitary tapware products or materials used for their manufacturing are available already.

- 3) Exploring whether an energy efficiency/consumption measurement and criteria in addition to water flow measurement and criteria might be 1) feasible and 2) meaningful/helpful in terms of driving further future savings.

4.7.2 Manufacturing processes

In the preliminary discussions on the criteria development the potential proposal of a criterion regarding "Manufacturing processes – surface treatment" was considered. It should aim at promoting manufacturers who choose along their production chain best (from the environmental viewpoint) available technologies (BAT). Some stakeholders indicated that the surface treatment processes are of highest importance in the manufacturing phase and could be considered in this respect. The manufacturers would have to demonstrate that they do comply with general environmental legislation. Further, taking into account the environmental impacts of surface treatment, the manufacturers (and/or their suppliers, in applicable) would have to demonstrate that they conduct their processes in accordance with the most environmentally friendly technologies. Among the processes of special concern mentioned were: reuse of the Chromium VI or use of Chromium III, zinc processing without cyanide, water recirculation systems, preventing/not using chlorinated solvents, and other. The latest available version of the Reference Document on Best Available Techniques for the Surface Treatment of Metals and Plastics (BREF) was proposed to be used as a reference document indicating best practices.

Nevertheless, in the process of criteria development and based on the results of the technical analysis conducted it was decided not to set a criterion in this area. The LCA

conducted showed that the contribution of the manufacturing phase to the overall environmental impacts of this product group is very low in comparison with the use phase, for most impact categories below 1%. The detailed results can be found in the report of Base Case Assessment⁴⁹. It has been discussed that the EU Ecolabel is not an appropriate policy tool to stimulate development in this area for this particular product group. The manufacturer stakeholders emphasized further that the production processes are already subject to numerous items of EU and national legislation that set limits for emissions to air, soil and water. Furthermore, technical difficulties in using BREF (which is a very extensive and complex document, updated once in several years) as a reference document were also indicated. It was emphasized that different parts of production and manufacturing processes take place in several places, also outside the EU, which makes very difficult to establish feasible and reliable verification of compliance, going beyond a plain self-declaration.

Due to the negligible impact from the manufacturing phase and having in consideration the additional difficulty of having a feasible and credible verification procedure, it was decided not to establish a criterion on surface treatment and manufacturing processes in the current criteria set.

4.7.3 Criterion regarding substances

The issue of addressing the requirements on the release of hazardous substances from the product was also discussed in the process of criteria development with the stakeholders. As already mentioned, the results of LCA conducted indicated that the main environmental impacts related to this product group are caused in the use phase and in this area the efforts of the development of the EU Ecolabel criteria should be focused. Stakeholders' discussions arrived at the consensual conclusion that hazardous substances play a minor role for this product group due to characteristics of these products and specific materials used in them. In the use phase, the concern regarding substances is their release to drinking water, which was identified as key issue in the area of impacts caused by substances contained in these products. It was decided to address this issue in a more targeted way than with the general criterion on hazardous substances – with the Criterion 2 – Material requirements – Chemical and hygienic characteristics of materials. This criterion aims at ensuring that products in contact with drinking water or materials used for their manufacturing do not pose risk to human health, i.e. the materials used shall not release to water intended for human consumption compounds, which reduce the protection of human health, as it is required by the Drinking Water Directive.

⁴⁹ Available online at the project's website: <http://susproc.jrc.ec.europa.eu/ecotapware/stakeholders.html>.

In this respect it was proposed to require from the manufacturers that the products for which the EU Ecolabel shall be awarded must have been tested and obtained a certificate stating that the product is suited for contact with drinking water (with regard to hygienic requirements) from one of the laboratories accredited by one of the EU Member States, i.e. confirming that it does not release to drinking water substances which can be harmful for human health.

For more information regarding the issue of release of substance to drinking water and certification of products in contact with water intended for human consumption in various Member States, see Chapter 4.2 of this report.

DRAFT - WORK IN PROGRESS

5. SUMMARY

This document has been prepared as the background report accompanying the development of Ecolabel criteria for sanitary tapware. The proposed criteria aim, in particular, at promoting water-efficient products, which in consequence have also reduced impact on consumption of energy needed to heat the water. The criteria furthermore aim at supporting products of high quality ensuring long-term appropriate functioning and proved to be safe for consumers. Further, the information which should accompany the ecolabelled products shall educate and constitute support for the end users how to responsibly and environmentally conscious use these products, contributing to lower environmental impacts related to water consumption.

The criteria are proposed for each of the following aspects:

- 1) Water consumption and related energy saving
- 2) Materials
- 3) Product quality and longevity
- 4) Packaging
- 5) User information
- 6) Information appearing on the EU Ecolabel

Based on the study conducted, increase of water-efficiency of taps and showerheads has been identified as the main reason for establishing the ecological criteria for sanitary tapware, since the use phase contributes most to the environmental impacts caused by this product group along its life cycle. Nevertheless, also other aspects related to the life cycle of this product, which improvement can bring environmental benefits, are considered and rationale to establishing the criteria are presented.

APPENDIX I

Guidelines for a procedure for checking the criteria in respect of applications: use of test laboratories

The national competent body or eco-labelling board will consider the applications individually taking into account the following approach and making a decision according to the specific situation without prejudice to the credibility of the European eco-labelling scheme.

- 1) Laboratory tests shall be performed by laboratories that are accredited for the specified test method according to ISO 17025 or GLP, where possible. The Competent Bodies accept accredited laboratories in all Member States in the EU/EEA and in countries that have signed the mutual recognition agreement according to ILAC, the international accreditation organisation.

If in the Member State where the applicant submits its dossier or where the company or the concerned production plant or service is based, one or more laboratories are accredited according to ISO 17025 or GLP, applicants shall use such a laboratory, either in that Member State or another.

- 2) Laboratories with an accreditation for tests other than those required by the criteria can be accepted if they submit a declaration that the tests are carried out following the same quality management procedures as the tests for which they obtained an accreditation. In case of doubt, the competent body or national board shall inspect the lab that carries out the tests or shall select an accredited auditor who will be charged to do so.
- 3) If neither point 1 or 2 is possible, applicants should call on a non-accredited independent laboratory certified or approved by a Government Department or other public body in a Member State.

In case of doubt, the competent body or national board shall inspect the lab that carries out the tests or shall select an accredited auditor who will be charged to do so.

- 4) If none of points 1 - 3 are possible, applicants may have the tests performed by an independent laboratory that is neither accredited nor approved by authorities according to point 3.

Laboratories with a quality management system shall be preferred. A laboratory situated in an organisation holding an ISO 9001- certificate, may be accepted if the scope of the certification includes the laboratory.

The competent body or national board shall verify the competence of the laboratory that carries out the tests or shall select an accredited auditor who will be charged to do so.

- 5) If none of the above mentioned points can be fulfilled, the applicant may have the tests carried out in a company laboratory (that is not accredited ISO 17025 or GLP, as this would be covered by point 1). The competent body or national board shall ensure that the tests are properly carried out or shall select an accredited auditor who will be charged to do so.

In this case, the laboratory shall have a quality management system. A laboratory within an organisation holding an ISO 9001 certificate is accepted as being under appropriate quality management, if the scope of the certification includes the laboratory.

This option may also be used for continuous monitoring of the production, including discharges and emissions, and for testing fitness for use when no standard test method exists.

DRAFT - WORK IN PROGRESS

APPENDIX II

STANDARDS RELATED TO ELECTRIC SHOWERS⁵⁰

Safety

EN 60335-1: 1994 Safety of household and similar electrical appliances - Part 1: General requirements

EN 60335-2-35: 2002 Household and similar electrical appliances - Safety - Part 2-35: Particular requirements for instantaneous water heaters

EN 60335-2-41 (if including a pump): 2003 Household and similar electrical appliances - Safety - Part 2-41: Particular requirements for pumps

EN 62233: 2008 Measurement methods for electromagnetic fields of household appliances and similar apparatus with regard to human exposure

Electro Magnetic Compatibility Directive (EMC)

EN 55014-1: 2006 Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 1: Emission

EN 55014-2: 1997 Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 2: Immunity - Product family standard

EN 61000-3-11: 2000 Electromagnetic compatibility (EMC) - Part 3-11: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems - Equipment with rated current ≤ 75 A and subject to conditional connection

EN 61000-3-12: 2000 Electromagnetic compatibility (EMC) - Part 3-12: Limits - Limits for harmonic currents produced by equipment connected to public low-voltage systems with input current > 16 A and ≤ 75 A per phase

⁵⁰ The specifics of which standard to use will depend on the specific configuration of the electric shower. These standards are used to establish compliance with the Low Voltage Directive (LVD) and the Electro Magnetic Compatibility Directive (EMC).