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**COMMISSION DECISION**

**of 21 May 2013**

**establishing the ecological criteria for the award of the EU Ecolabel for sanitary tapware**

*(notified under document C(2013) 2826)*

**(Text with EEA relevance)**

(2013/250/EU)

(OJ L 145, 31.5.2013, p. 6)

Corrected by:

► **C1** Corrigendum, OJ L 280, 22.10.2013, p. 32 (2013/250/EU)

**COMMISSION DECISION****of 21 May 2013****establishing the ecological criteria for the award of the EU Ecolabel  
for sanitary tapware***(notified under document C(2013) 2826)***(Text with EEA relevance)****(2013/250/EU)**

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Regulation (EC) No 66/2010 of the European Parliament and of the Council of 25 November 2009 on the EU Ecolabel<sup>(1)</sup>, and in particular Article 8(2) thereof,

After consulting the European Union Eco-labelling Board,

Whereas:

- (1) Under Regulation (EC) No 66/2010, the EU Ecolabel may be awarded to products which have a reduced environmental impact during their entire life cycle.
- (2) Regulation (EC) No 66/2010 provides that specific EU Ecolabel criteria are to be established according to product groups.
- (3) Since the consumption of water and the related energy to heat the water contribute significantly to the overall environmental impacts of households and non-domestic premises, it is appropriate to establish EU Ecolabel criteria for the product group of 'sanitary tapware'. The criteria should, in particular, promote water-efficient products which contribute to a reduction in the consumption of water and thereby also in the energy required for water heating.
- (4) The measures provided for in this Decision are in accordance with the opinion of the Committee established by Article 16 of Regulation (EC) No 66/2010,

HAS ADOPTED THIS DECISION:

*Article 1*

1. 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.

<sup>(1)</sup> OJ L 27, 30.1.2010, p. 1.

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2. The following products shall be excluded from the product group 'sanitary tapware':

- (a) bathtub taps;
- (b) double lever/handle showers;
- (c) non-domestic special purpose sanitary tapware.

*Article 2*

For the purpose of this Decision, the following definitions shall apply:

- (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;
- (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;

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- (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.

*Article 3*

The criteria for awarding the EU Ecolabel under Regulation (EC) No 66/2010, for a product falling within the product group ‘sanitary tapware’ defined in Article 1 of this Decision, as well as the related assessment and verification requirements are set out in the Annex to this Decision.

*Article 4*

The criteria and the related assessment requirements set out in the Annex shall be valid for four years from the date of adoption of this Decision.

*Article 5*

►**C1** For administrative purposes, the code number assigned to the product group ‘sanitary tapware’ shall be ‘40’. ◀

*Article 6*

This Decision is addressed to the Member States.



## ANNEX

## EU ECOLABEL CRITERIA AND ASSESSMENT AND VERIFICATION REQUIREMENTS

Criteria for awarding the EU Ecolabel to sanitary tapware:

1. Water consumption and related energy saving
2. Materials in contact with drinking water
3. Excluded or limited substances and mixtures
4. Product quality and longevity
5. Packaging
6. User information
7. Information appearing on the EU Ecolabel

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 17025 <sup>(1)</sup> 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.

As pre-requisite, the product must meet all respective legal requirements of the country (countries) in which the product is intended to be placed on the market. The applicant shall declare the product's compliance with this requirement.

### Criterion 1. Water consumption and related energy saving

#### (a) Maximum available water flow rate

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

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 <sup>(1)</sup>	8,0
Basin taps	without flow limiting device	6,0
	with flow limiting device <sup>(1)</sup>	8,0
Showerheads and showers <sup>(2)</sup>		8,0

<sup>(1)</sup> 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/min.

<sup>(2)</sup> Showerheads and showers with more than one spray pattern shall fulfil the requirement for the setting with the highest water flow.

<sup>(1)</sup> ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories

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**Assessment and verification:** 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 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 ( $\pm 0,2$  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 ( $\pm 0,02$  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'**

Number	Title
EN 200	Sanitary tapware. Single taps and combination of taps for water supply systems of type 1 and type 2 – General technical specification
EN 816	Sanitary tapware. Automatic shut-off valves (PN10)
EN 817	Sanitary tapware. Mechanical mixing valves (PN10) – General technical specifications
EN 1111	Sanitary tapware. Thermostatic mixing valves (PN10) – General technical specification
EN 1112	Sanitary tapware. Shower outlets for sanitary tapware for water supply systems type 1 and type 2 – General technical specification
EN 1286	Sanitary tapware. Low pressure mechanical mixing valves. General technical specification
EN 1287	Sanitary tapware. Low pressure thermostatic mixing valves. General technical specifications
EN 15091	Sanitary tapware. Electronic opening and closing sanitary tapware
EN 248	Sanitary tapware. General specification for electrodeposited coatings of Ni-Cr
EN60335-1	Household and Similar Electrical Appliances
EN60335-2-35	Household and Similar Electrical Appliances, Safety, Particular Requirements for Instantaneous Water heaters

**▼B**(b) *Lowest maximum available water flow rate*

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
Showers and showerheads	4,5
Electric showers and low pressure showers (*)	3,0

(\*) Products marketed to be suitable for low pressure installations, functioning typically at 0,1 to 0,5 bar.

**Assessment and verification:** 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 ( $\pm 0,2$  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 ( $\pm 0,02$  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.

(c) *Temperature management*

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.

**Assessment and verification:** 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.

**▼B***(d) Time control*

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.

**Assessment and verification:** 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 ( $\pm$  0,02 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.

**Criterion 2. Materials in contact with drinking water***Chemical and hygienic characteristics of materials in contact with drinking water*

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 health<sup>(1)</sup>. 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.

**Assessment and verification:** the applicant shall declare that the product complies with the requirement and submit relevant documentation or test results, as indicated below:

<sup>(1)</sup> Article 10 of Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption (OJ L 330, 5.12.1998, p. 32).



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Metallic materials in contact with drinking water used in sanitary tapware shall be listed in the positive list 'Acceptance of Metallic Materials for Products in Contact with Drinking Water' as given in the Appendix. The applicant shall submit a declaration of compliance with this requirement. If the metallic materials are not included in this positive list, results of test conducted in accordance with the approach for 'Adding Materials to the Composition List within a Category of Materials', as described in the Appendix, and using the EN 15664-1 standard, shall be submitted. Alternatively, if obligatory national regulations are in place in the Member State where the product will be placed on the market, a certificate of approval of these metallic materials and/or product issued by national authorities or responsible laboratories shall be submitted.

Organic materials in contact with drinking water shall be tested in accordance with the respective requirements of the Member State where the product will be placed on the market. A certificate or, if appropriate, test results issued by national authorities or responsible laboratories shall be submitted.

Additionally, if required by the national regulations or the Member State where the product is placed on the market, test results for enhancement of microbial growth and assessment of odour and flavour assessment of water shall be submitted.

**Criterion 3. Excluded or limited substances and mixtures***(a) Hazardous substances and mixtures*

According to the Article 6(6) of Regulation (EC) No 66/2010 on the EU Ecolabel, the product or any article<sup>(1)</sup> of it shall not contain substances meeting criteria for classification with the hazard statements or risk phrases specified below in accordance with Regulation (EC) No 1272/2008 of the European Parliament and of the Council<sup>(2)</sup> or Council Directive 67/548/EEC<sup>(3)</sup> nor shall it contain substances referred to in Article 57 of Regulation (EC) No 1907/2006 of the European Parliament and of the Council<sup>(4)</sup>. The risk phrases below generally refer to substances. However, if information on substances cannot be obtained, the classification rules for mixtures apply.

**List of hazard statements**

Hazard Statement <sup>(1)</sup>	Risk Phrase <sup>(2)</sup>
H300 Fatal if swallowed	R28
H301 Toxic if swallowed	R25
H304 May be fatal if swallowed and enters airways	R65
H310 Fatal in contact with skin	R27
H311 Toxic in contact with skin	R24
H330 Fatal if inhaled	R23/26
H331 Toxic if inhaled	R23
H340 May cause genetic defects	R46
H341 Suspected of causing genetic defects	R68

<sup>(1)</sup> In Regulation (EC) No 1907/2006 (REACH) Article: means an object which during production is given a special shape, surface or design which determines its function to a greater degree than does its chemical composition;

<sup>(2)</sup> OJ L 353, 31.12.2008, p. 1.

<sup>(3)</sup> OJ 196, 16.8.1967, p. 1.

<sup>(4)</sup> OJ L 396, 30.12.2006, p. 1.

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Hazard Statement <sup>(1)</sup>	Risk Phrase <sup>(2)</sup>
H350 May cause cancer	R45
H350i May cause cancer by inhalation	R49
H351 Suspected of causing cancer	R40
H360F May damage fertility	R60
H360D May damage the unborn child	R61
H360FD May damage fertility. May damage the unborn child	R60/61/60-61
H360Fd May damage fertility. Suspected of damaging the unborn child	R60/63
H360Df May damage the unborn child. Suspected of damaging fertility	R61/62
H361f Suspected of damaging fertility	R62
H361d Suspected of damaging the unborn child	R63
H361fd Suspected of damaging fertility. Suspected of damaging the unborn child.	R62-63
H362 May cause harm to breast fed children	R64
H370 Causes damage to organs	R39/23/24/25/26/27/28
H371 May cause damage to organs	R68/20/21/22
H372 Causes damage to organs through prolonged or repeated exposure	R48/25/24/23
H373 May cause damage to organs through prolonged or repeated exposure	R48/20/21/22
H400 Very toxic to aquatic life	R50
H410 Very toxic to aquatic life with long-lasting effects	R50-53
H411 Toxic to aquatic life with long-lasting effects	R51-53
H412 Harmful to aquatic life with long-lasting effects	R52-53
H413 May cause long-lasting harmful effects to aquatic life	R53
EUH059 Hazardous to the ozone layer	R59
EUH029 Contact with water liberates toxic gas	R29
EUH031 Contact with acids liberates toxic gas	R31
EUH032 Contact with acids liberates very toxic gas	R32
EUH070 Toxic by eye contact	R39-41

<sup>(1)</sup> Regulation (EC) No 1272/2008.

<sup>(2)</sup> Directive 67/548/EEC with adjustment to REACH according to Directive 2006/121/EC of the European Parliament and of the Council <sup>(1)</sup> and Directive 1999/45/EC of the European Parliament and of the Council <sup>(2)</sup> as amended.

<sup>(1)</sup> OJ L 396, 30.12.2006, p. 850.

<sup>(2)</sup> OJ L 200, 30.7.1999, p. 1.

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Substances or mixtures which change their properties through processing (e.g. become no longer bioavailable, or undergo chemical modification in a way that removes the previously identified hazard) are exempted) from the above requirement.

Concentration limits for substances or mixtures which may be or have been assigned the hazard statements or risk phrase listed above, meeting the criteria for classification in the hazard classes or categories, and for substances meeting the criteria of Article 57 (a), (b) or (c) of Regulation (EC) No 1907/2006, shall not exceed the generic or specific concentration limits determined in accordance with the Article 10 of Regulation (EC) No 1272/2008. Where specific concentration limits are determined they shall prevail over the generic ones.

Concentration limits for substances meeting criteria of Article 57 (d), (e) or (f) of Regulation (EC) No 1907/2006 shall not exceed 0,1 % weight by weight.

The final product must not be labelled according to the hazard statements above.

The following substances/components are specifically derogated from this requirement:

Nickel in stainless steel of all types	All hazard statements and risk phrases
Articles and homogenous parts of sanitary tapware in contact with drinking water made of alloys, which fall under Article 23 (d) of Regulation (EC) No 1272/2008 and are listed in Part B of the 'Acceptance of metallic materials used for products in contact with drinking water' – Common Approach' or fulfil the requirements to be added to this list as indicated in the Appendix.	All hazard statements and risk phrases
Nickel in protective coating layer, if the release of nickel from nickel layers or a coating containing nickel on inner surfaces of products which are intended to come into contact with drinking water tested in accordance with EN 16058 (*) standard (**) does not exceed 10 µg/l.	All hazard statements and risk phrases
Electronic components of sanitary tapware, which fulfil the requirements of Directive 2011/65/EU (***)	All hazard statements and risk phrases

(\*) Where national requirements of the Member State where the product will be placed on the market or respective testing procedure for the release of nickel from coating are in place, a proof that these national requirements are met can be submitted instead to prove the compliance with this requirement.

(\*\*) 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.

(\*\*\*) Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment

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**Assessment and verification:** for each article or any homogenous part of the applicant shall provide a declaration of compliance with this criterion, together with related documentation, such as declarations of compliance signed by their suppliers, on the non-classification of the substances or materials with any of the hazard classes associated to the hazard statements referred to in the above list in accordance with Regulation (EC) No 1272/2008, as far as this can be determined, as a minimum, from the information meeting the requirements listed in Annex VII of Regulation (EC) No 1907/2006. This declaration shall be supported by summarized information on the relevant characteristics associated to the hazard statements referred to in the above list, to the level of detail specified in section 10, 11 and 12 of Annex II of Regulation (EC) No 1907/2006 (Requirements for the Compilation of Safety Data Sheets).

Information on intrinsic properties of substances may be generated by means other than tests, for instance through the use of alternative methods such as in vitro methods, by quantitative structure activity models or by the use of grouping or read-across in accordance with Annex XI of Regulation (EC) No 1907/2006. The sharing of relevant data is strongly encouraged.

The information provided shall relate to the forms or physical states of the substance or mixtures as used in the final product.

For substances listed in Annexes IV and V of REACH, exempted from registration obligations under Article 2(7)(a) and (b) of Regulation (EC) No 1907/2006 REACH, a declaration to this effect will suffice to comply with the requirements set out above.

(b) *Substances listed in accordance with article 59(1) of Regulation (EC) No 1907/2006*

No derogation from the exclusion in Article 6(6) of the Regulation (EC) No 66/2010 shall be given concerning substances identified as substances of very high concern and included in the list foreseen in Article 59 of Regulation (EC) No 1907/2006, present in mixtures, in an article or in any homogeneous part of a complex article in concentrations > 0,1 %. Specific concentration limits determined in accordance with Article 10 of Regulation (EC) No 1272/2008 shall apply in cases where the concentration is lower than 0,1 %.

**Assessment and verification:** The list of substances identified as substances of very high concern and included in the candidate list in accordance with Article 59 of Regulation (EC) No 1907/2006 can be found on the ECHA website<sup>(1)</sup>.

Reference to the list shall be made on the date of application. The applicant shall provide a declaration of compliance with this criterion, together with related documentation, such as declarations of compliance signed by the material suppliers and copies of relevant Safety Data Sheets for substances or mixtures in accordance with Annex II to Regulation (EC) No 1907/2006 for substances or mixtures. Concentration limits shall be specified in the Safety Data Sheets in accordance with Article 31 of Regulation (EC) No 1907/2006 for substances and mixtures.

<sup>(1)</sup> [http://echa.europa.eu/chem\\_data/authorisation\\_process/candidate\\_list\\_table\\_en.asp](http://echa.europa.eu/chem_data/authorisation_process/candidate_list_table_en.asp)

**▼B****Criterion 4. Product quality and longevity****(a) General requirements**

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.

**(b) Exposed surface condition and quality of Ni-Cr coating**

A sanitary product which has a metallic Ni-Cr coating (regardless of the nature of the substrate material) shall comply with the standard EN 248.

**(c) Reparability and availability of spare parts**

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.

**(d) Warranty**

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

**Assessment and verification:** 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.

**Criterion 5. Packaging**

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.

**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.

**▼B****Criterion 6. User information**

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 for taps), such as for example 'To avoid the wastage of drinking water, use stagnation water (e.g. such as water used in the morning or after holidays) to for example, flush toilets, take a shower or water gardens',
- (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.
  - (v) advice on regular and proper service of aerators.

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)'.

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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)’.

For ‘restricted flow showerheads’ information should be placed on the product sheet regarding the need of checking the compatibility when used with electric shower, e.g. ‘please check that this restricted flow showerhead is compatible with your existing shower system in case you plan to use it with an electric shower’.

*Assessment and verification:* 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.

**Criterion 7. Information appearing on the EU Ecolabel**

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

- Improved water efficiency
- Increased energy saving potential
- With this certified product you save water, energy and money.

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>

*Assessment and verification:* the applicant shall provide a sample of the label, together with a declaration of compliance with this criterion.

**▼B***Appendix*

The following information is based on the report of 'ACCEPTANCE OF METALLIC MATERIALS USED FOR PRODUCTS IN CONTACT WITH DRINKING WATER. Common Approach. Part A – Procedure for the acceptance and Part B – Common Composition List' accessible via <http://www.umweltbundesamt.de/wasser-e/themen/trinkwasser/4ms-initiative.htm>.

**Excerpt 1 of the 'ACCEPTANCE OF METALLIC MATERIALS USED FOR PRODUCTS IN CONTACT WITH DRINKING WATER. Common Approach. Part A. Procedure for the acceptance' presented in chapter 2.**

**1. Acceptance of metallic materials onto the Composition List**

Metallic materials used for PDW must be listed on the Composition List.

*1.1. Procedure for the addition of materials to the Composition List*

The primary responsibility for assessment of materials will remain at the national level making use of established processes and the expert resources available there. However, the interpretation of test results and the application of acceptance criteria described below is complex. For this reason a Committee of Experts should advice in the decision-making process.

The Committee of Experts should have the following expertise:

- Competent knowledge of corrosion and metal release
- Competence on toxicology and evaluation of drinking water quality related to human health aspects
- Understanding of the ways in which metallic materials and products are used in drinking water treatment and supply

The 4 Member States group agreed on a common procedure to accept materials on a common Composition List. This procedure is described in Part B of this document.

*1.2. Structure of the Composition List*

The Composition List contains different categories of metallic materials.

A Category is defined as:

a group of materials with the same characteristics in respect of their field of application, behaviour in contact with drinking water and restrictions with regard to water composition and/or surface area.

The Composition List contains the categories' range of compositions.

Each category has one reference material.

A Reference Material is defined as:

a material falling within a category for which the characteristics of metal release into drinking water are known and reproducible, the composition is strictly controlled and the elements of interest will be at or near the upper limit of acceptability. Possible effects of some constituents to inhibit the metal release have to be taken into account.



**▼B**

Under each category commercially available metallic materials accepted for use in PDW will be listed. The materials may only be used for certain products due to the restrictions with respect to the surface area (Table 1).

Table 1

**Product groups for metallic materials**

Product Group	Examples of products or parts of products	Assumed contact surface 'a'
A	Pipes in buildings installation Uncoated pipelines in water supply systems	100 %
B	Fittings Ancillaries Parts of pumps in buildings installations Parts of valves in buildings installations	10 %
C	Moving parts in water meter Parts of pumps in water supply systems Parts of valves in water supply systems	1 %

## — Product Group A: up to 100 % contact surface

For pipes in a buildings installation the same material can be used for all diameters. A single material can contribute to nearly 100 % of the surface in contact with water e.g. copper, galvanised steel or stainless steel. The evaluation of the conditions for safe use must assume the maximum possible percentage. The acceptance of a composition for the use as pipes includes the acceptance for all uses (e.g. fittings, components, etc.).

This group also includes uncoated metallic pipelines in water supply systems and water treatment processes.

## — Product Group B: up to 10 % contact surface

Fittings or ancillaries can be produced from one material or from slightly different materials throughout the buildings installation. The most common are made from copper alloys that contain lead. Due to their potential to release lead to water there is a need to restrict the total surface contact of products made from these alloys. For assessments of materials for these products a contribution of 10 % water contact surface area is assumed.

This group also includes metallic parts of pumps and valves used in buildings installations.

## — Product Group C: less than 1 % contact surface

For technical reasons, there might be a need to produce small parts from compositions not accepted for the Product Group B, fittings and ancillaries. Other compositions with higher release rates may be accepted in these devices as long as their use will not significantly increase the total contamination of drinking water. The use of such compositions should be restricted to parts that do not exceed 1 % of the total surface in contact with drinking water; for example, the body of a water meter would need to be produced from an accepted composition for Product Group B but a moving part may be produced from a material listed for Product Group C.

**▼B**

This group also includes metallic parts of pumps and valves used in water supply systems and water treatment processes.

### 1.3. *Data required for assessment*

Acceptance of metallic materials is based on results of long term tests on a rig test according to EN 15664-1. The minimum test period is six months and which can be extended. Additional requirements for the testing according to EN 15664-1 are described in 1.4 and 1.5.

Acceptance of a reference material for a category requires acceptance of results from the EN 15664-1 test carried out with different waters (see EN 15664-2) representing the normal range of compositions of drinking waters in the EU.

To add a material in a category, a comparative test against the reference material is required using EN 15664-1. For comparative testing it is sufficient to use a local drinking water, provided that the water is suitably corrosive (see EN 15664-2).

The following information shall be provided:

- Test reports according to EN 15664-1
- Test reports for the composition of the test specimen
- For each composition, information on the boundaries for major alloying constituent elements and maximum values for impurities. Such boundaries will be tighter for Reference Materials than for commercial alloys
- Existing applicable European standard(s) for the material
- The material characteristics
- Products to be manufactured from the material and their uses (a-factor)
- The production process
- Other information considered appropriate in support of the assessment

### 1.4. *Specification of test specimen*

For the testing of a material according to EN 15664-1 the test specimens have to be of a certain composition.

All elements exceeding 0,02 % could be of relevance and have to be declared for the composition of the material to be listed. For impurities below 0,02 % it is the responsibility of the producer of the alloys/materials to guarantee that no release occurs with the potential to cause negative health impacts.

The composition of the test specimens shall be as follows:

**▼B**

## 1.4.1. Reference materials

The test specimens submitted for testing a new reference material and the test specimens used as reference materials for the comparative testing have to meet the following requirements:

- Constituents and impurities have to be in the range as declared.

Note: The composition of the reference material should be accepted before testing is started. The range of composition should be very narrow and the reference material should represent a worst case material in respect of the metal release of concern for the category.

## 1.4.2. Candidate materials for comparative testing

For the candidate materials the range of composition and its allowed impurities have to be defined. Comparative testing is possible, if the defined range of composition of the candidate material complies with the definition of an existing category of materials.

The composition of the test specimens used for testing has to be more restricted than the defined range of composition of the material. Based on the knowledge about copper alloys the composition of the test specimens has to meet the following requirements:

*Constituents:*

- Cu, Zn as constituents have to be in the range as declared
- As as a constituent shall be greater than 66 % of the declared range. (e.g. if the declared range is  $\leq 0,15$  % then 66 % of the range (0,15 %) is 0,10 %; therefore, element content should be 0,10-0,15 %.)
- Al, Si and P shall be less than 50 % of the declared range
- For all other constituents the content shall be greater than 80 % of the declared range (e.g. if the declared range is 1,6 to 2,2 % then 80 % of the range (0,6 %) is 0,48 %; therefore, element content should be greater than 2,08 %).

*Impurities:*

- Impurities to be analysed in the contact water (see 1.5) shall be greater than 60 % of the declared maximum content

For other non-copper alloys these requirements may be different.

## 1.5. Water analysis

If a new reference material is tested the contact water according to EN 15664-1 has to be analysed for all elements exceeding 0,02 % in the composition of the declared material with the exception of:

- Sn, Si and P if present as constituents
- Fe, Sn, Mn, Al, Si and P if present as impurities in the alloy

**▼B**

For comparative testing the analysis of contact water may be limited to certain elements specified for each category in the composition list.

#### 1.6. Acceptance criteria

Table 2 proposes the acceptable contributions from metallic PDW to the overall concentrations of metals at consumers' taps. It is based on the acceptance values for chemical and indicator parametric values in the DWD. The acceptable contributions were derived using the following principles:

- 90 % for elements for which metallic PDW constitute the only major source of contamination;
- 50 % for elements for which other sources of contamination are possible

In the case of other parameters not listed in the DWD, the following criteria have been used:

- Zinc: this element is not toxic at the concentrations encountered in water supply systems where galvanised steel pipes have been used. However, zinc can give rise to complaints about the taste and appearance of water. The proposed reference value has been set to ensure that zinc does not reduce the aesthetic acceptability of water (WHO, 2004).
- Tin, bismuth, molybdenum, titanium: these reference values are based on provisional values recommended by a toxicology expert (Fawell, 2003).
- Other metals: Advice will be sought from toxicology experts on an appropriate reference value as necessary

In order to allow time for the development of natural protective layers, it is proposed that the test procedure simulates a conditioning period of three months, in which a slight non-compliance with the reference concentration is tolerated.

Table 2

#### Acceptable contributions and reference concentrations for acceptance of metallic constituents of metallic PDW

Parameter	Acceptable contribution from metallic PDW	DWD parametric value or proposed reference value in DW (µg/l)	Reference concentration 'RC' for Acceptance Scheme (µg/l)
<i>Part B: Chemical parameters</i>			
Antimony	50 %	5	2,5
Arsenic	50 %	10	5
Chromium	50 %	50	25
Cadmium	50 %	5	2,5
Copper	90 %	2 000	1 800

## ▼B

Parameter	Acceptable contribution from metallic PDW	DWD parametric value or proposed reference value in DW (µg/l)	Reference concentration 'RC' for Acceptance Scheme (µg/l)
Lead	50 %	10	5
Nickel	50 %	20	10
Selenium	50 %	10	5

*Part C: Indicator parameters*

Aluminium	50 %	200	100
Iron	50 %	200	100
Manganese	50 %	50	25

*Others: not listed in DWD*

Bismuth	90 %	10	9
Molybdenum	50 %	20	10
Tin	50 %	6 000	3 000
Titanium	50 %	15	7,5
Zinc	90 %	3 000	2 700

1.7. *Adding a Reference Material for a Category or a Material not falling under a listed Category*

The addition or change of range of an alloying element may move an alloy outside a Category and this change may significantly influence the metal release characteristics of the material. In this case and for an alloy representative of a Category (Reference Material) the following information shall be provided.

— The information listed in 1.3

— Where a proposed new composition is not comparable to a listed Category of materials the full test results from pipe rig testing according to EN15664-1 using at least three different drinking waters defined in EN15664-2 shall be provided.

1.7.1. *Acceptance of a Reference Material*

For the assessment of the test rig results (according to EN 15664-1) the arithmetic mean of the equivalent pipe concentrations  $MEP_n(T)$  shall be considered.

For all periods of operation (T) an average of the  $MEP_n(T)$  of the three test lines in one rig is calculated:  $MEP_a(T)$ .

The material can be accepted for a product group with the assumed contact surface a (see Table 1), if:

(I)  $MEP_a(T) * a \leq RC$  for T = 16, 21 and 26 weeks

(II)  $MEP_a(T_b) \geq MEP_a(T)$  for  $\{T_b, T\} = \{12, 16\}, \{16, 21\}$  and  $\{21, 26\}$  weeks

**▼ B**

are met for all tested drinking waters.

The test may be extended up to 1 year, if criterion II is not met. In this case the material is acceptable, if

(III)  $MEP_a(T_b) \geq MEP_a(T)$  for  $\{T_b, T\} = \{26, 39\}$  and  $\{39, 52\}$  weeks

is met for the tested drinking waters, where criterion II was not fulfilled.

The complete set of available data has to be considered. For the test rig according to EN 15664-1 these are:

- Results of individual test lines,
- 4h stagnation results and
- parameters of water composition.

If stagnation samples were analysed in addition to the requirements in EN 15664-1 this data shall also be considered for the assessment.

The Committee of Expert shall decide, whether the data available is of sufficient quality (e.g. no major difference of the three test lines, interpretation of outliers) for an assessment to be carried out and if so decide whether to accept the material based on the above mentioned criteria. Accepted materials will be added to the Composition List together with the Category as the Reference Material.

#### 1.8. *Adding Materials to the Composition List within a Category of materials*

Where the constituents of a candidate material for approval are shown to fall within a Category, the material can be added to the Composition List provided that a comparative test run against the respective Reference Material in a standardised rig test, EN15664-1, using one water defined in EN15664-2 shows satisfactory results.

For each material, the following information shall be provided:

- The information listed in 1.3
- Results from comparative testing using the pipe rig test EN15664-1 relative to the Category's Reference Material

##### 1.8.1. *Acceptance of a material by comparative testing*

For the assessment of the test rig results (according to EN 15664-1) the arithmetic mean of the equivalent pipe concentrations  $MEP_n(T)$  shall be considered.

For all periods of operation (T) an average of the  $MEP_n(T)$  of the three test lines in the rig is calculated:  $MEP_a(T)$ .

For the Reference Material  $MEP_{a,RM}(T)$  of the three reference lines shall be considered.

The material can be accepted for a product group with the assumed contact surface a of the Reference Material (see Table 1), if:

- (I)  $MEP_a(T) \leq MEP_{a,RM}(T)$  for  $T = 16, 21$  and  $26$  weeks
- (II)  $MEP_a(T_b) \geq MEP_a(T)$  for  $\{T_b, T\} = \{12, 16\}, \{16, 21\}$  and  $\{21, 26\}$  weeks

**▼B**

are met for the tested drinking water.

The test may be extended up to 1 year, if criterion II is not met. In this case the material is acceptable, if

(III)  $MEP_a(T_b) \geq MEP_a(T)$  for  $\{T_b, T\} = \{26, 39\}$  and  $\{39, 52\}$  weeks

is met.

The complete set of available data has to be considered. For the test rig according to EN 15664-1 these are:

— Results of individual test lines,

— 4h stagnation results and

— parameters of water composition.

If stagnation samples were analysed in addition to the requirements in EN 15664-1 this data shall also be considered for the assessment.

The Committee of Expert shall decide, whether the data available is of sufficient quality (e.g. no major difference of the three test lines, interpretation of outliers) for an assessment to be carried out, and if so decide whether to accept the materials based on the above mentioned criteria. Accepted materials will be added to the Composition List for the Category of the Reference Material used for comparative testing.

**Excerpt 2 of the ‘ACCEPTANCE OF METALLIC MATERIALS USED FOR PRODUCTS IN CONTACT WITH DRINKING WATER. Common Approach. Part B – Common Composition List’ presented in chapter 2.**

Copper alloys

Copper-zinc-lead alloys

1.8.1.1. Category

Composition limits of the Category

Constituent	Content (%)	Impurity	Maximum (%)
Copper	$\geq 57,0$	Antimony	0,02
Zinc	Remainder	Arsenic	0,02
Lead	$\leq 3,5$	Bismuth	0,02
Aluminium	$\leq 1,0$	Cadmium	0,02
Iron	$\leq 0,5$	Chromium	0,02
Silicon	$\leq 1,0$	Nickel	0,2
Tin	$\leq 0,5$		

**▼B**

## Composition of Reference Material

Constituent	Content (%)	Impurity	Maximum (%)
Copper	57,0 – 59,0	Antimony	0,02
Zinc	Remainder	Arsenic	0,02
Lead	1,9-2,1	Bismuth	0,02
		Cadmium	0,02
		Chromium	0,02
		Nickel	0,2
		Aluminium	0,2
		Iron	0,3
		Silicon	0,02
		Tin	0,3

Elements for consideration in the migration water:

Lead, nickel, copper, zinc

Addition of:

For each element: Acceptance factors in comparison to the mentioned reference material

## 1.8.1.2. Accepted alloys

Accepted alloy Brass B2 (based on CW617N CW612N)

Constituent	Content (%)	Impurity	Maximum (%)
Copper	57,0 – 60,0	Antimony	0,02
Zinc	Remainder	Arsenic	0,02
Lead	1,6 – 2,2	Bismuth	0,02
		Cadmium	0,02
		Chromium	0,02
		Nickel	0,1
		Aluminium	0,05
		Iron	0,3
		Silicon	0,03
		Tin	0,3

Accepted for the following product groups

Product group B

Product group C

Basis for Acceptance

German Co-normative Research Report RG\_CPDW\_01\_074

Dossier John Nuttall (March 2006)



**▼B**

Accepted alloy Brass B1 (based on CW614N, CW603N)

Constituent	Content (%)	Impurity	Maximum (%)
Copper	57,0 – 62,0	Antimony	0,02
Zinc	Remainder	Arsenic	0,02
Lead	2,5 – 3,5	Bismuth	0,02
		Cadmium	0,02
		Chromium	0,02
		Nickel	0,2
		Aluminium	0,05
		Iron	0,3
		Silicon	0,03
		Tin	0,3

Accepted for the following product groups

Product group C

Basis for Acceptance

German Co-normative Research Report RG\_CPDW\_01\_074

Dossier John Nuttall (March 2006)

Copper-zinc-lead-arsenic alloys

1.8.1.3. Category

Composition limits of the Category

Constituent	Content (%)	Impurity	Maximum (%)
Copper	≥ 61,0	Antimony	0,02
Zinc	Remainder	Bismuth	0,02
Arsenic	≤ 0,15	Cadmium	0,02
Lead	≤ 2,2	Chromium	0,02
Aluminium	≤ 1,0	Nickel	0,2
Iron	≤ 0,5		
Silicon	≤ 1,0		
Tin	≤ 0,5		

Composition of Reference Material

Constituent	Content (%)	Impurity	Maximum (%)
Copper	61,0-63,0	Antimony	0,02
Zinc	Remainder	Bismuth	0,02
Arsenic	0,09-0,13	Cadmium	0,02
Lead	1,4-1,6	Chromium	0,02
Aluminium	0,5-0,7	Nickel	0,2

**▼ B**

Constituent	Content (%)	Impurity	Maximum (%)
		Iron	0,12
		Silicon	0,02
		Tin	0,3

Elements for consideration in the migration water:

Lead, nickel, arsenic, copper, zinc

Restrictions for the use of metallic materials with respect to water composition (health based)

Based on the results of ongoing dedicated research (by industry), the alloying elements (constituents) and the impurities will be limited such, that the alloys can be used in any drinking water.

Accepted for the following product groups

Product Group B

Product Group C

Basis for Proposal

Dossier John Nuttall (March 2006) Addition of:

For each element: Acceptance factors in comparison to the mentioned reference material

Copper-tin-zinc lead alloys

#### 1.8.1.4. Category

Composition limits of the Category

Constituent	Content (%)	Impurity	Maximum (%)
Copper	Remainder	Aluminium	0,01
Zinc	≤ 6,5	Antimony	0,1
Tin	≤ 13,0	Arsenic	0,03
Lead	≤ 3,0	Bismuth	0,02
Nickel	≤ 0,6	Cadmium	0,02
		Chromium	0,02
		Iron	0,3
		Silicon	0,01

Composition of Reference Material

Constituent	Content (%)	Impurity	Maximum (%)
Copper	Remainder	Aluminium	0,01
Zinc	5,9-6,2	Antimony	0,1
Tin	3,9-4,1	Arsenic	0,03
Lead	2,8-3,0	Bismuth	0,02

**▼B**

Constituent	Content (%)	Impurity	Maximum (%)
Nickel	0,5-0,6	Cadmium	0,02
		Chromium	0,02
		Iron	0,3
		Silicon	0,01

Elements for consideration in the migration water:

Lead, nickel, antimony, copper, zinc, tin

Addition of:

For each element: Acceptance factors in comparison to the mentioned reference material

#### 1.8.1.5. Accepted alloys

Accepted alloy Gunmetal GM1 (based on CC491K)

Constituent	Content (%)	Impurity	Maximum (%)
Copper	84,0 – 88,0	Aluminium	0,01
Zinc	4,0 – 6,0	Antimony	0,1
Tin	4,0 – 6,0	Arsenic	0,03
Lead	2,5-3,0	Bismuth	0,02
Nickel	0,1-0,6	Cadmium	0,02
		Chromium	0,02
		Iron	0,3
		Silicon	0,01

Accepted for the following product groups

Product Group B

Product Group C

Basis for Proposal: German Co-normative Research Report RG\_CPDW\_01\_074, Dossier John Nuttall (March 2006)

Coppers

Copper

#### 1.8.1.6. Category

Composition limits for the Category

Constituent	Content (%)	Impurity	Maximum (%)
Copper	≥ 99,9	Others total	≤ 0,1
Phosphorus	≤ 0,04		

**▼B**

## Reference Composition

Constituent	EN number
Cu-DHP	CW 024A

Elements for consideration in the migration water:

None: no need for comparative testing

## 1.8.1.7. Accepted alloys

## Copper (Cu-DHP)

Constituent	Content (%)	Impurity	Maximum (%)
Copper	≥ 99,9	Others total	≤ 0,1
Phosphorus	≤ 0,04		

Accepted for the following product groups

Product group A

Product group B

Product group C

Restrictions for the use of metallic materials with respect to water composition (health based)

The formation of the copper compounds on the surface of copper pipes and consequently the dissolution is strongly influenced by minor components of the water composition. In some water compositions, the rate of leaching of copper may be unacceptably high. Member States may need to offer guidance to the water industry and to suppliers and installers of copper pipe on restrictions that may need to be introduced on use of copper pipe in water compositions where excessive leaching of copper might occur.

Further research into the compatibility of copper with certain compositions of water needs to be carried out using harmonised procedures for investigation and evaluation.

## Basis for Proposal

Research results and practical experience in several Member States are needed to characterise the conditions for safe use.

## Note

The contamination of drinking water by copper pipes depends on several characteristics of water composition. There is no consensus view on their combined action and interaction at this time. In particular, there is inadequate information on the range of compositions of drinking water where non-compliance with the DWD is likely to occur.

## Tinned Copper Tubes and tinned Copper Fittings

For tinned copper tubes and tinned copper fittings as base material copper according to 4.3.1 is used. On this substrate material a tin layer is deposited by different processes. By diffusion of copper ions into the tin layer the formation of an increasing intermetallic phase consisting of tin and copper ( $\eta$ -phase =  $\text{Cu}_6\text{Sn}_5$ ) is formed.

**▼B**

## 1.8.1.8. Category

Composition limits of the Category: tin layer

Constituent	Content (%)	Impurity of	Maximum (%)
Tin and Copper	99,90	Antimony	0,01
		Arsenic	0,01
		Bismuth	0,01
		Cadmium	0,01
		Chromium	0,01
		Lead	0,01
		Nickel	0,01

Reference composition

Copper tube according to EN 1057

Constituent	EN number
Cu-DHP	CW 024A

## 1.8.1.9. Accepted alloys

CW 024A copper with a tin layer thickness 1 µm with the following composition:

Constituent	Content (%)	Impurity of	Maximum (%)
Tin	90	Antimony	0,01
Copper	< 10	Arsenic	0,01
		Bismuth	0,01
		Cadmium	0,01
		Chromium	0,01
		Lead	0,01
		Nickel	0,01

Accepted for the following product groups

Product group A

Product group B

Product group C

Basis for proposal:

Leaching tests

a: rig tests in representative German drinking waters, published: A. Baukloh, S. Priggemeyer, U. Reiter, B. Winkler, Chemically inner tinned Copper Pipes, Less Copper in Corrosive Drinking Waters, Metall 10-11 (1998) 592 - 600.

b: Rig tests according to DIN 50931 (rig test): Technical report DVGW/TZW, 2000

**▼B**

Already existing approvals without restrictions in drinking waters

— Netherlands: according to BRL-K19005,

— Germany: according to DIN 50930, T6 and DVGW GW 392)

— Denmark, ETA

Galvanised steel

#### 1.8.1.10. Category

The zinc coating resulting from used in the galvanising process shall comply with the following requirements.

Constituent	Content (%)	Impurity	Maximum (%)
Zinc		Antimony	0,01
		Arsenic	0,02
		Cadmium	0,01
		Chromium	0,02
		Lead	0,05
		Bismuth	0,01

#### 1.8.1.11. Accepted alloys

The zinc coating resulting from used in the galvanising process complying with the following:

Constituent	Content (%)	Impurity	Maximum (%)
Zinc		Antimony	0,01
		Arsenic	0,02
		Cadmium	0,01
		Chromium	0,02
		Lead	0,05
		Bismuth	0,01

Guidance on restrictions for the use of metallic materials with respect to water composition

The following formula is proposed as a means identifying water compositions where corrosion rates for galvanised steel is acceptable.

$\text{pH} \geq 7,5$  or  $\text{free CO}_2 \leq 0,25$  mmol/L

AND Alkalinity  $\geq 1,5$  mmol/L

AND  $S_1 < 2$  (*definition of  $S_1$  below*)

AND Calcium  $\geq 0,5$  mmol/L

AND Conductivity  $\leq 600$   $\mu\text{S/cm}$  at 25 °C

AND  $S_2 < 1$  or  $S_2 > 3$  (*definition of  $S_2$  below*)

**▼ B**

$$S_1 = \frac{c(\text{Cl}^-) + c(\text{NO}_3^-) + 2 c(\text{SO}_4^{2-})}{c(\text{HCO}_3^-)} \text{ concentrations in mmol/l}$$

$$S_2 = \frac{c(\text{Cl}^-) + 2 c(\text{SO}_4^{2-})}{c(\text{NO}_3^-)} \text{ concentrations in mmol/l}$$

Accepted for the following product groups

Product group A

Product group B

Product group C

Basis for proposal

There are regulations with respect to water composition in France (DTU 60.1/NF P 40-201) and in Germany (DIN 50930-3). These limits are based on practical experience but are expressed in different ways. The proposal covers mainly the same water compositions as both regulations. The proposal takes into account available results from research in Germany and co-normative research.

The proposal incorporates also the recommendations given EN 12502-3 with regard to the risk of localised corrosion. This localised corrosion frequently leads to deterioration in water quality as a result of corrosion products of iron.

The proposal is based on results that have been obtained with galvanised steel pipes with lead concentrations between 1,0 % and 0,6 % in the zinc layer, assuming a similar behaviour of pipes with lower lead concentrations.

Carbon steel

Carbon Steel for pipes and tanks

Carbon steel without permanent protective layers is not suitable for use in contact with drinking water.

Carbon Steel for ancillaries

Unprotected carbon steel can be used for specific applications (e.g. pumps, valves) and only for small surface in contact with water.

#### 1.8.1.12. Category

The constituents and impurities should not exceed the maximum limits stated below:

Constituent	Content (%)	Impurity	Maximum (%)
Iron		Antimony	0,02
Carbon	≤ 2,11	Arsenic	0,02
Chromium	≤ 1,0	Cadmium	0,02
Molybdenum	≤ 1,0	Lead	0,02
Nickel	≤ 0,5		

**▼B**

## 1.8.1.13. Accepted alloys

The constituents and impurities should not exceed the maximum limits stated below:

Constituent	Content (%)	Impurity	Maximum (%)
Iron		Antimony	0,02
Carbon	≤ 2,11	Arsenic	0,02
Chromium	≤ 1,0	Cadmium	0,02
Molybdenum	≤ 1,0	Lead	0,02
Nickel	≤ 0,5		

Accepted for the following product groups

Group C

Basis for proposal

Draft Italian Regulation

Calculation of possible impact on DW

Cast iron

Cast iron for pipes and tanks

Cast iron without permanent protective layers is not suitable for pipes and fittings in contact with drinking water.

Cast iron for ancillaries

Unprotected cast iron can be used for specific applications (e.g. pumps, valves) and only for very small surface in contact with water. Their composition needs to be regulated.

## 1.8.1.14. Category

The constituents and impurities should not exceed the maximum limits stated below:

Constituent	Content (%)	Impurity	Maximum (%)
		Antimony	0,02
Iron		Arsenic	0,02
Carbon		Cadmium	0,02
Chromium	≤ 1,0	Lead	0,02
Molybdenum	≤ 1,0		
Nickel	≤ 6,0		

## 1.8.1.15. Accepted alloys

The constituents and impurities should not exceed the maximum limits stated below:

Constituent	Content (%)	Impurity	Maximum (%)
		Antimony	0,02
Iron		Arsenic	0,02



**▼B**

Constituent	Content (%)	Impurity	Maximum (%)
Carbon		Cadmium	0,02
Chromium	≤ 1,0	Lead	0,02
Molybdenum	≤ 1,0		
Nickel	≤ 6,0		

Accepted for the following product groups

Group C

Basis for proposal

Draft Italian regulation

French regulation

Calculation of possible impact on DW