Project co-financed by the European Regional Development Fund

**GRASPINNO**

Transnational model, strategies and decision support for innovative clusters and business networks towards green growth, focusing on green e-procurement in EE/RES for energy refurbishment of public buildings.

# Deliverable: 3.2.1 Methodology for developing green electronic procurement criteria

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# 1 Introduction

## 1.1 Scope and objectives of the deliverable

This report represents the "methodology for developing green electronic procurement criteria" deliverable for the GRASPINNO project and describes part of the work undertaken in WP3 "Testing". The main objective was the development of a methodology to be used for the development of electronic green public procurement criteria, including the identification of a) general specifications and standards for green eProcurement and b) green criteria that products/services should have.

## 1.2 Structure of the deliverable

This deliverable is structured in 6 chapters:

**Chapter 2,** *"General standards and specifications of green eProcurement"* describes general standards and specifications for green eProcurement with particular emphasis on "green" criteria for products and services.

**Chapter 3**, *"Methodology for green eProcurement criteria"* presents the methodology to be used for the development of electronic green public procurement criteria, prior to the pilot tests to be executed by specific GRASPINNO partners, in order to help the public authorities in the definition of the green criteria of their pilot-tenders and support SMEs offer/provide end-users with green products that fulfill the required green criteria.

In **Chapter 4,** "Identified EU GPP criteria for public buildings refurbishment", there is a presentation of the identified EU "green" criteria for the main categories (Indoor lighting, Office Building Design/Construction/Management, Combined Heat and Power, Furniture, Toilets & Urinals, Wall Panels, Water-based heaters and Sanitary Tapware) related to buildings' refurbishment.

**Chapter 5**, **"**ASHRAE criteria**",** arrays some indicative "green" criteria related to buildings' refurbishment, as these criteria resulted from the study of specific ASHRAE standards.

Finally, in the Annex we have included the harmonized "green" criteria for buildings' refurbishment, that are applicable in 5 countries (Greece, Slovenia, Cyprus, Italy, Bosnia-Herzegovina) participating in the GRASPINNO project.

# 2 General standards and specifications of green eProcurement

## 2.1 Brief description

Green Public Procurement (GPP) is defined in the Communication (COM (2008) 400) "Public procurement for a better environment" 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.". GPP is a voluntary instrument, which means that Member States and public authorities can determine the extent to which they implement it.

Public authorities are major consumers in Europe: they spend approximately 1.8 trillion euro annually, representing around 14 % of the EU's gross domestic product. By using their purchasing power to choose goods and services with lower impacts on the environment, they can make an important contribution to sustainable consumption and production. Green purchasing is also about influencing the market. By promoting and using GPP, public authorities can provide industry with real incentives for developing green technologies and products. In some sectors, public purchasers command a significant share of the market (e.g. public transport and construction, health services and education) and so their decisions have considerable impact.

## 2.2 General standards and specifications

The existence of a procurement model which includes e-procurement that takes into account "green" extensions of products/services is an important factor that contributes positively to the efficient use of energy and money saving for the Public Sector. The procedures of such a model should cover all phases of the supply cycle and the stages of the transaction, from the call for tenders, the examination of the necessary conditions and terms, until the payment and management of the respective contracts. Such a model should be an integrated solution that automates, monitors and controls the processes of green procurement in the best possible way for the public bodies and the suppliers.

This common model should, also, follow the evolution stages of already existing public e-procurement systems. Specifically:

1. Existence of a website that provides general information and on-line forms for a tender.
2. Searchable databases and complete online forms.
3. Two-way communication with the respective suppliers and safe introduction of suppliers' confidential data.
4. Sharing of certified data with other services, with the condition that there is consent from the part of suppliers.

Additionally, the GRASPINNO tool, may adopt operational models and standards used by Public Authorities and organizations across Europe. Indicative examples are the following:

**e-Tendering:** through e-Tendering the creation and publication of the tender notice and the creation and circulation of the required documents are processed electronically. Usually, the process is coordinated through a central portal where all the necessary tender documents are available (e.g. notices, specifications, FAQs, etc.). Furthermore, through the portal the suppliers may submit their offers by using the standardized electronic forms (e-Access, e-Submission). Regarding the necessary information and administrative documents from the suppliers involved, these are available in the respective electronic registry of suppliers from which are recovered in order to be checked. Finally, through the portal it is possible the communication between the Public organization that manages/publishes the tender and the participating suppliers.

A typical e-Tendering model includes the following stages:

- *Online tender publication:* access to published tender notices through the portal, usually through databases accessible via Internet.
- *Electronic delivery of documents:* the participating suppliers can access the Portal and either "download" the tender documentation (eg notice, specifications, etc.), or receive them via email. In this way, a supplier may save time as he can quickly determine whether the declaration of a tender interests him or not.
- *Electronic submission of tenders (e-Submission):* the participating suppliers may submit their offers electronically. A requirement for the implementation

of this step is the existence of appropriate certification and transaction security applications (eg, electronic signatures, etc.).

**Online auctions:** electronic auctions are based on an electronic mechanism responsible for submitting financial offers for a tender. The auctions are not a full evaluation process but an important part of this. They are performed after a preliminary evaluation of offers has been conducted (open, restricted, negotiated tender), allowing them to be ranked by using an automatic evaluation method. Once the preliminary evaluation of the offers is held, the organization performing the tender sends an electronic invitation to the selected suppliers so that they may participate in the auction.

**Electronic marketplaces:** this standard acts as an e-market where suppliers present their profile and offered products/services, thus offering the possibility for public bodies to have an overview of the market. In conjunction with potential electronic catalogues, it is possible the creation of an online platform through which the public bodies may order products/services.

**Electronic catalogues:** Electronic catalogues have specific structure and rely on integrated electronic suppliers' and products' registries that are also based on standards for their structure. By using of electronic catalogues the following advantages are foressen:

- A reduction of the time needed for data analysis is achieved and the errors are minimized, since no iterative checks regarding suppliers' data are required.
- The standard structure of the electronic catalogues allows finding suppliers through specialized searching queries in the electronic catalogues based on specific criteria (eSourcing).
- Facilitation of the process for selecting the winning supplier (eAwarding) since the data lists are directly comparable.
- Facilitation of the process for receiving electronic orders (eOrdering).

Furthermore, to the above standards additional functions can be implemented, so as to complete the functionality of a GPP model. Such indicative functions are the following:

**Qualification systems:** In public procurement, suppliers are required to prove that they meet specific financial and technical specifications, as well as their experience. In addition, they must submit various administrative documents for each tender (e.g. balance sheets, legal documents, Chamber certificates, bank statements, etc.). Qualification systems can reduce the bureaucratic procedures, since they support the automatic submission and control of procurement documents. The documents of each company are being checked once at a specified time from the institutional framework, and after their initial submission are available on-line for all public bodies.

**e-Awarding:** This function aims to help the offers evaluation process both through the automation of the standard procedures and through the use of decision support tools which assist in the ranking of suppliers and the selection of the contractor, thereby enhancing transparency and integrity of the respective process. Moreover, this function is able to send a notice and all related documents to the selected contractor-supplier.

**e-Evaluation:** this function helps the evaluation of the offers submitted by a supplier in order the final tender contractor to be selected.

**e-Contracting:** This function takes over to support the electronic management of training and the monitoring of the contracts execution.

**e-Ordering:** this unit performs all functions that are relative to the creation and distribution by electronic means of all the documents related to specific orders.

**e-Invoicing:** This function is responsible for automating the process of creating and distributing the respectictive invoices between the buyer and the supplier.

**e-Payment:** Refers to the information distribution regarding payments and/or accomplishment of electronic payments between the buyer, the supplier and the bank. In addition, this component supports the electronic management of the Bank Guarantees.

For all the above functions/standards the existence of standardized electronic catalogues (e-Catalogues) per supplier is required. The existence of electronic records

for suppliers/products contributes substantially in avoiding errors and automating the process of public procurement.

Finally, the GRASPINNO integrated tool should take into account certain "green" standards for the products/services that will include.

Indicative examples are the following:

- When it comes to the packaged products these should have in their packaging  this certain Green Seal. This seal on the product's packaging means that the company that produces the product has fulfilled its obligations in relation to the responsibility for the recovery and recycling of the packaging as it is foreseen by Directive 62/1994/EK and the relevant law 2339/2001.
- The products/services should have eco-labeling and meet specific environmental criteria. The EU has created a specific "green procurement" toolkit (http://ec.europa.eu/environment/gpp/eu_gpp_criteria_en.htm) which includes energy criteria for the following: Copy and printing paper, cleaning products/services, office IT equipment, constructions, transport, furniture, electricity, catering services, textiles, gardening products/services, glass, insulation, hard floor coverings, walling, cogeneration of heat and electricity, roads and road markings, street lighting and signaling, cell phones and interior lighting. Therefore, if for the product/service requested environmental criteria were set, then the technical specifications should include these statutory criteria. The use of criteria from voluntary or mandatory energy/eco-label certificates in tenders may lead companies to produce greener products globally. Indicative energy labels are the following:


**Picture 1: Energy/Green labels**

- The legislative framework (European/National) established for the supply of specific products/services should be taken into account. Briefly we mention the following:
    - Minimum requirements for the energy performance of new and existing buildings. Energy performance certification for buildings.
    - Supply of electricity which is generally produced from renewable sources, and not from a particular source or technology.
    - Supply of electrical appliances (i.e. air conditioners etc.) of energy class A, at least.
    - Supply of lamps of energy efficiency classes A or B and which have electronic ballast. Also, the lighting systems in buildings should have maximum energy efficiency 55 lumen/W.
    - Office equipment (e.g. screens, PCs, laptops, printers, fax, etc.) should be certified at least with the «Energy Star» certificate.
- In the GRASPINNO tool should not be included products containing substances or sub-products which are harmful to the environment such as polyurethane products, asbestos products, detergents and cleaning products with phosphates, vinyl products (chlorinated plastic PVC), etc.

# 3 Methodology for green eProcurement criteria

## 3.1 General description

In this section, a methodology for the development of green eProcurement criteria is described. This methodology will be used in the training seminars that will be organized by specific GRASPINNO partners prior to the pilots in order to support the Public Authorities in defining the green criteria of their pilots and, also, support the SMEs to provide products/services that fulfill the required green criteria. The procedure for EU GPP criteria development must follow such a methodology in order to make the criteria development process more participatory and enhance synergies among different product-related policy instruments, for example EU GPP and EU Ecolabel.

The eGPP criteria are developed to facilitate the inclusion of green requirements in public tender documents. While the adopted GPP criteria aim to reach a good balance between environmental performance, cost considerations, market availability and ease of verification, procuring authorities may choose, according to their needs and ambition level, to include all or only certain requirements in their tender documents.

## 3.2 Methodology for GPP criteria

The basic concept of GPP relies on having clear, verifiable, justifiable and ambitious environmental criteria for products and services, based on a life-cycle approach and scientific evidence base. The criteria should be similar to avoid a distortion of the single market and a reduction of EU-wide competition. Having common criteria reduces considerably the administrative burden for economic operators and for public administrations implementing GPP. Common GPP criteria are of a particular benefit to companies operating in many countries as well as SMEs (whose capacity to master differing procurement procedures is limited). The GPP criteria are based on data from an evidence base, on existing ecolabel criteria and on information collected from stakeholders of industry, civil society and Member States. The evidence base uses available scientific information and data, adopts a life-cycle approach and engages stakeholders who meet to discuss issues and develop consensus.

For the purposes of the GRASPINNO pilot actions, a specific methodology will be followed in order green criteria to be identified. This methodology should include:

1. Adoption of the EU legal framework regarding GPP [Directive 2004/17/EC (Utilities), Directive 2004/18/EC (Goods, works, services).
2. *Adoption of the treaty of the European Communities*: The following principles must be respected:
    a. Free movement of goods
    b. Freedom to provide services
    c. Non-discrimination
    d. Equal treatment
    e. Transparency
    f. Proportionality
    g. Mutual recognition
    h. Best value for money.
3. Identification of EU GPP criteria, related to activities for energy efficient public buildings refurbishment.
4. Based on the EU GPP criteria, focus on the related applicable national green criteria.
5. Investigation if the identified criteria are related to the ASHRAE criteria for buildings' energy efficient refurbishment.
6. *Respect of the technical specifications of GPP tenders:* in the pilot actions the following technical specifications could be respected:
    a. *Clear definitions:* All Technical Specifications must be sufficiently precise to allow potential suppliers to understand exactly what is required. It is not possible to simply demand that "All offered products must have a low environmental impact" - it must be clearly defined what "low environmental impact" means, for instance by using the standards or ecolabel criteria.
    b. *Technical standards:* The Technical Specifications of the product or service can be defined by referring to existing international, European or national technical standards such as ISO, EN, DIN. Such reference shall be accompanied by the words 'or equivalent', so that a supplier whose product meets an alternative but equivalent standard is not discriminated against.
    c. *Performance/Functional requirements:* Technical Specifications can also be defined in terms of the environmental performance of the product or service (such as ecolabel criteria), or the function you require the final product to fulfil. Specifying the function rather than

defining the exact technical characteristics of what you require allows greater flexibility in how potential suppliers can respond, giving an option for innovative responses (e.g. "Indoor air conditions in a building: inside temperature between 18-22oC during winter and 26-28oC during summer and a relative humidity of 50%").

d. *Ecolabel criteria:* You can request that the product(s) meet the underlying criteria of a recognized ecolabel and recognize the ecolabel as non-exclusive proof of compliance – you cannot require that the product carries the ecolabel itself - other forms of proof must be accepted (e.g. For PCs, the energy consumption must comply with the standards set in the Energy Star label").

e. *Production and process related criteria:* includes requirements related to the way in which the product has been produced, as long as they are relevant for characterising the product based on a life cycle approach – this implies that the environmental criteria can concern aspects of the production process such as, for instance, emissions to air and water during the production process, which do not necessarily impact on the physical characteristics of the end product. It can be indicated that during the production of paper, harmful emissions to air and water may not exceed certain limits, or that electricity is produced from renewable sources because these criteria characterize the end-product from a life cycle perspective.

# 4 Identified EU GPP criteria for public buildings refurbishment

## 4.1 Overall description

As mentioned before, specific GRASPINNO partners will perform pilot actions in their regions. These pilot actions have to do with the energy efficient refurbishment of public buildings by using the integrated GRASPINNO eGPP tool. For this reason, specific EU "green" criteria related to works/services (i.e. indoor lighting, Office/Building design, Furniture, etc.) for the buildings' refurbishment were identified. In the following subsections, the "green" criteria for each category are presented.

We have identified specific main categories (Indoor lighting, Office Building Design/Construction/Management, Combined Heat and Power, Furniture, Toilets & Urinals, Wall Panels, Water-based heaters and Sanitary Tapware) related to buildings' refurbishment. For each of these categories, we have defined EU "green" criteria, as follows.

## 4.2 Overall Category: Indoor lighting

| ***Category – Level 1: Energy Efficiency*** | | | | | |
|---|---|---|---|---|---|
| ***Subcategory – Level 2: Indoor Lighting*** | | | | | |
| ***Subcategory – Level 3: Lamps*** | | | | | |
| ***Subcategory – Level 4: Existing installations*** | | | | | |
| ***Subcategory – Level 5: Energy Class*** | | | | | |
| **Energy class "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Energy class for replacement lamps of existing installations (Tungsten halogen lamps) | Tungsten halogen lamps energy class | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class C |
| 2 | Energy class for replacement lamps of existing installations (Fluorescent lamps without integral ballast) | Compact fluorescent lamps without integral ballast | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class B |
| 3 | Energy class for replacement lamps of existing installations (reflector/chandelier type fluorescent lamps with integral ballast) | Globe shaped, pear shaped, reflector type or chandelier type compact fluorescent lamps with integral ballast | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class B |
| 4 | Energy class for replacement lamps of existing installations (All lamps other than halogen lamps with colour rendering index Ra>=90). | All lamps other than halogen lamps with colour rendering index Ra>=90 | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class B |
| 5 | Energy class for replacement lamps of existing installations (All other fluorescent lamps with integral ballast). | All other compact fluorescent lamps with integral ballast | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class A |
| 6 | Energy class for replacement lamps of existing installations (15W T8 tubular fluorescent lamps). | 15W T8 tubular fluorescent lamps, and miniature tubular fluorescent lamps | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class B |
| 7 | Energy class for replacement lamps of existing installations (Circular lamps). | Circular lamps | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class B |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Indoor Lighting* | | | | | |
| *Subcategory – Level 3: Lamps* | | | | | |
| *Subcategory – Level 4: Existing installations* | | | | | |
| *Subcategory – Level 5: Energy Class* | | | | | |
| **Energy class "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 8 | Energy class for replacement lamps of existing installations (Other tubular fluorescent lamps). | Other tubular fluorescent lamps | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class A |
| 9 | Energy class for replacement lamps of existing installations (All other lamps incl. LED). | All other lamps including LEDs and discharge lamps | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class A |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Indoor Lighting* | | | | | |
| *Subcategory – Level 3: Lamps* | | | | | |
| *Subcategory – Level 4: New & Renovated installations* | | | | | |
| *Subcategory – Level 5: Energy Class* | | | | | |
| **Energy class "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Energy class for lamps of new & renovated installations (all lamps with colour rendering index Ra>=90) | All lamps with colour rendering index Ra>=90 (where this is required for the activities being carried out in the building) | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class B |
| 2 | Energy class for lamps of new & renovated installations (all other lamps) | All other lamps | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class A |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Indoor Lighting* | | | | | |
| *Subcategory – Level 3: Lamps* | | | | | |
| *Subcategory – Level 4: Lamp life* | | | | | |
| **Lamp life (Hours) "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Lamp life (Tungsten halogen lamps) | Tungsten halogen lamps | EN 50285 | http://ec.europa.eu/environment/ecolabel/documents/part2_Light_bulbs.pdf | Minimum lamp life 2.000 hours |
| 2 | Lamp life (reflector/chandelier type compact fluorescent lamps) | Globe shaped, pear shaped, reflector type or chandelier type compact fluorescent lamps | EN 50285 | http://ec.europa.eu/environment/ecolabel/documents/part2_Light_bulbs.pdf | Minimum lamp life 6.000 hours |
| 3 | Lamp life (other compact fluorescent lamps) | All other compact fluorescent lamps | EN 50285 | http://ec.europa.eu/environment/ecolabel/documents/part2_Light_bulbs.pdf | Minimum lamp life 10.000 hours |
| 4 | Lamp life (circular lamps) | Circular lamps | EN 50285 | http://ec.europa.eu/environment/ecolabel/documents/part2_Light_bulbs.pdf | Minimum lamp life 7.500 hours |
| 5 | Lamp life (T8 tubular fluorescent lamps with electromagnetic ballasts) | T8 tubular fluorescent lamps with electromagnetic ballasts | EN 50285 | http://ec.europa.eu/environment/ecolabel/documents/part2_Light_bulbs.pdf | Minimum lamp life 15.000 hours |
| 6 | Lamp life (Other tubular fluorescent lamps) | Other tubular fluorescent lamps | EN 50285 | http://ec.europa.eu/environment/ecolabel/documents/part2_Light_bulbs.pdf | Minimum lamp life 20.000 hours |
| 7 | Lamp life (HID non-directional lamps) | HID non-directional lamps (primary burning position) | EN 50285 | http://ec.europa.eu/environment/ecolabel/documents/part2_Light_bulbs.pdf | Minimum lamp life 12.000 hours |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Indoor Lighting* | | | | | |
| *Subcategory – Level 3: Lamps* | | | | | |
| *Subcategory – Level 4: Lamp life* | | | | | |
| **Lamp life (Hours) "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 8 | Lamp life (HID directional lamps) | HID directional lamps (primary burning position) | EN 50285 | http://ec.europa.eu/environment/ecolabel/documents/part2_Light_bulbs.pdf | Minimum lamp life 9.000 hours |
| 9 | Lamp life (retrofit LEDs) | Retrofit LEDs with integrated control gear | EN 50285 | http://ec.europa.eu/environment/ecolabel/documents/part2_Light_bulbs.pdf | Minimum lamp life 15.000 hours |
| 10 | Lamp life (other LEDs) | Other LEDs | EN 50285 | http://ec.europa.eu/environment/ecolabel/documents/part2_Light_bulbs.pdf | Minimum lamp life 20.000 hours |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Indoor Lighting* | | | | | |
| *Subcategory – Level 3: Lamps* | | | | | |
| *Subcategory – Level 4: Mercury content* | | | | | |
| **Mercury content (mg/lamp) "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Mercury content (compact fluorescent lamps, less than 30W) | Compact fluorescent lamps, wattage less than 30W | Ecodesign Directive (2009/125/EC) Commission Regulation 245/2009 (Annex III) | http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009L0125, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ | Max. mercury content 2,5 |

| | | | | | |
|---|---|---|---|---|---|
| ***Category – Level 1: Energy Efficiency*** | | | | | |
| ***Subcategory – Level 2: Indoor Lighting*** | | | | | |
| ***Subcategory – Level 3: Lamps*** | | | | | |
| ***Subcategory – Level 4: Mercury content*** | | | | | |
| **Mercury content (mg/lamp) "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| | | | | :L:2009:076:0017:0044 :en:PDF | |
| 2 | Mercury content (compact fluorescent lamps, more than 30W) | Compact fluorescent lamps, wattage 30W or over | Ecodesign Directive (2009/125/EC) Commission Regulation 245/2009 (Annex III) | http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009L0125, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:076:0017:0044:en:PDF | Max. mercury content 3 |
| 3 | Mercury content (T5 tubular lamps, lifetime less than 25.000 hours) | T5 tubular fluorescent lamps, lifetime less than 25.000 hours | Ecodesign Directive (2009/125/EC) Commission Regulation 245/2009 (Annex III) | http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009L0125, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:076:0017:0044:en:PDF | Max. mercury content 2,5 |
| 4 | Mercury content (T5 tubular lamps, lifetime more than 25.000 hours) | T5 lamps, lifetime 25.000 hours or more | Ecodesign Directive (2009/125/EC) Commission Regulation 245/2009 (Annex III) | http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009L0125, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:076:0017:0044:en:PDF | Max. mercury content 4 |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Indoor Lighting* | | | | | |
| *Subcategory – Level 3: Lamps* | | | | | |
| *Subcategory – Level 4: Mercury content* | | | | | |
| **Mercury content (mg/lamp) "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 5 | Mercury content (T8 tubular lamps, wattages less than 70W, lifetime less than 25.000 hours) | T8 tubular fluorescent lamps, wattages less than 70W, lifetime less than 25.000 hours | Ecodesign Directive (2009/125/EC) Commission Regulation 245/2009 (Annex III) | http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009L0125, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:076:0017:0044:en:PDF | Max. mercury content 3,5 |
| 6 | Mercury content (T8 tubular lamps, wattages more than 70W) | T8 tubular fluorescent lamps, wattage 70W or over | Ecodesign Directive (2009/125/EC) Commission Regulation 245/2009 (Annex III) | http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009L0125, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:076:0017:0044:en:PDF | Max. mercury content 5 |
| 7 | Mercury content (T8 lamps, lifetime more than 25.000 hours) | T8 lamps, lifetime 25.000 hours or more | Ecodesign Directive (2009/125/EC) Commission Regulation 245/2009 (Annex III) | http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009L0125, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:076:0017:0044:en:PDF | Max. mercury content 5 |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Indoor Lighting* | | | | | |
| *Subcategory – Level 3: Lamps* | | | | | |
| *Subcategory – Level 4: Packaging* | | | | | |
| **Packaging "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Lamps' packaging (cardboard and corrugated paper boxes) | Cardboard and corrugated paper boxes used for lamps' packaging | | | Shall be made of at least 50% post-consumer recycled material. |
| 2 | Lamps' packaging (plastic materials) | Plastic materials used for lamps' packaging | | | Shall be made of at least 50% post-consumer recycled material. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Indoor Lighting* | | | | | |
| *Subcategory – Level 3: Design of indoor lighting* | | | | | |
| *Subcategory – Level 4: Lighting power density* | | | | | |
| **Lighting power density (W/m²) "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Lighting power density (Car park) | Lighting power density for car parks | EN 12464-1 | | Max. density 2,5 |
| 2 | Lighting power density (Court) | Lighting power density for courts | EN 12464-1 | | Max. density 14 |
| 3 | Lighting power density (Exhibition space, museum) | Lighting power density for exhibition spaces, museums | EN 12464-1 | | Max. density 9 |
| 4 | Lighting power density (Fire station) | Lighting power density for fire stations | EN 12464-1 | | Max. density 12 |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Indoor Lighting* | | | | | |
| *Subcategory – Level 3: Design of indoor lighting* | | | | | |
| *Subcategory – Level 4: Lighting power density* | | | | | |
| **Lighting power density (W/m²) "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 5 | Lighting power density (Further education) | Lighting power density for further education | EN 12464-1 | | Max. density 13 |
| 6 | Lighting power density (Hospital) | Lighting power density for hospitals | EN 12464-1 | | Max. density 12 |
| 7 | Lighting power density (Library) | Lighting power density for libraries | EN 12464-1 | | Max. density 12 |
| 8 | Lighting power density (Offices-cellular) | Lighting power density for cellular offices | EN 12464-1 | | Max. density 13 |
| 9 | Lighting power density (Offices-open plan) | Lighting power density for open plan offices | EN 12464-1 | | Max. density 11 |
| 10 | Lighting power density (Police station) | Lighting power density for police stations | EN 12464-1 | | Max. density 14 |
| 11 | Lighting power density (Post office) | Lighting power density for post offices | EN 12464-1 | | Max. density 14 |
| 12 | Lighting power density (Prison) | Lighting power density for prisons | EN 12464-1 | | Max. density 9 |
| 13 | Lighting power density (Public hall) | Lighting power density for public halls | EN 12464-1 | | Max. density 9 |
| 14 | Lighting power density (Residential) | Residential Lighting power density | EN 12464-1 | | Max. density 11 |
| 15 | Lighting power density (Residential-communal spaces) | Residential (communal spaces) Lighting power density | EN 12464-1 | | Max. density 6 |
| 16 | Lighting power density (School) | Lighting power density for schools | EN 12464-1 | | Max. density 8 |
| 17 | Lighting power density (Sports centre) | Lighting power density for sports centers | EN 12464-1 | | Max. density 9 |
| 18 | Lighting power density (Town hall) | Lighting power density for town halls | EN 12464-1 | | Max. density 13 |

| Category – Level 1: Energy Efficiency | | | | | |
|---|---|---|---|---|---|
| Subcategory – Level 2: Indoor Lighting | | | | | |
| Subcategory – Level 3: Design of indoor lighting | | | | | |
| Subcategory – Level 4: Normalized lighting power density | | | | | |
| Normalized lighting power density (W/m²/100 lux) "green" criteria | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Normalized lighting power density (Bedrooms) | Normalized Lighting power density for bedrooms | EN 12464-1 | | Max. density 7,5 |
| 2 | Normalized lighting power density (Canteens) | Normalized lighting power density for canteens | EN 12464-1 | | Max. density 3,5 |
| 3 | Normalized lighting power density (car parks) | Normalized lighting power density for car parks | EN 12464-1 | | Max. density 2,2 |
| 4 | Normalized lighting power density (lifts, stairs) | Normalized lighting power density for lifts, stairs | EN 12464-1 | | Max. density 3,2 |
| 5 | Normalized lighting power density (Conference rooms) | Normalized lighting power density for conference rooms | EN 12464-1 | | Max. density 2,8 |
| 6 | Normalized lighting power density (Gym) | Normalized lighting power density for gyms | EN 12464-1 | | Max. density 2,8 |
| 7 | Normalized lighting power density (Halls) | Normalized lighting power density for halls | EN 12464-1 | | Max. density 2,8 |
| 8 | Normalized lighting power density (Hospitals/examination rooms) | Normalized lighting power density for hospitals/examination rooms | EN 12464-1 | | Max. density 4 |
| 9 | Normalized lighting power density (Domestic kitchens) | Normalized lighting power density for domestic kitchens | EN 12464-1 | | Max. density 5 |
| 10 | Normalized lighting power density (restaurant kitchens) | Normalized lighting power density for restaurant kitchens | EN 12464-1 | | Max. density 2,8 |
| 11 | Normalized lighting power density (Laboratories) | Normalized lighting power density for laboratories | EN 12464-1 | | Max. density 2,8 |
| 12 | Normalized lighting power density (Libraries) | Normalized lighting power density for libraries | EN 12464-1 | | Max. density 3,2 |
| 13 | Normalized lighting power density (Lounges-long area) | Normalized lighting power density for long area lounges | EN 12464-1 | | Max. density 6 |

| Category – Level 1: Energy Efficiency | | | | | |
|---|---|---|---|---|---|
| Subcategory – Level 2: Indoor Lighting | | | | | |
| Subcategory – Level 3: Design of indoor lighting | | | | | |
| Subcategory – Level 4: Normalized lighting power density | | | | | |
| Normalized lighting power density (W/m²/100 lux) "green" criteria | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 14 | Normalized lighting power density (Lounges-small area) | Normalized Lighting power density for small area lounges | EN 12464-1 | | Max. density 7,5 |
| 15 | Normalized lighting power density (open plan offices) | Normalized lighting power density for open plan offices | EN 12464-1 | | Max. density 2,3 |
| 16 | Normalized lighting power density (Cellular Offices) | Normalized lighting power density cellular offices | EN 12464-1 | | Max. density 3 |
| 17 | Normalized lighting power density (Plant rooms) | Normalized lighting power density for plant rooms | EN 12464-1 | | Max. density 3,2 |
| 18 | Normalized lighting power density (Post rooms/switchboards) | Normalized lighting power density for post rooms/switchboards | EN 12464-1 | | Max. density 3,2 |
| 19 | Normalized lighting power density (Prison cells) | Normalized lighting power density for prison cells | EN 12464-1 | | Max. density 4 |
| 20 | Normalized lighting power density (Reception) | Normalized lighting power density for receptions | EN 12464-1 | | Max. density 4 |
| 21 | Normalized lighting power density (Rest rooms) | Normalized lighting power density for rest rooms | EN 12464-1 | | Max. density 5 |
| 22 | Normalized lighting power density (Retail) | Normalized lighting power density for retails | EN 12464-1 | | Max. density 3,5 |
| 23 | Normalized lighting power density (School classrooms) | Normalized lighting power density for school classrooms | EN 12464-1 | | Max. density 2,3 |
| 24 | Normalized lighting power density (Store rooms) | Normalized lighting power density for store rooms | EN 12464-1 | | Max. density 3,2 |
| 25 | Normalized lighting power density (waiting rooms) | Normalized lighting power density for waiting rooms | EN 12464-1 | | Max. density 3,2 |

| | | | | | |
|---|---|---|---|---|---|
| ***Category – Level 1: Energy Efficiency*** | | | | | |
| ***Subcategory – Level 2: Indoor Lighting*** | | | | | |
| ***Subcategory – Level 3: Design of indoor lighting*** | | | | | |
| ***Subcategory – Level 4: Lighting controls*** | | | | | |
| **Lighting controls installation "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Lighting controls in infrequently occupied spaces | Installation of lighting controls in infrequently occupied spaces | | | Occupancy sensors which turn off the lighting after the space becomes unoccupied, unless this would endanger safety or security. |
| 2 | Lighting controls in unoccupied spaces at night/weekends | Installation of lighting controls in unoccupied spaces at night/weekends | | | Installation of either time switches or occupancy sensors to switch off the lighting after the space becomes unoccupied at night or at weekends. |
| 3 | Lighting controls in spaces with side windows | Installation of lighting controls in spaces with side windows | | | Should be controlled in rows parallel to the windows, so that the rows nearer to the windows can be switched off separately. |
| 4 | Lighting controls in offices/conference rooms/classrooms etc. | Installation of lighting controls in offices/conference rooms/classrooms etc. | | | Accessible by the occupants switches in convenient locations. |
| 5 | Lighting controls in daylight circulation areas | Installation of lighting controls in daylight circulation areas | | | Automatic daylight linked control (either switching or dimming). |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Indoor Lighting* | | | | | |
| *Subcategory – Level 3: Installation of indoor lighting* | | | | | |
| *Subcategory – Level 4: Installation of lighting systems* | | | | | |
| **Lighting controls installation "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Instructions about the new/renovated lighting installation | Written instructions regarding the new/renovated lighting system | | | Provision of:<br>• Disassembly instructions for luminaires<br>• Instructions on how to replace lamps, and which lamps can be used in the luminaires without increasing the stated power densities.<br>• Instructions on how to operate and maintain lighting controls<br>• For occupancy sensors, instructions on how to adjust their sensitivity and time delay, and advice on how best to do this to meet occupant needs without excessive increase in energy consumption<br>• For daylight linked controls, instructions on how to recalibrate and adjust them, for example to take into account changes to room layout.<br>• For time switches, instructions on how to adjust the switch off times, and advice on how best to do this to meet occupant without excessive increase in energy consumption. |
| 2 | Management of the installation wastes | Environmental measures to reduce and recover the waste that is produced during the installation of a new or renovated lighting system. | WEEE directive | http://ec.europa.eu/environment/waste/weee/index_en.htm | All waste lamps and luminaires and lighting controls shall be separated and sent for recovery. |

## 4.3 Overall Category: Office Building Design, Construction and Management

This GPP criteria set addresses the procurement process for office buildings, including their design, site preparation, construction, servicing and ongoing management. For the purposes of the criteria, the product group "Office buildings" shall comprise buildings where mainly administrative, bureaucratic and clerical activities are carried out.

| ***Category – Level 1: Energy Efficiency*** | | | | | |
|---|---|---|---|---|---|
| ***Subcategory – Level 2: Office Building Design, Construction and Management*** | | | | | |
| ***Subcategory – Level 3: Design and performance*** | | | | | |
| ***Subcategory – Level 4: New-built projects*** | | | | | |
| ***Subcategory – Level 5: Minimum Energy performance*** | | | | | |
| **Minimum Energy performance "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Energy performance for new-built projects | Energy performance of a new-built office building | EN 15603 | https://iet.jrc.ec.europa.eu/energyefficiency/sites/energyefficiency/files/events/High-Performance-Buildings-June-2013/Papers/session3/34_pap_socal_-_en_15603_new_features_-_2013-06-06.pdf | Energy Performance Certificate (EPC) class C or three times the kWh/m$^2$ cut-off value for the best class or a maximum of 135 kWh/m$^2$ (whichever is the strictest); |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Design and performance* | | | | | |
| *Subcategory – Level 4: Renovations* | | | | | |
| *Subcategory – Level 5: Minimum Energy performance* | | | | | |
| **Minimum Energy performance "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Energy performance for renovation of building | Energy performance of a renovated office building | EN 15603 | https://iet.jrc.ec.europa.eu/energyefficiency/sites/energyefficiency/files/events/High-Performance-Buildings-June-2013/Papers/session3/34_pap_socal_-_en_15603_new_features_-_2013-06-06.pdf | Energy Performance Certificate (EPC) class D or four times the kWh/m$^2$ cut-off value for the best class or a maximum of 170 kWh/m$^2$ (whichever is the strictest); |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Design and performance* | | | | | |
| *Subcategory – Level 4: Cost optimal performance* | | | | | |
| **Cost optimal performance "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Cost optimal performance | Cost optimal performance of new-build and major renovation projects | EN 15603, EU Delegated Regulation 244/2012 | https://iet.jrc.ec.europa.eu/energyefficiency/sites/energyefficiency/files/events/High-Performance-Buildings-June-2013/Papers/session3/34_pap_socal_-_en_15603_new_features_-_2013-06-06.pdf, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:081:0018:0036:en:PDF | The cost optimum primary energy demand for a public office building expressed in kWh/m2 as calculated according to the methodology in Commission Delegated Regulation No 244/2012. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Design and performance* | | | | | |
| *Subcategory – Level 4: Energy management system* | | | | | |
| **Energy management system "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Installation of a building energy management system | Installation and commission of a building energy management system | | | A building energy management system (BEMS) shall be installed and commissioned that provides occupants and facilities managers with real-time information on the building's energy use by using networked sensors and a minimum of half hourly utility metering. |
| 2 | Building energy management system interface | Guidelines for the interface of the Building energy management system interface | | | The user interface shall allow for information on the buildings energy use to be analyzed and downloaded by occupants and facilities managers without requiring significant training. |
| 3 | Key energy aspects control by the Building energy management system | Control of the building's key energy aspects | | | The performance of key aspects of the building that can be controlled by the system shall be easy to adjust i.e. lighting, heating, cooling. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Design and performance* | | | | | |
| *Subcategory – Level 4: Low or zero carbon energy sources* | | | | | |
| **Low or zero carbon energy sources "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Connection to cost-effective energy systems | Connection of a building's energy system to alternative cost-effective energy systems | | | Where the building is located so as to benefit from the potential to connect to a high efficiency and cost-effective |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Design and performance* | | | | | |
| *Subcategory – Level 4: Low or zero carbon energy sources* | | | | | |
| **Low or zero carbon energy sources "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| | | | | | alternative energy systems, the building's energy systems shall be designed to connect to this infrastructure. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Design and performance* | | | | | |
| *Subcategory – Level 4: Staff travel plan and infrastructure* | | | | | |
| **Staff travel plan and infrastructure "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Staff travel plan | Identification of a travel plan for the occupants of the building | | | The plan shall identify specific measures that, taking into account the local context, may reduce the need for commuting to the building by private car and promote the use of more sustainable modes of transport, to include cycling and walking, public transport, low emission vehicles, and car sharing. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Design and performance* | | | | | |
| *Subcategory – Level 4: Recyclable waste storage* | | | | | |
| **Recyclable waste storage "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Dedicated recyclable waste storage | Availability of a dedicated waste storage within the building | | | Dedicated recyclable waste storage shall be provided within the building, or within the curtilage of the building, to facilitate the segregation of recyclable materials and end-of-life products by occupiers. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Design and performance* | | | | | |
| *Subcategory – Level 4: Thermal comfort conditions* | | | | | |
| **Thermal comfort conditions "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Indoor thermal comfort conditions | Indoor temperature conditions | EN 15251 | https://ec.europa.eu/energy/intelligent/projects/en/projects/commoncense | Design indoor temperature values (minimum room temperature in winter, maximum room temperature in summer) for the office building shall comply with at least category II in accordance with EN 15251 or equivalent. Annex A1 shall be referred to for mechanically cooled buildings and A2 for passively cooled buildings. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Design and performance* | | | | | |
| *Subcategory – Level 4: Daylighting and glare control* | | | | | |
| **Daylighting and glare control "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Daylighting and glare control (Usable office space-externally facing facades) | Daylighting and glare control of the externally facing facades of usable office space | | | Useable office space shall for 80% of the useable floor area achieve an average Daylight Factor of 1.5% |
| 2 | Daylighting and glare control (Usable office space-interior facing facades) | Daylighting and glare control of the interior facing facades of usable office space | | | Useable office space shall for 80% of the useable floor area achieve an average Daylight Factor of 0.7% |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Design and performance* | | | | | |
| *Subcategory – Level 4: Ventilation and air quality* | | | | | |
| **Ventilation and air quality "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Ventilation system air supply (Normal outdoor air quality) | Indoor air supply by the building's ventilation system | EN 15251 | https://ec.europa.eu/energy/intelligent/projects/en/projects/commonconcense | Quality rating of IDA 2 |
| 2 | Ventilation system air supply (Poor outdoor air quality-ODA class 2 or 3) | Indoor air supply by the building's ventilation system | EN 13779 | http://www.cres.gr/greenbuilding/PDF/prend/set4/WI_25_Pre-FV_version_prEN_13779_Ventilation_for_non-resitential_buildings.pdf | - No air intake should be positioned on a façade or facades exposed to busy roads (road to be indicated in the ITT). Where this is not possible, the opening should be positioned as high above |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Design and performance* | | | | | |
| *Subcategory – Level 4: Ventilation and air quality* | | | | | |
| **Ventilation and air quality "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| | | | | | the ground as possible. The design shall additionally be in compliance with guidance A2.2 in EN 13779;<br>- Ventilation system filters shall be in compliance with the specifications in table A.5 of EN 13779 or equivalent. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Strip-out, demolition and site preparation works* | | | | | |
| *Subcategory – Level 4: Demolition waste audit and management plan* | | | | | |
| **Demolition waste audit and management plan "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Re-use, recycling, material recovery of non-hazardous waste | Re-use of non-hazardous waste generated during demolition and strip-out works | | | Re-use of the demolition wastes at a minimum of 55% of the wastes' weight. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Construction of the building or major renovation works* | | | | | |
| *Subcategory – Level 4: Sourcing of legal timber* | | | | | |
| **Demolition waste audit and management plan "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Source of the timber | Identification of the timber's source | EU 995/2010 | http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:295:0023:0034:EN:PDF | All timber or timber products to be supplied must be legally harvested |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Construction of the building or major renovation works* | | | | | |
| *Subcategory – Level 4: Site waste management* | | | | | |
| **Site waste management "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Site waste management | Management of the wastes arising during construction and renovation, excluding demolition waste | EU Directive 2008/98/EC | http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:312:0003:0030:en:PDF | Less than or equal to 11 tones per 100m$^2$ gross internal office floor area. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Construction of the building or major renovation works* | | | | | |
| *Subcategory – Level 4: Selection of fit-out materials and finishes* | | | | | |
| **Selection of fit-out materials and finishes emissions (µg/m³) "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Emissions of TVOCs (3 days) | TVOCs emissions (3 days) for the fit-out of the offices | CEN/TS 16516 | http://www.eurofins.com/media/2236/gst-2014-x738-oppl-cen-ts-16516.pdf | 10.000 µg/m³ |
| 2 | Emissions of TVOCs (28 days) | TVOCs emissions (28 days) for the fit-out of the offices | CEN/TS 16516 | http://www.eurofins.com/media/2236/gst-2014-x738-oppl-cen-ts-16516.pdf | <2.000 µg/m³ |
| 3 | Emissions of Formaldehyde (3 days) | Formaldehyde emissions (3 days) for the fit-out of the offices | CEN/TS 16516 | http://www.eurofins.com/media/2236/gst-2014-x738-oppl-cen-ts-16516.pdf | - |
| 4 | Emissions of Formaldehyde (28 days) | Formaldehyde emissions (28 days) for the fit-out of the offices | CEN/TS 16516 | http://www.eurofins.com/media/2236/gst-2014-x738-oppl-cen-ts-16516.pdf | < 120 µg/m³ |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Completion and handover* | | | | | |
| *Subcategory – Level 4: Quality of the completed building fabric / Air tightness* | | | | | |
| **Air tightness "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Design air tightness (new-build) | Air tightness for new-build buildings | EN 13829 | https://www.attma.org/wp-content/uploads/2016/09 | 4 m³/(h.m²) at 50 Pascals |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Completion and handover* | | | | | |
| *Subcategory – Level 4: Quality of the completed building fabric / Air tightness* | | | | | |
| **Air tightness "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| | | | | /ATTMA-TSL1-Issue-3-Rev-0-2016.09.09.pdf | |
| 2 | Design air tightness (renovations) | Air tightness for renovated buildings | EN 13829 | https://www.attma.org/wp-content/uploads/2016/09/ATTMA-TSL1-Issue-3-Rev-0-2016.09.09.pdf | 8 $m^3/(h.m^2)$ at 50 Pascals |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Facilities management* | | | | | |
| *Subcategory – Level 4: Building energy management system* | | | | | |
| **Energy management system "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Energy Management system reports | Facilities management reports | | | Monthly reports which disaggregate heating, cooling, ventilation and lighting energy use on a seasonal basis. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Facilities management* | | | | | |
| *Subcategory – Level 4: Energy performance contract* | | | | | |
| **Energy performance contract "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Energy performance contract | Agreement regarding the limits of building's energy consumption | | | Agreement based on the preliminary modelling of the buildings energy consumption, limits on energy consumption associated with lighting, heating, cooling, ventilation and auxiliary power. |
| 2 | Energy performance contract duration | Duration (in years) of the agreement | | | At least 10 years |
| 3 | Contract liabilities | Contract liabilities between facilities manager and contracting authority | | | If energy usage were to exceed the limits set, the building operator or facilities manager (as appropriate) would be liable for the additional costs. If energy usage were to be below these limits, the savings would be shared 50:50 (or an alternative agreed apportionment of the savings) with the contracting authority. The arrangement shall be subject to a review on an annual basis. |

| | | | | | |
|---|---|---|---|---|---|
| ***Category – Level 1: Energy Efficiency*** | | | | | |
| ***Subcategory – Level 2: Office Building Design, Construction and Management*** | | | | | |
| ***Subcategory – Level 3: Facilities management*** | | | | | |
| ***Subcategory – Level 4: Waste management system*** | | | | | |
| **Waste management system "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Installation of waste management system | Waste management systems for recycling/re-use of occupants' materials | | | Installation of a waste management system that will allow occupiers to segregate paper, cardboard, food and drink packaging (glass, plastic and other materials for which local separate collection systems exist) into separate streams for recycling. Batteries, ink and toner cartridges, IT equipment and furniture shall also be collected and arranged for re-use or recycling where possible. |

## 4.4 Overall Category: Combined Heat and Power

The scope for the purposes of this GPP specification is defined further using the Cogeneration Directive as a basis. For the purposes of this GPP specification cogeneration is defined as „the simultaneous generation of thermal energy and electrical and/or mechanical energy". The criteria are applicable to cogeneration units, which shall mean a unit that can operate in cogeneration mode.

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Combined Heat and Power* | | | | | |
| **CHP "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Combined Heat and Power equipment overall energy efficiency | Energy efficiency (annual sum of electricity and mechanical energy production and useful heat output divided by the fuel input used for heat produced in a cogeneration process and gross electricity and mechanical energy production) of CHP unit | Cogeneration Directive | http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32004L0008&from=EN | 75% |
| 2 | Combined Heat and Power equipment overall energy efficiency (energy savings calculated as follows: $PES = \left[1 - \frac{1}{\frac{CHPH\eta}{RefH\eta} + \frac{CHPE\eta}{RefE\eta}}\right] * 100\%$ | Energy efficiency (annual sum of electricity and mechanical energy production and useful heat output divided by the fuel input used for heat produced in a cogeneration process and gross electricity and mechanical energy production) of CHP unit | Cogeneration Directive | http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32004L0008&from=EN | 80% |
| 3 | Combined Heat and Power equipment overall energy efficiency (primary energy savings calculated based on PES by replacing:<br>• "CHP $H_\eta$" with "$H_\eta$"<br>• "CHP $E_\eta$" with "$E_\eta$" | Energy efficiency (annual sum of electricity and mechanical energy production and useful heat output divided by the fuel input used for heat produced in a cogeneration process and gross electricity and mechanical energy production) of CHP unit | Cogeneration Directive | http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32004L0008&from=EN | Above 70% |

## 4.5 Overall Category: Furniture

This GPP criteria set addresses the procurement process for furniture. Furniture is a broad product group that encompasses very different types of furniture (chairs, tables, wardrobes, shelves, cupboards...) with very different uses (for schools, offices, kitchens, bathrooms, outdoors, special uses, etc.).

| ***Category – Level 1: Energy Efficiency*** | | | | | |
|---|---|---|---|---|---|
| ***Subcategory – Level 2: Furniture*** | | | | | |
| **Furniture "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Wood and wood-based material furniture | Purchase of wood and wood-based furniture | FSC, PEFC, FLEGT | www.fsc.org, www.pefc.org, ec.europa.eu/environment/forests/flegt.htm | All wood and wood-based materials shall come from legally sourced timber. |
| 2 | Plastic parts of furniture | Furniture containing plastic parts | ISO 11469 | http://www.iso.org/iso/catalogue_detail.htm?csnumber=27946 | All plastic parts ≥ 50g shall be marked for recycling and must not contain additions of other materials that may hinder their recycling |
| 3 | Surface coating of wood, plastic and/or metal parts | Furniture with its surface coated with wood, plastic and/or metal parts | EU Directive 199/45/EC | http://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX:31999L0045 | • Not contain hazardous substances that are classified as carcinogenic (R40, R45, R49), harmful to the reproductive system (R60, R61, R62, R63), mutagenic (R46, R68), toxic (R23, R24 , R25, R26, R27, R28, R51), allergenic when inhaled (R42 ) or harmful to the environment (R50, R50/53, R51/53, R52, R52/53, R53). cause heritable genetic damage (R46), danger of serious damage to health by prolonged exposure (R48), possible risks of irreversible effects (R68).<br>• Not contain more than 5% by weight of volatile organic compounds (VOCs). |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Furniture* | | | | | |
| **Furniture "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| | | | | | For phtalates: no use is allowed of phtalates that at the time of application fulfil the classification criteria of any of the following risk phrases (or combinations thereof): R60, R61, R62, in accordance with Directive 67/548/EEC and its amendments.<br>• Not contain aziridine<br>• Not contain Chromium (VI) compounds |
| 4 | Adhesives and glues | Adhesives and glues used in the assembly of furniture | | | VOC contain of adhesives shall not exceed 10% by weight |
| 5 | Furniture packaging materials | Recycling of packaging materials | | | Packaging must consist of readily recycled material, and/or materials taken from renewable resources, or be a multi-use system. |
| 6 | Separation of furniture packaging materials | Packaging material separation by hand | | | All packaging materials shall be easily separable by hand into recyclable parts consisting of one material (e.g. cardboard, paper, plastic, textile). |

## 4.6 Overall Category: Toilets & Urinals

The following table covers "green" criteria for flushing toilet equipment including toilet suites, toilet receptacles and toilet flushing systems, and urinal equipment including urinal suites, urinals, flush-free urinals and urinal flushing systems.

| Category – Level 1: Energy Efficiency | | | | | |
|---|---|---|---|---|---|
| Subcategory – Level 2: Toilets & Urinals | | | | | |
| Subcategory –Level 3: Flushing toilet equipment | | | | | |
| Subcategory – Level 4: Water Efficiency | | | | | |
| **Water efficiency "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Full flush volume | Nominal full flush volume | EN 997 | http://www.nccs.org.cn/yujing/cbunuser/1/down/b_fileupload_2010519152058.pdf | Up to 6 lt/flush |
| 2 | Water saving | Water saving in toilets of a flush volume more than 4 lt. | EN 997 | http://www.nccs.org.cn/yujing/cbunuser/1/down/b_fileupload_2010519152058.pdf | Up to 3 lt/flush |
| 3 | Flush volume adjustment (plain toilets) | Flush adjustment of plain toilets | EN 997 | http://www.nccs.org.cn/yujing/cbunuser/1/down/b_fileupload_2010519152058.pdf | Up to 6 lt/flush |
| 4 | Flush volume adjustment (toilets with water saving device) | Flush adjustment of toilets equipped with water saving device | EN 997 | http://www.nccs.org.cn/yujing/cbunuser/1/down/b_fileupload_2010519152058.pdf | Up to 3 lt/flush |

| Category – Level 1: Energy Efficiency | | | | | |
|---|---|---|---|---|---|
| Subcategory – Level 2: Toilets & Urinals | | | | | |
| Subcategory –Level 3: Flushing toilet equipment | | | | | |
| Subcategory – Level 4: Product performance | | | | | |
| **Product performance "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | WC and urinal cisterns performance | Flushing performance of WC and urinal flushing cisterns | EN 14055 | http://www.nccs.org.cn/yujing/cbunuser/1/down/b_fileupload_20105191453 23.pdf | Comply with the standard |
| 2 | Pressure flushing valves and automatic | Flushing performance of sanitary tapware - Pressure flushing valves and | EN 12541 | http://www.nccs.org.cn/yujing/cbunuser/1/down/B_fileUpload_2010519144443.pdf | Comply with the standard |

| Category – Level 1: Energy Efficiency | | | | | |
|---|---|---|---|---|---|
| Subcategory – Level 2: Toilets & Urinals | | | | | |
| Subcategory –Level 3: Flushing toilet equipment | | | | | |
| Subcategory – Level 4: Product performance | | | | | |
| **Product performance "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| | closing urinal valves PN 10 performance | automatic closing urinal valves PN 10 | | | |
| 3 | Electronic opening and closing sanitary tapware performance | Flushing performance of sanitary tapware - Electronic opening and closing sanitary tapware | EN 15091 | http://www.ceir.eu/files/Standardisation%20guide%20for%20sanitary%20tapware.pdf | Comply with the standard |
| 4 | Flush performance | Flush performance of toilet suites and toilet receptacles | EN 997 | http://www.nccs.org.cn/yujing/cbunuser/1/down/b_fileupload_20105191520 58.pdf | Comply with the standard |
| 5 | Longevity | Toilet flushing equipment warranty | | | At least, 10 years |
| 6 | Installation instructions | Printed/electronic installation instructions | | | Provision by the installer with installation instructions containing info on specific operating pressures, how to adjust flushing volumes, how rational use can minimize environmental impact, recommendations on the proper use, etc. |

| Category – Level 1: Energy Efficiency | | | | | |
|---|---|---|---|---|---|
| Subcategory – Level 2: Toilets & Urinals | | | | | |
| Subcategory –Level 3: Urinal equipment | | | | | |
| Subcategory – Level 4: Water Efficiency | | | | | |
| **Water efficiency "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Full flush volume | Nominal full flush volume | EN 13407 | http://www.nccs.org.cn/yujing/cbunuser/1/down/B_fileUpload_20105119430.pdf | Up to 2 lt/flush |
| 2 | Water saving | Water saving in urinals (flush control) | | | On-demand flush control for not more than 60 cm width of continuous wall. |
| 3 | Flush volume adjustment | Flush adjustment of urinal with flushing system | | | Up to 2 lt/flush |

| Category – Level 1: Energy Efficiency | | | | | |
|---|---|---|---|---|---|
| Subcategory – Level 2: Toilets & Urinals | | | | | |
| Subcategory –Level 3: Urinal equipment | | | | | |
| Subcategory – Level 4: Product performance | | | | | |
| **Product performance "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | WC and urinal flushing cisterns performance | Flushing performance of WC and urinal flushing cisterns | EN 14055 | http://www.nccs.org.cn/yujing/cbunuser/1/down/b_fileupload_2010519145323.pdf | Comply with the standard |
| 2 | Pressure flushing valves and automatic closing urinal valves PN 10 performance | Flushing performance of sanitary tapware - Pressure flushing valves and automatic closing urinal valves PN 10 | EN 12541 | http://www.nccs.org.cn/yujing/cbunuser/1/down/B_fileUpload_2010519144443.pdf | Comply with the standard |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Toilets & Urinals* | | | | | |
| *Subcategory –Level 3: Urinal equipment* | | | | | |
| *Subcategory – Level 4: Product performance* | | | | | |
| **Product performance "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 3 | Electronic opening and closing sanitary tapware performance | Flushing performance of sanitary tapware - Electronic opening and closing sanitary tapware | EN 15091 | http://www.ceir.eu/files/Standardisation%20guide%20for%20sanitary%20tapware.pdf | Comply with the standard |
| 4 | Flush performance | Flush performance of urinal suites and urinals | EN 13407 | http://www.nccs.org.cn/yujing/cbunuser/1/down/B_fileUpload_20105119430.pdf | Comply with the standard |
| 5 | Flush-free urinal performance | Flush-free urinals' performance | Commission Decision 2013/641/EU (Appendix 2) | http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32013D0641 | Comply with the standard |
| 6 | Longevity | Urinal flushing equipment warranty | | | At least, 10 years |
| 7 | Fluid biodegradability and maintenance of flush-free urinals | Flush-free urinals | | | Use of a biodegradable fluid or operation completely without fluid. |
| 8 | Installation instructions of the urinal flushing equipment | Printed/electronic installation instructions | | | Provision by the installer with installation instructions containing info on specific operating pressures, how to adjust flushing volumes, how rational use can minimize environmental impact, recommendations on the proper use, etc. |

## 4.7 Overall Category: Wall panels

For the purposes of these Green Public Procurement criteria wall panels are defined as boards that are used in vertical or angled placement (for example in loft conversions) in a building, where the panel itself is not load bearing and its surface is not the final surface seen in the finished building, i.e. it will be plastered, skimmed, painted, papered etc.

| ***Category – Level 1: Energy Efficiency*** | | | | | |
|---|---|---|---|---|---|
| ***Subcategory – Level 2: Wall panels*** | | | | | |
| ***Subcategory –Level 3: Gypsum Plasterboard Wall panels*** | | | | | |
| **Gypsum Plasterboard wall panels "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Panel recycling materials | Recyclable materials used in the manufacture of gypsum panels | | | Panel made from 100% recycled wood/paper |
| 2 | Wood paper panels | Panels made by wood paper | FSC, PEFC, FLEGT | www.fsc.org, www.pefc.org, ec.europa.eu/environment/forests/flegt.htm | Paper made of wood, wood fibres or wood particles stemming from legally harvested forests. |
| 3 | Gypsum content | Recyclable gypsum content | | | At least 2% by weight |

| ***Category – Level 1: Energy Efficiency*** | | | | | |
|---|---|---|---|---|---|
| ***Subcategory – Level 2: Wall panels*** | | | | | |
| ***Subcategory –Level 3: Wood-Based Wall panels*** | | | | | |
| **Wood-based wall panels "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Virgin wood panels | Origin of the panels' wood | FSC, PEFC, FLEGT | www.fsc.org, www.pefc.org, ec.europa.eu/environment/forests/flegt.htm | Virgin wood material shall come from legal sources |

| Category – Level 1: Energy Efficiency | | | | | |
|---|---|---|---|---|---|
| Subcategory – Level 2: Wall panels | | | | | |
| Subcategory –Level 3: Wood-Based Wall panels | | | | | |
| Wood-based wall panels "green" criteria | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 2 | Formaldehyde emission | Wood panels formaldehyde emission | EN 13986 | http://apawood-europe.org/official-guidelines/european-standards/individual-standards/en-13986 | Up to 0.13 mg/$m^3$ |

## 4.8 Overall Category: Water-based Heaters

This table covers procurement criteria for water-based heaters. For the purposes of these criteria, the product group "water-based heaters" shall comprise products that are used to generate heat as part of a water-based central heating system, where the heated water is distributed by means of circulators and heat emitters in order to reach and maintain the indoor temperature of an enclosed space such as a building, a dwelling, or a room, at a desired level.

| Category – Level 1: Energy Efficiency | | | | | |
|---|---|---|---|---|---|
| Subcategory – Level 2: Water-based Heaters | | | | | |
| Subcategory –Level 3: Heaters' Energy Efficiency | | | | | |
| Heaters' Energy Efficiency "green" criteria | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Minimum energy efficiency (All heaters except solid biomass boiler heaters) | Seasonal space heating energy efficiency ($\eta_s$) | 2014/314/EU | http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=urisery%3AOJ.L_.2014.164.01.0083.01.ENG | ($\eta_s$) >= 90% |
| 2 | Minimum energy efficiency (Solid biomass boiler heaters) | Seasonal space heating energy efficiency ($\eta_s$) | 2014/314/EU | http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=urise | ($\eta_s$) >= 75% |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Water-based Heaters* | | | | | |
| *Subcategory –Level 3: Heaters' Energy Efficiency* | | | | | |
| **Heaters' Energy Efficiency "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| | | | | rv%3AOJ.L_.2014.164.01.0083.01.ENG | |
| 3 | Greenhouse gas emissions (All heaters, except heat pump heaters) | Greenhouse gas (GHG) emission limits | 2014/314/EU | http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=urise rv%3AOJ.L_.2014.164.01.0083.01.ENG | 220 g $CO_2$ – equivalent/kWh heating output |
| 4 | Greenhouse gas emissions (pump heaters) | Greenhouse gas (GHG) emission limits | 2014/314/EU | http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=urise rv%3AOJ.L_.2014.164.01.0083.01.ENG | 170 g $CO_2$ – equivalent/kWh heating output |
| 5 | Longevity | Water-based heaters warranty | 2014/314/EU | http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=urise rv%3AOJ.L_.2014.164.01.0083.01.ENG | At least, 4 years |
| 6 | Installation instructions of the water-based heaters | Printed/electronic installation instructions | | | Provision by the installer with installation instructions containing info on appropriate dimensions of heaters for each building, info on energy consumption, operating instructions, recommendations on appropriate disposal at product's end-of-life |

## 4.9 Overall Category: Sanitary Tapware

Below you may find "green" criteria for sanitary tapware. For the purposes of these criteria, sanitary tapware is defined as covering the following groups of products:

1) taps,
2) showerheads,
3) showers.

| ***Category – Level 1: Energy Efficiency*** | | | | | |
|---|---|---|---|---|---|
| ***Subcategory – Level 2: Sanitary tapware*** | | | | | |
| ***Subcategory –Level 3: Water consumption/Energy saving*** | | | | | |
| **Water consumption/Energy saving "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Maximum water flow rate (kitchen taps) | Maximum water flow rates to the basin/sink for kitchen taps | EN 200, EN 816, EN 817, EN 1111, EN 1112, EN 1286, EN 1287, EN 15091, EN 248, EN 60335-1, EN 60335-2-35 | | Max. 8 lt/min |
| 2 | Maximum water flow rate (Basin taps) | Maximum water flow rates to the basin/sink for basin taps | EN 200, EN 816, EN 817, EN 1111, EN 1112, EN 1286, EN 1287, EN 15091, EN 248, EN 60335-1, EN 60335-2-35 | | Max. 7 lt/min |
| 3 | Maximum water flow rate (Showerheads or showers) | Maximum water flow rates to the basin/sink for showerheads or showers | EN 200, EN 816, EN 817, EN 1111, EN 1112, EN 1286, EN 1287, EN 15091, EN 248, EN 60335-1, EN 60335-2-35 | | Max. 9 lt/min |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Sanitary tapware* | | | | | |
| *Subcategory –Level 3: Water consumption/Energy saving* | | | | | |
| **Water consumption/Energy saving "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 4 | Lowest Maximum water flow rate (kitchen taps) | Lowest maximum water flow rates to the basin/sink for kitchen taps | EN 200, EN 816, EN 817, EN 1111, EN 1112, EN 1286, EN 1287, EN 15091, EN 248, EN 60335-1, EN 60335-2-35 | | Lowest max. 2 lt/min |
| 5 | Lowest Maximum water flow rate (Basin taps) | Lowest Maximum water flow rates to the basin/sink for basin taps | EN 200, EN 816, EN 817, EN 1111, EN 1112, EN 1286, EN 1287, EN 15091, EN 248, EN 60335-1, EN 60335-2-35 | | Lowest max. 2 lt/min |
| 6 | Lowest Maximum water flow rate (Showerheads or showers) | Lowest Maximum water flow rates to the basin/sink for showerheads or showers | EN 200, EN 816, EN 817, EN 1111, EN 1112, EN 1286, EN 1287, EN 15091, EN 248, EN 60335-1, EN 60335-2-35 | | Lowest max. 4,5 lt/min |
| 7 | Lowest Maximum water flow rate (Electric showers and low pressure showers) | Lowest Maximum water flow rates to the basin/sink for electric showers and low pressure showers | EN 200, EN 816, EN 817, EN 1111, EN 1112, EN 1286, EN 1287, EN 15091, EN 248, EN 60335-1, EN 60335-2-35 | | Lowest max. 3 lt/min |
| 8 | Temperature management (Hot water barrier) | Sanitary tapware equipped with an advance device or technical solution which allows temperature management | | | Equipped with hot water barrier |
| 9 | Temperature management (Thermostatic adjustment) | Sanitary tapware equipped with an advance device or technical | | | Sanitary tapware shall allow |

| Category – Level 1: Energy Efficiency | | | | | |
|---|---|---|---|---|---|
| Subcategory – Level 2: Sanitary tapware | | | | | |
| Subcategory –Level 3: Water consumption/Energy saving | | | | | |
| Water consumption/Energy saving "green" criteria | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| | | solution which allows temperature management | | | thermostatic adjustment |
| 10 | Temperature management (Cold water supply) | Sanitary tapware equipped with an advance device or technical solution which allows temperature management | | | Sanitary tapware shall be designed with a cold-water supply in middle position |
| 11 | Time control system (taps) | Time control for stopping water flow of taps | | | Up to 15 seconds |
| 12 | Time control system (showers) | Time control for stopping water flow of showers | | | Up to 35 seconds |
| 13 | Sensor control system (taps) | Shut off delay time after usage for stopping water flow of taps | | | Up to 2 seconds |
| 14 | Sensor control system (showers) | Shut off delay time after usage for stopping water flow of showers | | | Up to 3 seconds |

| Category – Level 1: Energy Efficiency | | | | | |
|---|---|---|---|---|---|
| Subcategory – Level 2: Sanitary tapware | | | | | |
| Subcategory –Level 3: Product quality/Longevity | | | | | |
| Product quality/Longevity "green" criteria | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Ni-Cr coating | Sanitary products with a metallic Ni-Cr coating | EN 248 | http://www.nccs.org.cn/yujing/cbunuser/1/down/B_fileUpload_2010511143933.pdf | Should comply with the standard |
| 2 | Reparability/Availability of spare parts | Reparability and availability of the tapware's spare parts | | | The product shall be designed in such a way that its exchangeable components can |

| | | | | | |
|---|---|---|---|---|---|
| ***Category – Level 1: Energy Efficiency*** | | | | | |
| ***Subcategory – Level 2: Sanitary tapware*** | | | | | |
| ***Subcategory –Level 3: Product quality/Longevity*** | | | | | |
| **Product quality/Longevity "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| | | | | | be replaced easily by the end-user or a professional service engineer |
| 3 | Warranty | Sanitary tapware warranty | | | At least, 4 years |
| 4 | User information | Printed/electronic information | | | The product shall be supplied with installation instructions, proper use recommendations, advice on maintenance, advice on cleaning sanitary tapware, instructions for replacement, etc. |

# 5 ASHRAE criteria

## 5.1 Overall description

Besides the main categories' criteria, described in the previous section, the GRASPINNO consortium, also, studied the ASHRAE standards for identifying "green" criteria which are related to buildings' refurbishment.

ASHRAE (www.ashrae.org) was founded in 1984, and is a global society advancing human well-being through sustainable technology for the built environment. The Society and its members focus on building systems, energy efficiency, indoor air quality, refrigeration and sustainability within the industry. Through research, standards writing, publishing and continuing education, ASHRAE shapes the future built environment. ASHRAE was formed as the American Society of Heating, Refrigerating and Air-Conditioning Engineers by the merger in 1959 of American Society of Heating and Air-Conditioning Engineers (ASHAE) founded in 1894 and The American Society of Refrigerating Engineers (ASRE) founded in 1904. In 2012, as part of a rebranding, ASHRAE began doing business as "ASHRAE" instead of using its full legal name of the American Society of Heating, Refrigerating and Air-Conditioning Engineers. Use of ASHRAE reflects the Society's worldwide membership and that services will continue evolving globally. ASHRAE has more than 56.000 in 130 countries, and covers 14 geographical regions.

The performed study, revealed that the most suitable standards for the GRASPINNO purposes are the 90.1-2016 and 189.1-2014 standards. More specifically, the **90.1-2016** standard provides minimum energy efficiency requirements for design and construction and a plan for operation & maintenance, for new buildings and their systems, new portions of buildings and their systems, and new systems and equipment in existing buildings; and utilization of on-site renewables, while the **189.1-2014 standard** has to do with High-performance green buildings, balancing energy efficiency, environmental responsibility, resource efficiency, occupant comfort, community sensitivity (2016, ASHRAE).

## 5.2 Basic standards' criteria

In this subsection, we array basic criteria as these are presented in the abovementioned two ASHRAE standards.

### 5.2.1 90.1 standard's basic criteria

1. **Heat transfer Criteria**

| Component | Area/ Length | U-factor/ F-factor | Heat Transfer Rate (Btu/h•°F) | Heat Transfer Rate (W/°C) |
|---|---|---|---|---|
| Roof | 10,000 ft² (929 m²) | 0.041 (0.233) | 410 | 216 |
| Exterior Wall | 1,000 ft² (93 m²) | 0.109 (0.619) | 109 | 57.5 |
| Slab length | 100 ft (30.5 m) | 0.73 (4.14) | 73 | 38.5 |
| Overall heat transfer rate | | | 592 | 312 |

**Table 1: Heat transfer to the exterior (Source: ASHRAE)**

| Component | Area/ Length | U-factor/ F-factor | Heat Transfer Rate (Btu/h•°F) | Heat Transfer Rate (W/°C) |
|---|---|---|---|---|
| Exterior Wall | 3,000 ft² (279 m²) | 0.352 (2.0) | 1056 | 557 |

**Table 2: Heat transfer rate between the space and the adjacent conditioned space (Source: ASHRAE)**

2. **Air leakage criteria**

Fenestration products, including doors, can significantly contribute to air leakage. The 90.1 standard sets the following maximum air leakage rates:

| | |
|---|---|
| a. Glazed swinging entrance doors and revolving doors | 1.00 cfm/ft² (305 liters/minute•m²) |
| b. Curtain wall and storefront glazing | 0.06 cfm/ft² (18 liters/minute•m²) |
| c. Skylights | 0.30 cfm/ft² (91 liters/minute•m²) |
| d. Non-swinging opaque doors | 0.40 cfm/ft² (122 liters/minute•m²) |
| e. All other products(including windows) | 0.20 cfm/ft² (61 liters/minute•m²) |

**Table 3: Air leakage rates (Source: ASHRAE)**

## 3. Walls' Heat Capacity criteria

| Item | Weight ($lb/ft^2$) | Fraction of Wall | Specific Heat (Btu/lb•°F) | HC ($Btu/ft^2$•°F) |
|---|---|---|---|---|
| 4 in. Face Brick | 47.00 | 1.00 | 0.20 | 9.40 |
| Air Gap | 0 | 1.00 | 0 | 0 |
| 8 in. Partially Grouted CMU (105 $lb/ft^3$) | 47.00 | 1.00 | 0.20 | 10.20 |
| 2 x 4 Wood Studs | 9.30 | 0.22 | 0.33 | 0.46 |
| R-11 Batt | 0.25 | 0.78 | 0.30 | 0.06 |
| ⅝ in. Gypsum Board | 2.60 | 1.00 | 0.26 | 0.68 |
| Total | | | | 20.80 |
| | | | | |
| Item | Weight ($kg/m^2$) | Fraction of Wall | Specific Heat (kJ/kg•°C) | HC ($kJ/m^2$•°C) |
| 102 mm Face Brick | 753 | 1.00 | 0.84 | 192 |
| Air Gap | 0 | 1.00 | 0 | 0 |
| 204 mm Partially Grouted CMU (1,682 $kg/m^3$) | 753 | 1.00 | 0.84 | 208 |
| 51 mm x 102 mm Wood Studs | 149 | 0.22 | 1.37 | 9.4 |
| R-1.9 Batt | 4.00 | 0.78 | 1.26 | 1.2 |
| 16 mm Gypsum Board | 41.6 | 1.00 | 1.08 | 13.9 |

**Table 4: Walls' Heat Capacity (Source: ASHRAE)**

## 4. Low Voltage Energy Dry-Type distribution transformers efficiency criteria

| Single Phase Transformers | | Three Phase Transformers | |
|---|---|---|---|
| kVA | Efficiency (%) | kVA | Efficiency (%) |
| 15 | 97.7 | 15 | 97.0 |
| 25 | 98.0 | 30 | 97.5 |
| 37.5 | 98.2 | 45 | 97.7 |
| 50 | 98.3 | 75 | 98.0 |
| 75 | 98.5 | 112.5 | 98.2 |
| 100 | 98.6 | 150 | 98.3 |
| 167 | 98.7 | 225 | 98.5 |
| 250 | 98.8 | 300 | 98.6 |
| 333 | 98.9 | 500 | 98.7 |
| | | 750 | 98.8 |
| | | 1000 | 98.9 |

**Table 5: Low-Voltage Dry-Type distributions transformers' efficiency (Source: ASHRAE)**

**5. Building Service Water Pressure Booster Systems**

Such systems should meet the following requirements for energy efficiency:

- The system shall use one or more pressure sensors to determine if the system is maintaining the appropriate pressure and to vary pump speed or turn pumps on or off in response to a signal. The sensor shall be located near the critical plumbing fixture(s) that determine the required pressure.
- When water pressure booster systems are used, there can be no devices in the system installed for reducing pressure of all the water, except for safety devices. The purpose of this requirement is to prevent pumping all water to a high pressure and then reducing the pressure to what is needed.
- Controls shall shut down the booster system when there is no water flow.

**6. Building elevators**

Elevator systems can account for 3% to 5% of electrical energy use in buildings. Energy using components include the motors and controls, but also lighting and ventilation systems.

*6.1 Elevator's lighting*

The elevetor's lighting system must have an efficacy of greater than 35 lumens per watt.

*6.2 Ventilation power*

Ventilation fans in elevator cabs shall not exceed 0.33 W/cfm at maximum speed.

*6.3 Controls for Standby Mode*

The cab should have controls that de-energize both the lighting and ventilation system when the cab is inactive for more than 15 minutes.

### *5.2.2 189.1 standard's basic criteria*

**1. Buildings Water Consumption Management**

Measurement devices with remote communication capability shall be provided to collect water consumption data for the domestic water supply to the building.

| Water Source | Main Measurement Threshold |
|---|---|
| Potable water | 1000 gal/day (3800 L/day) |
| Municipally reclaimed water | 1000 gal/day (3800 L/day) |
| Alternate sources of water | 500 gal/day (1900 L/day) |

**Table 6: Water Supply Source Measurement Thresholds (Source: ASHRAE)**

All building measurement devices, monitoring systems, and sub-meters installed to comply with the thresholds limits in Table 6 shall be configured to communicate water consumption data to a meter data management system. At a minimum, meters shall provide daily data and shall record hourly consumption of water.

| Subsystem | Sub-Metering Threshold |
|---|---|
| Cooling towers (meter on makeup water and blowdown) | Cooling tower flow through tower >500 gpm (30 L/s) |
| Evaporative coolers | Makeup water >0.6 gpm (0.04 L/s) |
| Steam and hot-water boilers | >500,000 Btu/h (50 kW) input |
| Total Irrigated landscape area with controllers | >25,000 $ft^2$ (2500 $m^2$) |
| Separate campus or project buildings | Consumption >1000 gal/day (3800 L/day) |
| Separately leased or rental space | Consumption >1000 gal/day (3800 L/day) |
| Any large water using process | Consumption >1000 gal/day (3800 L/day) |

**Table 7: Subsystem Water Measurement Thresholds (Source: ASHRAE)**

## 2. On-site Renewable Energy Systems

Building project design shall show allocated space and pathways for future installation of on-site renewable energy systems and associated infrastructure that provide the annual energy production equivalent of not less than 6.0 kBtu/$ft^2$ (20 kWh/$m^2$) for single-story buildings and not less than 10.0 kBtu/$ft^2$ (32 kWh/$m^2$) multiplied by the total roof area in $ft^2$ ($m^2$) for all other buildings.

## 3. Energy Consumption Management

Measurement devices with remote communication capability shall be provided to collect energy consumption data for each energy supply source to the building, including gas, electricity, and district energy. The recorded energy consumption data should not exceed the following thresholds:

| Energy Source | Threshold |
|---|---|
| Electrical service | >200 kVA |
| On-site renewable electric power | All systems > 1 kVA (peak) |
| Gas and district services | >1,000,000 Btu/h (300 kW) |
| *Geothermal* energy | >1,000,000 Btu/h (300 kW) heating |
| On-site renewable thermal energy | >100,000 Btu/h (30 kW) |

**Table 8: Energy Source Thresholds (Source: ASHRAE)**

## 4. Building Service Life Plan

Service Life Plan shall be developed to estimate to what extent structural, building envelope (not mechanical and electrical), and hardscape materials will need to be repaired or replaced during the service life of the building. The design service life of the building shall be no less than that determined using Table 9.

| Category | Minimum Service Life | Building Types |
|---|---|---|
| Temporary | Up to 10 years | Non-permanent construction buildings (sales offices, bunkhouses)<br>Temporary exhibition buildings |
| Medium life | 25 years | Industrial buildings<br>Stand-alone parking structures |
| Long life | 50 years | All buildings not temporary or medium life, including the parking structures below buildings designed for long life category |

**Table 9: Minimum Design Service Life for Building (Source: ASHRAE)**

# Annex

In this Annex, we array the harmonized "green" criteria of the abovementioned categories for buildings' refurbishment, in various countries participating in the GRASPINNO project, based on the EU "green" criteria described in Chapter 4. More specifically, we array the harmonized "green" criteria as they apply in Greece, Cyprus, Slovenia, Italy and Bosnia-Herzegovina.

## Greece

### *Indoor lighting*

| ***Category – Level 1: Energy Efficiency*** | | | | | |
|---|---|---|---|---|---|
| ***Subcategory – Level 2: Indoor Lighting*** | | | | | |
| ***Subcategory – Level 3: Lamps*** | | | | | |
| ***Subcategory – Level 4: Existing installations*** | | | | | |
| ***Subcategory – Level 5: Energy Class*** | | | | | |
| **Energy class "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Energy class for replacement lamps of existing installations (Tungsten halogen lamps) | Tungsten halogen lamps energy class | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class C |
| 2 | Energy class for replacement lamps of existing installations (Fluorescent lamps without integral ballast) | Compact fluorescent lamps without integral ballast | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class B |
| 3 | Energy class for replacement lamps of existing installations (reflector/chandelier type fluorescent lamps with integral ballast) | Globe shaped, pear shaped, reflector type or chandelier type compact fluorescent lamps with integral ballast | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class B |
| 4 | Energy class for replacement lamps of existing installations (All lamps other than halogen lamps with colour rendering index Ra>=90). | All lamps other than halogen lamps with colour rendering index Ra>=90 | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class B |
| 5 | Energy class for replacement lamps of existing installations (All other fluorescent lamps with integral ballast). | All other compact fluorescent lamps with integral ballast | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class A |
| 6 | Energy class for replacement lamps of existing installations (15W T8 tubular fluorescent lamps). | 15W T8 tubular fluorescent lamps, and miniature tubular fluorescent lamps | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class B |
| 7 | Energy class for replacement lamps of existing installations (Circular lamps). | Circular lamps | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class B |

| ***Category – Level 1: Energy Efficiency*** | | | | | |
|---|---|---|---|---|---|
| ***Subcategory – Level 2: Indoor Lighting*** | | | | | |
| ***Subcategory – Level 3: Lamps*** | | | | | |
| ***Subcategory – Level 4: Existing installations*** | | | | | |
| ***Subcategory – Level 5: Energy Class*** | | | | | |
| **Energy class "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 8 | Energy class for replacement lamps of existing installations (Other tubular fluorescent lamps). | Other tubular fluorescent lamps | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class A |
| 9 | Energy class for replacement lamps of existing installations (All other lamps incl. LED).<br>TYPE E27 or E14<br>TUBE T8 or T5 | All other lamps including LEDs and discharge lamps | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class A |

| ***Category – Level 1: Energy Efficiency*** | | | | | |
|---|---|---|---|---|---|
| ***Subcategory – Level 2: Indoor Lighting*** | | | | | |
| ***Subcategory – Level 3: Lamps*** | | | | | |
| ***Subcategory – Level 4: New & Renovated installations*** | | | | | |
| ***Subcategory – Level 5: Energy Class*** | | | | | |
| **Energy class "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Energy class for lamps of new & renovated installations (all lamps with colour rendering index Ra>=90) | All lamps with colour rendering index Ra>=90 (where this is required for the activities being carried out in the building) | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class B |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Indoor Lighting* | | | | | |
| *Subcategory – Level 3: Lamps* | | | | | |
| *Subcategory – Level 4: New & Renovated installations* | | | | | |
| *Subcategory – Level 5: Energy Class* | | | | | |
| **Energy class "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 2 | Energy class for lamps of new & renovated installations (all other lamps) | All other lamps | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class A |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Indoor Lighting* | | | | | |
| *Subcategory – Level 3: Lamps* | | | | | |
| *Subcategory – Level 4: Lamp life* | | | | | |
| **Lamp life (Hours) "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Lamp life (Tungsten halogen lamps) | Tungsten halogen lamps | EN 50285 | http://ec.europa.eu/environment/ecolabel/documents/part2_Light_bulbs.pdf | Minimum lamp life 2.000 hours |
| 2 | Lamp life (reflector/chandelier type compact fluorescent lamps) | Globe shaped, pear shaped, reflector type or chandelier type compact fluorescent lamps | EN 50285 | http://ec.europa.eu/environment/ecolabel/documents/part2_Light_bulbs.pdf | Minimum lamp life 6.000 hours |
| 3 | Lamp life (other compact fluorescent lamps) | All other compact fluorescent lamps | EN 50285 | http://ec.europa.eu/environment/ecolabel/documents/part2_Light_bulbs.pdf | Minimum lamp life 10.000 hours |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Indoor Lighting* | | | | | |
| *Subcategory – Level 3: Lamps* | | | | | |
| *Subcategory – Level 4: Lamp life* | | | | | |
| **Lamp life (Hours) "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 4 | Lamp life (circular lamps) | Circular lamps | EN 50285 | http://ec.europa.eu/environment/ecolabel/documents/part2_Light_bulbs.pdf | Minimum lamp life 7.500 hours |
| 5 | Lamp life (T8 tubular fluorescent lamps with electromagnetic ballasts) | T8 tubular fluorescent lamps with electromagnetic ballasts | EN 50285 | http://ec.europa.eu/environment/ecolabel/documents/part2_Light_bulbs.pdf | Minimum lamp life 15.000 hours |
| 6 | Lamp life (Other tubular fluorescent lamps) | Other tubular fluorescent lamps | EN 50285 | http://ec.europa.eu/environment/ecolabel/documents/part2_Light_bulbs.pdf | Minimum lamp life 20.000 hours |
| 7 | Lamp life (HID non-directional lamps) | HID non-directional lamps (primary burning position) | EN 50285 | http://ec.europa.eu/environment/ecolabel/documents/part2_Light_bulbs.pdf | Minimum lamp life 12.000 hours |
| 8 | Lamp life (HID directional lamps) | HID directional lamps (primary burning position) | EN 50285 | http://ec.europa.eu/environment/ecolabel/documents/part2_Light_bulbs.pdf | Minimum lamp life 9.000 hours |
| 9 | Lamp life (retrofit LEDs) | Retrofit LEDs with integrated control gear | EN 50285 | http://ec.europa.eu/environment/ecolabel/documents/part2_Light_bulbs.pdf | Minimum lamp life 15.000 hours |
| 10 | Lamp life (other than LEDs) | Other than LEDs | EN 50285 | http://ec.europa.eu/environment/ecolabel/documents/part2_Light_bulbs.pdf | Minimum lamp life 20.000 hours |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Indoor Lighting* | | | | | |
| *Subcategory – Level 3: Lamps* | | | | | |
| *Subcategory – Level 4: Lamp life* | | | | | |
| **Lamp life (Hours) "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 11 | Lamp life for LED Type E27 or E14 | Not applicable – No mandatory legislation – PA's GPP legislation | Not applicable | | Minimum lamp life 15.000 hours |
| 12 | Lamp life for LED Type Tube T8 or T5 | Not applicable – No mandatory legislation – PA's GPP legislation | Not applicable | | Minimum lamp life 30.000 hours |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Indoor Lighting* | | | | | |
| *Subcategory – Level 3: Lamps* | | | | | |
| *Subcategory – Level 4: Mercury content* | | | | | |
| **Mercury content (mg/lamp) "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Mercury content (compact fluorescent lamps, less than 30W) | Compact fluorescent lamps, wattage less than 30W | Ecodesign Directive (2009/125/EC) Commission Regulation 245/2009 (Annex III) | http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009L0125, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:076:0017:0044:en:PDF | Max. mercury content 2,5 |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Indoor Lighting* | | | | | |
| *Subcategory – Level 3: Lamps* | | | | | |
| *Subcategory – Level 4: Mercury content* | | | | | |
| **Mercury content (mg/lamp) "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 2 | Mercury content (compact fluorescent lamps, more than 30W) | Compact fluorescent lamps, wattage 30W or over | Ecodesign Directive (2009/125/EC) Commission Regulation 245/2009 (Annex III) | http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009L0125, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:076:0017:0044:en:PDF | Max. mercury content 3 |
| 3 | Mercury content (T5 tubular lamps, lifetime less than 25.000 hours) | T5 tubular fluorescent lamps, lifetime less than 25.000 hours | Ecodesign Directive (2009/125/EC) Commission Regulation 245/2009 (Annex III) | http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009L0125, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:076:0017:0044:en:PDF | Max. mercury content 2,5 |
| 4 | Mercury content (T5 tubular lamps, lifetime more than 25.000 hours) | T5 lamps, lifetime 25.000 hours or more | Ecodesign Directive (2009/125/EC) Commission Regulation 245/2009 (Annex III) | http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009L0125, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:076:0017:0044:en:PDF | Max. mercury content 4 |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Indoor Lighting* | | | | | |
| *Subcategory – Level 3: Lamps* | | | | | |
| *Subcategory – Level 4: Mercury content* | | | | | |
| **Mercury content (mg/lamp) "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 5 | Mercury content (T8 tubular lamps, wattages less than 70W, lifetime less than 25.000 hours) | T8 tubular fluorescent lamps, wattages less than 70W, lifetime less than 25.000 hours | Ecodesign Directive (2009/125/EC) Commission Regulation 245/2009 (Annex III) | http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009L0125, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:076:0017:0044:en:PDF | Max. mercury content 3,5 |
| 6 | Mercury content (T8 tubular lamps, wattages more than 70W) | T8 tubular fluorescent lamps, wattage 70W or over | Ecodesign Directive (2009/125/EC) Commission Regulation 245/2009 (Annex III) | http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009L0125, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:076:0017:0044:en:PDF | Max. mercury content 5 |
| 7 | Mercury content (T8 lamps, lifetime more than 25.000 hours) | T8 lamps, lifetime 25.000 hours or more | Ecodesign Directive (2009/125/EC) Commission Regulation 245/2009 (Annex III) | http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009L0125, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:076:0017:0044:en:PDF | Max. mercury content 5 |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Indoor Lighting* | | | | | |
| *Subcategory – Level 3: Lamps* | | | | | |
| *Subcategory – Level 4: Packaging* | | | | | |
| **Packaging "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Lamps' packaging (cardboard and corrugated paper boxes) | Cardboard and corrugated paper boxes used for lamps' packaging | | | Shall be made of at least 50% post-consumer recycled material. |
| 2 | Lamps' packaging (plastic materials) | Plastic materials used for lamps' packaging | | | Shall be made of at least 50% post-consumer recycled material. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Indoor Lighting* | | | | | |
| *Subcategory – Level 3: Design of indoor lighting* | | | | | |
| *Subcategory – Level 4: Lighting power density* | | | | | |
| **Lighting power density (W/m²) "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Lighting power density (Car park) | Lighting power density for car parks | EN 12464-1 | | Max. density 2,5 |
| 2 | Lighting power density (Court) | Lighting power density for courts | EN 12464-1 | | Max. density 14 |
| 3 | Lighting power density (Exhibition space, museum) | Lighting power density for exhibition spaces, museums | EN 12464-1 | | Max. density 9 |
| 4 | Lighting power density (Fire station) | Lighting power density for fire stations | EN 12464-1 | | Max. density 12 |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Indoor Lighting* | | | | | |
| *Subcategory – Level 3: Design of indoor lighting* | | | | | |
| *Subcategory – Level 4: Lighting power density* | | | | | |
| **Lighting power density (W/m²) "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 5 | Lighting power density (Further education) | Lighting power density for further education | EN 12464-1 | | Max. density 13 |
| 6 | Lighting power density (Hospital) | Lighting power density for hospitals | EN 12464-1 | | Max. density 12 |
| 7 | Lighting power density (Library) | Lighting power density for libraries | EN 12464-1 | | Max. density 12 |
| 8 | Lighting power density (Offices-cellular) | Lighting power density for cellular offices | EN 12464-1 | | Max. density 13 |
| 9 | Lighting power density (Offices-open plan) | Lighting power density for open plan offices | EN 12464-1 | | Max. density 11 |
| 10 | Lighting power density (Police station) | Lighting power density for police stations | EN 12464-1 | | Max. density 14 |
| 11 | Lighting power density (Post office) | Lighting power density for post offices | EN 12464-1 | | Max. density 14 |
| 12 | Lighting power density (Prison) | Lighting power density for prisons | EN 12464-1 | | Max. density 9 |
| 13 | Lighting power density (Public hall) | Lighting power density for public halls | EN 12464-1 | | Max. density 9 |
| 14 | Lighting power density (Residential) | Residential Lighting power density | EN 12464-1 | | Max. density 11 |
| 15 | Lighting power density (Residential-communal spaces) | Residential (communal spaces) Lighting power density | EN 12464-1 | | Max. density 6 |
| 16 | Lighting power density (School) | Lighting power density for schools | EN 12464-1 | | Max. density 8 |
| 17 | Lighting power density (Sports centre) | Lighting power density for sports centers | EN 12464-1 | | Max. density 9 |
| 18 | Lighting power density (Town hall) | Lighting power density for town halls | EN 12464-1 | | Max. density 13 |

| Category – Level 1: Energy Efficiency | | | | | |
|---|---|---|---|---|---|
| Subcategory – Level 2: Indoor Lighting | | | | | |
| Subcategory – Level 3: Design of indoor lighting | | | | | |
| Subcategory – Level 4: Normalized lighting power density | | | | | |
| Normalized lighting power density (W/m²/100 lux) "green" criteria | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Normalized lighting power density (Bedrooms) | Normalized Lighting power density for bedrooms | EN 12464-1 | | Max. density 7,5 |
| 2 | Normalized lighting power density (Canteens) | Normalized lighting power density for canteens | EN 12464-1 | | Max. density 3,5 |
| 3 | Normalized lighting power density (car parks) | Normalized lighting power density for car parks | EN 12464-1 | | Max. density 2,2 |
| 4 | Normalized lighting power density (lifts, stairs) | Normalized lighting power density for lifts, stairs | EN 12464-1 | | Max. density 3,2 |
| 5 | Normalized lighting power density (Conference rooms) | Normalized lighting power density for conference rooms | EN 12464-1 | | Max. density 2,8 |
| 6 | Normalized lighting power density (Gym) | Normalized lighting power density for gyms | EN 12464-1 | | Max. density 2,8 |
| 7 | Normalized lighting power density (Halls) | Normalized lighting power density for halls | EN 12464-1 | | Max. density 2,8 |
| 8 | Normalized lighting power density (Hospitals/examination rooms) | Normalized lighting power density for hospitals/examination rooms | EN 12464-1 | | Max. density 4 |
| 9 | Normalized lighting power density (Domestic kitchens) | Normalized lighting power density for domestic kitchens | EN 12464-1 | | Max. density 5 |
| 10 | Normalized lighting power density (restaurant kitchens) | Normalized lighting power density for restaurant kitchens | EN 12464-1 | | Max. density 2,8 |
| 11 | Normalized lighting power density (Laboratories) | Normalized lighting power density for laboratories | EN 12464-1 | | Max. density 2,8 |
| 12 | Normalized lighting power density (Libraries) | Normalized lighting power density for libraries | EN 12464-1 | | Max. density 3,2 |
| 13 | Normalized lighting power density (Lounges-long area) | Normalized lighting power density for long area lounges | EN 12464-1 | | Max. density 6 |

| Category – Level 1: Energy Efficiency | | | | | |
|---|---|---|---|---|---|
| Subcategory – Level 2: Indoor Lighting | | | | | |
| Subcategory – Level 3: Design of indoor lighting | | | | | |
| Subcategory – Level 4: Normalized lighting power density | | | | | |
| Normalized lighting power density (W/m²/100 lux) "green" criteria | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 14 | Normalized lighting power density (Lounges-small area) | Normalized Lighting power density for small area lounges | EN 12464-1 | | Max. density 7,5 |
| 15 | Normalized lighting power density (open plan offices) | Normalized lighting power density for open plan offices | EN 12464-1 | | Max. density 2,3 |
| 16 | Normalized lighting power density (Cellular Offices) | Normalized lighting power density cellular offices | EN 12464-1 | | Max. density 3 |
| 17 | Normalized lighting power density (Plant rooms) | Normalized lighting power density for plant rooms | EN 12464-1 | | Max. density 3,2 |
| 18 | Normalized lighting power density (Post rooms/switchboards) | Normalized lighting power density for post rooms/switchboards | EN 12464-1 | | Max. density 3,2 |
| 19 | Normalized lighting power density (Prison cells) | Normalized lighting power density for prison cells | EN 12464-1 | | Max. density 4 |
| 20 | Normalized lighting power density (Reception) | Normalized lighting power density for receptions | EN 12464-1 | | Max. density 4 |
| 21 | Normalized lighting power density (Rest rooms) | Normalized lighting power density for rest rooms | EN 12464-1 | | Max. density 5 |
| 22 | Normalized lighting power density (Retail) | Normalized lighting power density for retails | EN 12464-1 | | Max. density 3,5 |
| 23 | Normalized lighting power density (School classrooms) | Normalized lighting power density for school classrooms | EN 12464-1 | | Max. density 2,3 |
| 24 | Normalized lighting power density (Store rooms) | Normalized lighting power density for store rooms | EN 12464-1 | | Max. density 3,2 |
| 25 | Normalized lighting power density (waiting rooms) | Normalized lighting power density for waiting rooms | EN 12464-1 | | Max. density 3,2 |

| | | | | | |
|---|---|---|---|---|---|
| ***Category – Level 1: Energy Efficiency*** | | | | | |
| ***Subcategory – Level 2: Indoor Lighting*** | | | | | |
| ***Subcategory – Level 3: Design of indoor lighting*** | | | | | |
| ***Subcategory – Level 4: Lighting controls*** | | | | | |
| **Lighting controls installation "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Lighting controls in infrequently occupied spaces | Installation of lighting controls in infrequently occupied spaces | | | Occupancy sensors which turn off the lighting after the space becomes unoccupied, unless this would endanger safety or security. |
| 2 | Lighting controls in unoccupied spaces at night/weekends | Installation of lighting controls in unoccupied spaces at night/weekends | | | Installation of either time switches or occupancy sensors to switch off the lighting after the space becomes unoccupied at night or at weekends. |
| 3 | Lighting controls in spaces with side windows | Installation of lighting controls in spaces with side windows | | | Should be controlled in rows parallel to the windows, so that the rows nearer to the windows can be switched off separately. |
| 4 | Lighting controls in offices/conference rooms/classrooms etc. | Installation of lighting controls in offices/conference rooms/classrooms etc. | | | Accessible by the occupants switches in convenient locations. |
| 5 | Lighting controls in daylight circulation areas | Installation of lighting controls in daylight circulation areas | | | Automatic daylight linked control (either switching or dimming). |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Indoor Lighting* | | | | | |
| *Subcategory – Level 3: Installation of indoor lighting* | | | | | |
| *Subcategory – Level 4: Installation of lighting systems* | | | | | |
| **Lighting controls installation "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Instructions about the new/renovated lighting installation | Written instructions regarding the new/renovated lighting system | | | Provision of:<br>• Disassembly instructions for luminaires<br>• Instructions on how to replace lamps, and which lamps can be used in the luminaires without increasing the stated power densities.<br>• Instructions on how to operate and maintain lighting controls<br>• For occupancy sensors, instructions on how to adjust their sensitivity and time delay, and advice on how best to do this to meet occupant needs without excessive increase in energy consumption<br>• For daylight linked controls, instructions on how to recalibrate and adjust them, for example to take into account changes to room layout.<br>• For time switches, instructions on how to adjust the switch off times, and advice on how best to do this to meet occupant without excessive increase in energy consumption. |
| 2 | Management of the installation wastes | Environmental measures to reduce and recover the waste that is produced during the installation of a new or renovated lighting system. | WEEE directive | http://ec.europa.eu/environment/waste/weee/index_en.htm | All waste lamps and luminaires and lighting controls shall be separated and sent for recovery. |

## *Office Building Design, Construction and Management*

| ***Category – Level 1: Energy Efficiency*** | | | | | |
|---|---|---|---|---|---|
| ***Subcategory – Level 2: Office Building Design, Construction and Management*** | | | | | |
| ***Subcategory – Level 3: Design and performance*** | | | | | |
| ***Subcategory – Level 4: New-built projects*** | | | | | |
| ***Subcategory – Level 5: Minimum Energy performance*** | | | | | |
| **Minimum Energy performance "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Energy performance for new-built projects | Energy performance of a new-built office building | EN 15603 | https://iet.jrc.ec.europa.eu/energyefficiency/sites/energyefficiency/files/events/High-Performance-Buildings-June-2013/Papers/session3/34_pap_socal_-_en_15603_new_features_-_2013-06-06.pdf | Energy Performance Certificate (EPC) class C or three times the kWh/m$^2$ cut-off value for the best class or a maximum of 135 kWh/m$^2$ (whichever is the strictest); |

| ***Category – Level 1: Energy Efficiency*** | | | | | |
|---|---|---|---|---|---|
| ***Subcategory – Level 2: Office Building Design, Construction and Management*** | | | | | |
| ***Subcategory – Level 3: Design and performance*** | | | | | |
| ***Subcategory – Level 4: Renovations*** | | | | | |
| ***Subcategory – Level 5: Minimum Energy performance*** | | | | | |
| **Minimum Energy performance "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Energy performance for renovation of building | Energy performance of a renovated office building | EN 15603 | https://iet.jrc.ec.europa.eu/energyefficiency/sites/energyefficiency/files/events/High-Performance-Buildings-June-2013/Papers/session3/34_pap_socal_-_en_15603_new_features_-_2013-06-06.pdf | Energy Performance Certificate (EPC) class D or four times the kWh/m$^2$ cut-off value for the best class or a maximum of 170 kWh/m$^2$ (whichever is the strictest); |

| Category – Level 1: Energy Efficiency | | | | | |
|---|---|---|---|---|---|
| Subcategory – Level 2: Office Building Design, Construction and Management | | | | | |
| Subcategory – Level 3: Design and performance | | | | | |
| Subcategory – Level 4: Cost optimal performance | | | | | |
| Cost optimal performance "green" criteria | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Cost optimal performance | Cost optimal performance of new-build and major renovation projects | EN 15603, EU Delegated Regulation 244/2012 | https://iet.jrc.ec.europa.eu/energyefficiency/sites/energyefficiency/files/events/High-Performance-Buildings-June-2013/Papers/session3/34_pap_socal_-_en_15603_new_features_-_2013-06-06.pdf, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:081:0018:0036:en:PDF | The cost optimum primary energy demand for a public office building expressed in kWh/m2 as calculated according to the methodology in Commission Delegated Regulation No 244/2012. |

| Category – Level 1: Energy Efficiency | | | | | |
|---|---|---|---|---|---|
| Subcategory – Level 2: Office Building Design, Construction and Management | | | | | |
| Subcategory – Level 3: Design and performance | | | | | |
| Subcategory – Level 4: Energy management system | | | | | |
| Energy management system "green" criteria | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Installation of a building energy management system | Installation and commission of a building energy management system | | | A building energy management system (BEMS) shall be installed and commissioned that provides occupants and facilities managers with real-time information on the building's energy use by using networked sensors and a minimum of half hourly utility metering. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Design and performance* | | | | | |
| *Subcategory – Level 4: Energy management system* | | | | | |
| **Energy management system "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 2 | Building energy management system interface | Guidelines for the interface of the Building energy management system interface | | | The user interface shall allow for information on the buildings energy use to be analyzed and downloaded by occupants and facilities managers without requiring significant training. |
| 3 | Key energy aspects control by the Building energy management system | Control of the building's key energy aspects | | | The performance of key aspects of the building that can be controlled by the system shall be easy to adjust i.e. lighting, heating, cooling. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Design and performance* | | | | | |
| *Subcategory – Level 4: Low or zero carbon energy sources* | | | | | |
| **Low or zero carbon energy sources "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Connection to cost-effective energy systems | Connection of a building's energy system to alternative cost-effective energy systems | | | Where the building is located so as to benefit from the potential to connect to a high efficiency and cost-effective alternative energy systems, the building's energy systems shall be designed to connect to this infrastructure. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Design and performance* | | | | | |
| *Subcategory – Level 4: Staff travel plan and infrastructure* | | | | | |
| **Staff travel plan and infrastructure "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Staff travel plan | Identification of a travel plan for the occupants of the building | | | The plan shall identify specific measures that, taking into account the local context, may reduce the need for commuting to the building by private car and promote the use of more sustainable modes of transport, to include cycling and walking, public transport, low emission vehicles, and car sharing. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Design and performance* | | | | | |
| *Subcategory – Level 4: Recyclable waste storage* | | | | | |
| **Recyclable waste storage "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Dedicated recyclable waste storage | Availability of a dedicated waste storage within the building | | | Dedicated recyclable waste storage shall be provided within the building, or within the curtilage of the building, to facilitate the segregation of recyclable materials and end-of-life products by occupiers. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Design and performance* | | | | | |
| *Subcategory – Level 4: Thermal comfort conditions* | | | | | |
| **Thermal comfort conditions "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Indoor thermal comfort conditions | Indoor temperature conditions | EN 15251 | https://ec.europa.eu/energy/intelligent/projects/en/projects/commoncense | Design indoor temperature values (minimum room temperature in winter, maximum room temperature in summer) for the office building shall comply with at least category II in accordance with EN 15251 or equivalent. Annex A1 shall be referred to for mechanically cooled buildings and A2 for passively cooled buildings. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Design and performance* | | | | | |
| *Subcategory – Level 4: Daylighting and glare control* | | | | | |
| **Daylighting and glare control "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Daylighting and glare control (Usable office space-externally facing facades) | Daylighting and glare control of the externally facing facades of usable office space | | | Useable office space shall for 80% of the useable floor area achieve an average Daylight Factor of 1.5% |
| 2 | Daylighting and glare control (Usable office space-interior facing facades) | Daylighting and glare control of the interior facing facades of usable office space | | | Useable office space shall for 80% of the useable floor area achieve an average Daylight Factor of 0.7% |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Design and performance* | | | | | |
| *Subcategory – Level 4: Ventilation and air quality* | | | | | |
| **Ventilation and air quality "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Ventilation system air supply (Normal outdoor air quality) | Indoor air supply by the building's ventilation system | EN 15251 | https://ec.europa.eu/energy/intelligent/projects/en/projects/commonconse nse | Quality rating of IDA 2 |
| 2 | Ventilation system air supply (Poor outdoor air quality-ODA class 2 or 3) | Indoor air supply by the building's ventilation system | EN 13779 | http://www.cres.gr/greenbuilding/PDF/prend/set4/WI_25_Pre-FV_version_prEN_13779_Ventilation_for_non-resitential_buildings.pdf | - No air intake should be positioned on a façade or facades exposed to busy roads (road to be indicated in the ITT). Where this is not possible, the opening should be positioned as high above the ground as possible. The design shall additionally be in compliance with guidance A2.2 in EN 13779;<br>- Ventilation system filters shall be in compliance with the specifications in table A.5 of EN 13779 or equivalent. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Strip-out, demolition and site preparation works* | | | | | |
| *Subcategory – Level 4: Demolition waste audit and management plan* | | | | | |
| **Demolition waste audit and management plan "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Re-use, recycling, material recovery of non-hazardous waste | Re-use of non-hazardous waste generated during demolition and strip-out works | | | Re-use of the demolition wastes at a minimum of 55% of the wastes' weight. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Construction of the building or major renovation works* | | | | | |
| *Subcategory – Level 4: Sourcing of legal timber* | | | | | |
| **Demolition waste audit and management plan "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Source of the timber | Identification of the timber's source | EU 995/2010 | http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:295:0023:0034:EN:PDF | All timber or timber products to be supplied must be legally harvested |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Construction of the building or major renovation works* | | | | | |
| *Subcategory – Level 4: Site waste management* | | | | | |
| **Site waste management "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Site waste management | Management of the wastes arising during construction and renovation, excluding demolition waste | EU Directive 2008/98/EC | http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:312:0003:0030:en:PDF | Less than or equal to 11 tones per 100m$^2$ gross internal office floor area. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Construction of the building or major renovation works* | | | | | |
| *Subcategory – Level 4: Selection of fit-out materials and finishes* | | | | | |
| **Selection of fit-out materials and finishes emissions (µg/m$^3$) "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Emissions of TVOCs (3 days) | TVOCs emissions (3 days) for the fit-out of the offices | CEN/TS 16516 | http://www.eurofins.com/media/2236/gst-2014-x738-oppl-cen-ts-16516.pdf | 10.000 µg/m$^3$ |
| 2 | Emissions of TVOCs (28 days) | TVOCs emissions (28 days) for the fit-out of the offices | CEN/TS 16516 | http://www.eurofins.com/media/2236/gst-2014-x738-oppl-cen-ts-16516.pdf | <2.000 µg/m$^3$ |
| 3 | Emissions of Formaldehyde (3 days) | Formaldehyde emissions (3 days) for the fit-out of the offices | CEN/TS 16516 | http://www.eurofins.com/media/2236/gst-2014-x738-oppl-cen-ts-16516.pdf | - |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Construction of the building or major renovation works* | | | | | |
| *Subcategory – Level 4: Selection of fit-out materials and finishes* | | | | | |
| **Selection of fit-out materials and finishes emissions (µg/m³) "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 4 | Emissions of Formaldehyde (28 days) | Formaldehyde emissions (28 days) for the fit-out of the offices | CEN/TS 16516 | http://www.eurofins.com/media/2236/gst-2014-x738-oppl-cen-ts-16516.pdf | < 120 µg/m³ |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Completion and handover* | | | | | |
| *Subcategory – Level 4: Quality of the completed building fabric / Air tightness* | | | | | |
| **Air tightness "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Design air tightness (new-build) | Air tightness for new-build buildings | EN 13829 | https://www.attma.org/wp-content/uploads/2016/09/ATTMA-TSL1-Issue-3-Rev-0-2016.09.09.pdf | 4 m³/(h.m²) at 50 Pascals |
| 2 | Design air tightness (renovations) | Air tightness for renovated buildings | EN 13829 | https://www.attma.org/wp-content/uploads/2016/09/ATTMA-TSL1-Issue-3-Rev-0-2016.09.09.pdf | 8 m³/(h.m²) at 50 Pascals |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Facilities management* | | | | | |
| *Subcategory – Level 4: Building energy management system* | | | | | |
| **Energy management system "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Energy Management system reports | Facilities management reports | | | Monthly reports which disaggregate heating, cooling, ventilation and lighting energy use on a seasonal basis. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Facilities management* | | | | | |
| *Subcategory – Level 4: Energy performance contract* | | | | | |
| **Energy performance contract "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Energy performance contract | Agreement regarding the limits of building's energy consumption | | | Agreement based on the preliminary modelling of the buildings energy consumption, limits on energy consumption associated with lighting, heating, cooling, ventilation and auxiliary power. |
| 2 | Energy performance contract duration | Duration (in years) of the agreement | | | At least 10 years |
| 3 | Contract liabilities | Contract liabilities between facilities manager and contracting authority | | | If energy usage were to exceed the limits set, the building operator or facilities manager (as appropriate) would be liable for the additional costs. If energy usage were to be below these limits, the savings would be shared 50:50 (or an alternative agreed apportionment of the savings) with the contracting authority. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Facilities management* | | | | | |
| *Subcategory – Level 4: Energy performance contract* | | | | | |
| **Energy performance contract "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| | | | | | The arrangement shall be subject to a review on an annual basis. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Facilities management* | | | | | |
| *Subcategory – Level 4: Waste management system* | | | | | |
| **Waste management system "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Installation of waste management system | Waste management systems for recycling/re-use of occupants' materials | | | Installation of a waste management system that will allow occupiers to segregate paper, cardboard, food and drink packaging (glass, plastic and other materials for which local separate collection systems exist) into separate streams for recycling. Batteries, ink and toner cartridges, IT equipment and furniture shall also be collected and arranged for re-use or recycling where possible. |

## *Combined Heat and Power*

| ***Category – Level 1: Energy Efficiency*** | | | | | |
|---|---|---|---|---|---|
| ***Subcategory – Level 2: Combined Heat and Power*** | | | | | |
| **CHP "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Combined Heat and Power equipment overall energy efficiency | Energy efficiency (annual sum of electricity and mechanical energy production and useful heat output divided by the fuel input used for heat produced in a cogeneration process and gross electricity and mechanical energy production) of CHP unit | Cogeneration Directive | http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32004L0008&from=EN | 75% |
| 2 | Combined Heat and Power equipment overall energy efficiency (energy savings calculated as follows: $PES = \left[1 - \frac{1}{\frac{CHPH\eta}{RefH\eta} + \frac{CHPE\eta}{RefE\eta}}\right] * 100\%$ | Energy efficiency (annual sum of electricity and mechanical energy production and useful heat output divided by the fuel input used for heat produced in a cogeneration process and gross electricity and mechanical energy production) of CHP unit | Cogeneration Directive | http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32004L0008&from=EN | 80% |
| 3 | Combined Heat and Power equipment overall energy efficiency (primary energy savings calculated based on PES by replacing:<br>• "CHP $H_\eta$" with "$H_\eta$"<br>• "CHP $E_\eta$" with "$E_\eta$" | Energy efficiency (annual sum of electricity and mechanical energy production and useful heat output divided by the fuel input used for heat produced in a cogeneration process and gross electricity and mechanical energy production) of CHP unit | Cogeneration Directive | http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32004L0008&from=EN | Above 70% |

## *Furniture*

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Furniture* | | | | | |
| **Furniture "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Wood and wood-based material furniture | Purchase of wood and wood-based furniture | FSC, PEFC, FLEGT | www.fsc.org, www.pefc.org, ec.europa.eu/environment/forests/flegt.htm | All wood and wood-based materials shall come from legally sourced timber. |
| 2 | Plastic parts of furniture | Furniture containing plastic parts | ISO 11469 | http://www.iso.org/iso/catalogue_detail.htm?csnumber=27946 | All plastic parts ≥ 50g shall be marked for recycling and must not contain additions of other materials that may hinder their recycling |
| 3 | Surface coating of wood, plastic and/or metal parts | Furniture with its surface coated with wood, plastic and/or metal parts | EU Directive 199/45/EC | http://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX:31999L0045 | • Not contain hazardous substances that are classified as carcinogenic (R40, R45, R49), harmful to the reproductive system (R60, R61, R62, R63), mutagenic (R46, R68), toxic (R23, R24 , R25, R26, R27, R28, R51), allergenic when inhaled (R42 ) or harmful to the environment (R50, R50/53, R51/53, R52, R52/53, R53). cause heritable genetic damage (R46), danger of serious damage to health by prolonged exposure (R48), possible risks of irreversible effects (R68).<br>• Not contain more than 5% by weight of volatile organic compounds (VOCs).<br>For phtalates: no use is allowed of phtalates that at the time of application fulfil the classification criteria of any of the following risk phrases (or combinations thereof): |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Furniture* | | | | | |
| **Furniture "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| | | | | | R60, R61, R62, in accordance with Directive 67/548/EEC and its amendments.<br>• Not contain aziridine<br>• Not contain Chromium (VI) compounds |
| 4 | Adhesives and glues | Adhesives and glues used in the assembly of furniture | | | VOC contain of adhesives shall not exceed 10% by weight |
| 5 | Furniture packaging materials | Recycling of packaging materials | | | Packaging must consist of readily recycled material, and/or materials taken from renewable resources, or be a multi-use system. |
| 6 | Separation of furniture packaging materials | Packaging material separation by hand | | | All packaging materials shall be easily separable by hand into recyclable parts consisting of one material (e.g. cardboard, paper, plastic, textile). |

### *Toilets & Urinals*

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Toilets & Urinals* | | | | | |
| *Subcategory –Level 3: Flushing toilet equipment* | | | | | |
| *Subcategory – Level 4: Water Efficiency* | | | | | |
| **Water efficiency "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Full flush volume | Nominal full flush volume | EN 997 | http://www.nccs.org.cn/yujing/cbunuser/1/down/b_fileupload_2010519152058.pdf | Up to 6 lt/flush |

| ***Category – Level 1: Energy Efficiency*** | | | | | |
|---|---|---|---|---|---|
| ***Subcategory – Level 2: Toilets & Urinals*** | | | | | |
| ***Subcategory –Level 3: Flushing toilet equipment*** | | | | | |
| ***Subcategory – Level 4: Water Efficiency*** | | | | | |
| **Water efficiency "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 2 | Water saving | Water saving in toilets of a flush volume more than 4 lt. | EN 997 | http://www.nccs.org.cn/yujing/cbunuser/1/down/b_fileupload_2010519152058.pdf | Up to 3 lt/flush |
| 3 | Flush volume adjustment (plain toilets) | Flush adjustment of plain toilets | EN 997 | http://www.nccs.org.cn/yujing/cbunuser/1/down/b_fileupload_2010519152058.pdf | Up to 6 lt/flush |
| 4 | Flush volume adjustment (toilets with water saving device) | Flush adjustment of toilets equipped with water saving device | EN 997 | http://www.nccs.org.cn/yujing/cbunuser/1/down/b_fileupload_2010519152058.pdf | Up to 3 lt/flush |

| ***Category – Level 1: Energy Efficiency*** | | | | | |
|---|---|---|---|---|---|
| ***Subcategory – Level 2: Toilets & Urinals*** | | | | | |
| ***Subcategory –Level 3: Flushing toilet equipment*** | | | | | |
| ***Subcategory – Level 4: Product performance*** | | | | | |
| **Product performance "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | WC and urinal cisterns performance | Flushing performance of WC and urinal flushing cisterns | EN 14055 | http://www.nccs.org.cn/yujing/cbunuser/1/down/b_fileupload_20105191453 23.pdf | Comply with the standard |
| 2 | Pressure flushing valves and automatic closing urinal valves PN 10 performance | Flushing performance of sanitary tapware - Pressure flushing valves and automatic closing urinal valves PN 10 | EN 12541 | http://www.nccs.org.cn/yujing/cbunuser/1/down/B_fileUpload_2010519144443.pdf | Comply with the standard |

| | | | | | |
|---|---|---|---|---|---|
| ***Category – Level 1: Energy Efficiency*** | | | | | |
| ***Subcategory – Level 2: Toilets & Urinals*** | | | | | |
| ***Subcategory –Level 3: Flushing toilet equipment*** | | | | | |
| ***Subcategory – Level 4: Product performance*** | | | | | |
| **Product performance "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 3 | Electronic opening and closing sanitary tapware performance | Flushing performance of sanitary tapware - Electronic opening and closing sanitary tapware | EN 15091 | http://www.ceir.eu/files/Standardisation%20guide%20for%20sanitary%20tapware.pdf | Comply with the standard |
| 4 | Flush performance | Flush performance of toilet suites and toilet receptacles | EN 997 | http://www.nccs.org.cn/yujing/cbunuser/1/down/b_fileupload_20105191520 58.pdf | Comply with the standard |
| 5 | Longevity | Toilet flushing equipment warranty | | | At least, 10 years |
| 6 | Installation instructions | Printed/electronic installation instructions | | | Provision by the installer with installation instructions containing info on specific operating pressures, how to adjust flushing volumes, how rational use can minimize environmental impact, recommendations on the proper use, etc. |

| Category – Level 1: Energy Efficiency | | | | | |
|---|---|---|---|---|---|
| Subcategory – Level 2: Toilets & Urinals | | | | | |
| Subcategory –Level 3: Urinal equipment | | | | | |
| Subcategory – Level 4: Water Efficiency | | | | | |
| **Water efficiency "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Full flush volume | Nominal full flush volume | EN 13407 | http://www.nccs.org.cn/yujing/cbunuser/1/down/B_fileUpload_20105119430.pdf | Up to 2 lt/flush |
| 2 | Water saving | Water saving in urinals (flush control) | | | On-demand flush control for not more than 60 cm width of continuous wall. |
| 3 | Flush volume adjustment | Flush adjustment of urinal with flushing system | | | Up to 2 lt/flush |

| Category – Level 1: Energy Efficiency | | | | | |
|---|---|---|---|---|---|
| Subcategory – Level 2: Toilets & Urinals | | | | | |
| Subcategory –Level 3: Urinal equipment | | | | | |
| Subcategory – Level 4: Product performance | | | | | |
| **Product performance "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | WC and urinal flushing cisterns performance | Flushing performance of WC and urinal flushing cisterns | EN 14055 | http://www.nccs.org.cn/yujing/cbunuser/1/down/b_fileupload_2010519145323.pdf | Comply with the standard |
| 2 | Pressure flushing valves and automatic closing urinal valves PN 10 performance | Flushing performance of sanitary tapware - Pressure flushing valves and automatic closing urinal valves PN 10 | EN 12541 | http://www.nccs.org.cn/yujing/cbunuser/1/down/B_fileUpload_2010519144443.pdf | Comply with the standard |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Toilets & Urinals* | | | | | |
| *Subcategory –Level 3: Urinal equipment* | | | | | |
| *Subcategory – Level 4: Product performance* | | | | | |
| **Product performance "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 3 | Electronic opening and closing sanitary tapware performance | Flushing performance of sanitary tapware - Electronic opening and closing sanitary tapware | EN 15091 | http://www.ceir.eu/files/Standardisation%20guide%20for%20sanitary%20tapware.pdf | Comply with the standard |
| 4 | Flush performance | Flush performance of urinal suites and urinals | EN 13407 | http://www.nccs.org.cn/yujing/cbunuser/1/down/B_fileUpload_20105119430.pdf | Comply with the standard |
| 5 | Flush-free urinal performance | Flush-free urinals' performance | Commission Decision 2013/641/EU (Appendix 2) | http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32013D0641 | Comply with the standard |
| 6 | Longevity | Urinal flushing equipment warranty | | | At least, 10 years |
| 7 | Fluid biodegradability and maintenance of flush-free urinals | Flush-free urinals | | | Use of a biodegradable fluid or operation completely without fluid. |
| 8 | Installation instructions of the urinal flushing equipment | Printed/electronic installation instructions | | | Provision by the installer with installation instructions containing info on specific operating pressures, how to adjust flushing volumes, how rational use can minimize environmental impact, recommendations on the proper use, etc. |

### *Wall panels*

| ***Category – Level 1: Energy Efficiency*** | | | | | |
|---|---|---|---|---|---|
| ***Subcategory – Level 2: Wall panels*** | | | | | |
| ***Subcategory –Level 3: Gypsum Plasterboard Wall panels*** | | | | | |
| **Gypsum Plasterboard wall panels "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Panel recycling materials | Recyclable materials used in the manufacture of gypsum panels | | | Panel made from 100% recycled wood/paper |
| 2 | Wood paper panels | Panels made by wood paper | FSC, PEFC, FLEGT | www.fsc.org, www.pefc.org, ec.europa.eu/environment/forests/flegt.htm | Paper made of wood, wood fibres or wood particles stemming from legally harvested forests. |
| 3 | Gypsum content | Recyclable gypsum content | | | At least 2% by weight |

| ***Category – Level 1: Energy Efficiency*** | | | | | |
|---|---|---|---|---|---|
| ***Subcategory – Level 2: Wall panels*** | | | | | |
| ***Subcategory –Level 3: Wood-Based Wall panels*** | | | | | |
| **Wood-based wall panels "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Virgin wood panels | Origin of the panels' wood | FSC, PEFC, FLEGT | www.fsc.org, www.pefc.org, ec.europa.eu/environment/forests/flegt.htm | Virgin wood material shall come from legal sources |
| 2 | Formaldehyde emission | Wood panels formaldehyde emission | EN 13986 | http://apawood-europe.org/official-guidelines/european-standards/individual-standards/en-13986 | Up to 0.13 mg/m$^3$ |

## *Water-based Heaters*

| ***Category – Level 1: Energy Efficiency*** | | | | | |
|---|---|---|---|---|---|
| ***Subcategory – Level 2: Water-based Heaters*** | | | | | |
| ***Subcategory –Level 3: Heaters' Energy Efficiency*** | | | | | |
| **Heaters' Energy Efficiency "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Minimum energy efficiency (All heaters except solid biomass boiler heaters) | Seasonal space heating energy efficiency ($\eta_s$) | 2014/314/EU | http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=urisery%3AOJ.L_.2014.164.01.0083.01.ENG | ($\eta_s$) >= 90% |
| 2 | Minimum energy efficiency (Solid biomass boiler heaters) | Seasonal space heating energy efficiency ($\eta_s$) | 2014/314/EU | http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=urisery%3AOJ.L_.2014.164.01.0083.01.ENG | ($\eta_s$) >= 75% |
| 3 | Greenhouse gas emissions (All heaters, except heat pump heaters) | Greenhouse gas (GHG) emission limits | 2014/314/EU | http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=urisery%3AOJ.L_.2014.164.01.0083.01.ENG | 220 g $CO_2$ – equivalent/kWh heating output |
| 4 | Greenhouse gas emissions (pump heaters) | Greenhouse gas (GHG) emission limits | 2014/314/EU | http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=urisery%3AOJ.L_.2014.164.01.0083.01.ENG | 170 g $CO_2$ – equivalent/kWh heating output |
| 5 | Longevity | Water-based heaters warranty | 2014/314/EU | http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=urisery%3AOJ.L_.2014.164.01.0083.01.ENG | At least, 4 years |
| 6 | Installation instructions of the water-based heaters | Printed/electronic installation instructions | | | Provision by the installer with installation instructions |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Water-based Heaters* | | | | | |
| *Subcategory –Level 3: Heaters' Energy Efficiency* | | | | | |
| **Heaters' Energy Efficiency "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| | | | | | containing info on appropriate dimensions of heaters for each building, info on energy consumption, operating instructions, recommendations on appropriate disposal at product's end-of-life |

## *Sanitary Tapware*

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Sanitary tapware* | | | | | |
| *Subcategory –Level 3: Water consumption/Energy saving* | | | | | |
| **Water consumption/Energy saving "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Maximum water flow rate (kitchen taps) | Maximum water flow rates to the basin/sink for kitchen taps | EN 200, EN 816, EN 817, EN 1111, EN 1112, EN 1286, EN 1287, EN 15091, EN 248, EN 60335-1, EN 60335-2-35 | | Max. 8 lt/min |
| 2 | Maximum water flow rate (Basin taps) | Maximum water flow rates to the basin/sink for basin taps | EN 200, EN 816, EN 817, EN 1111, EN 1112, EN 1286, EN 1287, EN 15091, EN | | Max. 7 lt/min |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Sanitary tapware* | | | | | |
| *Subcategory –Level 3: Water consumption/Energy saving* | | | | | |
| **Water consumption/Energy saving "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| | | | 248, EN 60335-1, EN 60335-2-35 | | |
| 3 | Maximum water flow rate (Showerheads or showers) | Maximum water flow rates to the basin/sink for showerheads or showers | EN 200, EN 816, EN 817, EN 1111, EN 1112, EN 1286, EN 1287, EN 15091, EN 248, EN 60335-1, EN 60335-2-35 | | Max. 9 lt/min |
| 4 | Lowest Maximum water flow rate (kitchen taps) | Lowest maximum water flow rates to the basin/sink for kitchen taps | EN 200, EN 816, EN 817, EN 1111, EN 1112, EN 1286, EN 1287, EN 15091, EN 248, EN 60335-1, EN 60335-2-35 | | Lowest max. 2 lt/min |
| 5 | Lowest Maximum water flow rate (Basin taps) | Lowest Maximum water flow rates to the basin/sink for basin taps | EN 200, EN 816, EN 817, EN 1111, EN 1112, EN 1286, EN 1287, EN 15091, EN 248, EN 60335-1, EN 60335-2-35 | | Lowest max. 2 lt/min |
| 6 | Lowest Maximum water flow rate (Showerheads or showers) | Lowest Maximum water flow rates to the basin/sink for showerheads or showers | EN 200, EN 816, EN 817, EN 1111, EN 1112, EN 1286, EN 1287, EN 15091, EN 248, EN 60335-1, EN 60335-2-35 | | Lowest max. 4,5 lt/min |
| 7 | Lowest Maximum water flow rate (Electric showers and low pressure showers) | Lowest Maximum water flow rates to the basin/sink for electric showers and low pressure showers | EN 200, EN 816, EN 817, EN 1111, EN 1112, EN 1286, EN 1287, EN 15091, EN | | Lowest max. 3 lt/min |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Sanitary tapware* | | | | | |
| *Subcategory –Level 3: Water consumption/Energy saving* | | | | | |
| **Water consumption/Energy saving "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| | | | 248, EN 60335-1, EN 60335-2-35 | | |
| 8 | Temperature management (Hot water barrier) | Sanitary tapware equipped with an advance device or technical solution which allows temperature management | | | Equipped with hot water barrier |
| 9 | Temperature management (Thermostatic adjustment) | Sanitary tapware equipped with an advance device or technical solution which allows temperature management | | | Sanitary tapware shall allow thermostatic adjustment |
| 10 | Temperature management (Cold water supply) | Sanitary tapware equipped with an advance device or technical solution which allows temperature management | | | Sanitary tapware shall be designed with a cold-water supply in middle position |
| 11 | Time control system (taps) | Time control for stopping water flow of taps | | | Up to 15 seconds |
| 12 | Time control system (showers) | Time control for stopping water flow of showers | | | Up to 35 seconds |
| 13 | Sensor control system (taps) | Shut off delay time after usage for stopping water flow of taps | | | Up to 2 seconds |
| 14 | Sensor control system (showers) | Shut off delay time after usage for stopping water flow of showers | | | Up to 3 seconds |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Sanitary tapware* | | | | | |
| *Subcategory –Level 3: Product quality/Longevity* | | | | | |
| **Product quality/Longevity "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Ni-Cr coating | Sanitary products with a metallic Ni-Cr coating | EN 248 | http://www.nccs.org.cn/yujing/cbunuser/1/down/B_fileUpload_2010511143933.pdf | Should comply with the standard |
| 2 | Reparability/Availability of spare parts | Reparability and availability of the tapware's 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 |
| 3 | Warranty | Sanitary tapware warranty | | | At least, 4 years |
| 4 | User information | Printed/electronic information | | | The product shall be supplied with installation instructions, proper use recommendations, advice on maintenance, advice on cleaning sanitary tapware, instructions for replacement, etc. |

## *Air conditioning*

| ***Category – Level 1: Energy Efficiency*** | | | | | |
|---|---|---|---|---|---|
| ***Subcategory – Level 2: Air conditioning machines*** | | | | | |
| ***Subcategory –Level 3: General "green" characteristics*** | | | | | |
| **Air conditioning machines "green" criteria/characteristics** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Air conditioning type of device | Device type of the air conditioning machine | Commission Delegated Regulation (EU) No 626/2011 | http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32011R0626 | INVERTER |
| 2 | Cooling Energy Efficiency Class | Cooling Energy Efficiency Class for cooling | Commission Delegated Regulation (EU) No 626/2011 | http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32011R0626 | At least A++ |
| 3 | Heating Energy Efficiency Class | Energy Efficiency Class for heating (Warm heating season) | Commission Delegated Regulation (EU) No 626/2011 | http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32011R0626 | A +++ |
| 4 | Seasonal Energy Efficiency Ratio (SEER) | Cooling output during a typical cooling-season | Commission Regulation (EU) No 206/2012<br><br>Commission Delegated Regulation (EU) No 626/2011 | http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32012R0206<br><br>http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32011R0626 | At least 6.10. (Reg.206 / 2012: min 3,60, Reg.626 / 2011 for class A ++: 6,10 ≤ SEER <8,50) |
| 5 | Seasonal Coefficient of Performance (SCOP) | Ratio of useful heating or cooling provided to work required | Commission Regulation (EU) No 206/2012<br><br>Commission Delegated Regulation (EU) No 626/2011 | http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32012R0206<br><br>http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32011R0626 | at least 5.10 based on warm heating season. (Reg.206 / 2012: min 3,60, Reg.626 / 2011 for class A +++: SCOP ≥ 5,10 for the average zone) |
| 6 | Indoor noise level | Indoor unit noise level | Commission Regulation (EU) No 206/2012 | http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32012R0206 | Lw : ≤ 60 dB (A) re 1pW |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Air conditioning machines* | | | | | |
| *Subcategory –Level 3: General "green" characteristics* | | | | | |
| **Air conditioning machines "green" criteria/characteristics** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 7 | Outdoor noise level | Outdoor unit noise level | Commission Regulation (EU) No 206/2012 | http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32012R0206 | Lw : ≤ 65 dB (A) re 1 pW |
| 8 | Coolant | Air conditioning machine coolant | Regulation (EC) No 2037/2000 | http://www.fao.org/faolex/results/details/en/?details=LEX-FAOC038031 | R410A or other *hydro-fluorocarbon refrigerant*, the use of which has not been prohibited |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Air conditioning machines* | | | | | |
| *Subcategory –Level 3: Air-condition machine functions* | | | | | |
| **Air-condition machine "green" functions criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | ECO Mode | Energy Saving Mode (ECO) | Not applicable – No mandatory legislation – PA's GPP policy | | Existence of such function |
| 2 | HOT START | Internal coil sensor about the control of indoor fan startup in heating and the prevention of cold air in the area | Not applicable – No mandatory legislation – PA's GPP policy | | Existence of such function |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Air conditioning machines* | | | | | |
| *Subcategory –Level 3: Certifications* | | | | | |
| *Subcategory –Level 4: Environmental management certification* | | | | | |
| **Environmental management certification "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Environmental management certification | The air conditioning manufacturer must hold environmental management certification | Not applicable – No mandatory legislation – PA's GPP policy | | ISO 14001 or equivalent |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Air conditioning machines* | | | | | |
| *Subcategory –Level 3: Installation of air-conditioning machines* | | | | | |
| *Subcategory –Level 4: Installation of wall-mounted, split-type, energy efficient air-conditioning machines* | | | | | |
| **Environmental management certification "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Management of the installation wastes | Environmental measures to reduce and recover the waste that is produced during the installation of a new or renovated lighting system | WEEE directive | http://ec.europa.eu/environment/waste/weee/index_en.htm | The supplier must participate in an approved alternative waste management of electrical and electronic equipment (WEEE) (N.2939 / 2001, JMD 23615/651 / E.103, Directive 2002/96 / E.C.) and deposit along with his technical tender, the relevant certificate. In case of the supplier is not registered in the system above as a producer, but is a distributor electrical and electronic equipment (EEE), then in his technical tender declares who is the producer of the EEE and |

| Category – Level 1: Energy Efficiency | | | | | |
|---|---|---|---|---|---|
| Subcategory – Level 2: Air conditioning machines | | | | | |
| Subcategory –Level 3: Installation of air-conditioning machines | | | | | |
| Subcategory –Level 4: Installation of wall-mounted, split-type, energy efficient air-conditioning machines | | | | | |
| Environmental management certification "green" criteria | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| | | | | | submits the relevant manufacturer's certificate. |
| 2 | Installation instructions (before the installation of the new unit) | Instructions before the air conditioner installation | Not applicable – No mandatory legislation – PA's GPP policy | | Before the installation of the new air conditioner, the contractor has to uninstall the withdrawn replacing air conditioner. Also, he is required to carry it in a place of the building where it will be indicated by the competent organizational unit of the Public Authority (eg Technical Service, Logistics, etc.) in order to pursue the collection for recycling with the care of the Public Authority. |
| 3 | Installation instructions (installation of the new unit) | Instructions about the new air conditioner installation | Not applicable – No mandatory legislation – PA's GPP policy | | The works of placing and installation of the new machine, the works of uninstall of withdrawn replacing machine, its transfer to the Public Authority's recycling place, as well as the materials needed for these works, exclusively charge the supplier |

## *Thermal insulation*

| ***Category – Level 1: Energy Efficiency*** | | | | | |
|---|---|---|---|---|---|
| ***Subcategory – Level 2: EE-Building renovation & retrofitting*** | | | | | |
| ***Subcategory –Level 3: Implementation of external and roof thermal insulation*** | | | | | |
| **Thermal insulation "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Insulation material | Natural insulation material for buildings' refurbishment | | | • Kenaf<br>• Sheep wool<br>• Corn grain fiber |
| 2 | Thermal conductivity (λ) | Lowest thermal conductivity, λ (W/mK) | | | • λ<=0,025 (class A)<br>• 0,025<λ<=0,035 (class B)<br>• 0,035<λ<=0,045 (class C)<br>• 0,045<λ<=0,050 (class D)<br>• 0,050<λ (class E) |
| 3 | Primary energy content | The lowest primary energy content [kWh/m3] (Products with primary energy content higher than 200 [kWh/m3] are excluded) | | | • primary energy content<=30 (class A)<br>• 30<primary energy content<=60 (class B)<br>• 60<primary energy content<=100 (Class C)<br>• 100<primary energy content<=150 (Class D)<br>• 150<primary energy content<=200 (Class E) |
| 4 | Weighted sound absorption coefficient | Building protection from noise, and disturbing and unpleasant sounds. | EN ISO 11654, EN ISO 354 | | • 0.90, 0.95 & 1.00 (Class A)<br>• 0.80 & 0.85 (Class B)<br>• 0.60, 0.65, 0.70 & 0.75 (Class C)<br>• 0.30, 0.35, 0.40, 0.45, 0.50 & 0.55 (Class D)<br>• 0.15, 0.20 & 0.25 (Class E) |

## Slovenia

### *Indoor lighting*

| ***Category – Level 1: Energy Efficiency*** | | | | | |
|---|---|---|---|---|---|
| ***Subcategory – Level 2: Indoor Lighting*** | | | | | |
| ***Subcategory – Level 3: Lamps*** | | | | | |
| ***Subcategory – Level 4: Existing installations*** | | | | | |
| ***Subcategory – Level 5: Energy Class*** | | | | | |
| ***Subcategory – Level 6: Non-directional lamps*** | | | | | |
| **Energy class "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Energy class for replacement lamps of existing installations (Tungsten halogen lamps) | Tungsten halogen lamps energy class | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class C |
| 2 | Energy class for replacement lamps of existing installations (Fluorescent lamps without integral ballast) | Compact fluorescent lamps without integral ballast | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class B |
| 3 | Energy class for replacement lamps of existing installations (reflector/chandelier type fluorescent lamps with integral ballast) | Globe shaped, pear shaped, reflector type or chandelier type compact fluorescent lamps with integral ballast | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class B |
| 4 | Energy class for replacement lamps of existing installations (All lamps other than halogen lamps with colour rendering index Ra>=90). | All lamps other than halogen lamps with colour rendering index Ra>=90 | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class B |
| 5 | Energy class for replacement lamps of existing installations (All other fluorescent lamps with integral ballast). | All other compact fluorescent lamps with integral ballast | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class A |
| 6 | Energy class for replacement lamps of existing installations (15W T8 tubular fluorescent lamps). | 15W T8 tubular fluorescent lamps, and miniature tubular fluorescent lamps | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class B |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Indoor Lighting* | | | | | |
| *Subcategory – Level 3: Lamps* | | | | | |
| *Subcategory – Level 4: Existing installations* | | | | | |
| *Subcategory – Level 5: Energy Class* | | | | | |
| *Subcategory – Level 6: Non-directional lamps* | | | | | |
| **Energy class "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 7 | Energy class for replacement lamps of existing installations (Circular lamps). | Circular lamps | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class B |
| 8 | Energy class for replacement lamps of existing installations (Other tubular fluorescent lamps). | Other tubular fluorescent lamps | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class A |
| 9 | Energy class for replacement lamps of existing installations (All other lamps incl. LED). | All other lamps including LEDs and discharge lamps | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class A |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Indoor Lighting* | | | | | |
| *Subcategory – Level 3: Lamps* | | | | | |
| *Subcategory – Level 4: Existing installations* | | | | | |
| *Subcategory – Level 5: Energy Class* | | | | | |
| *Subcategory – Level 6: Directional lamps* | | | | | |
| **Energy class "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Energy class for replacement lamps of existing installations (Tungsten halogen lamps) | Tungsten halogen lamps energy class | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class C |

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|---|---|---|---|---|---|
| ***Category – Level 1: Energy Efficiency*** | | | | | |
| ***Subcategory – Level 2: Indoor Lighting*** | | | | | |
| ***Subcategory – Level 3: Lamps*** | | | | | |
| ***Subcategory – Level 4: Existing installations*** | | | | | |
| ***Subcategory – Level 5: Energy Class*** | | | | | |
| ***Subcategory – Level 6: Directional lamps*** | | | | | |
| **Energy class "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 2 | Energy class for replacement lamps of existing installations (Fluorescent lamps without integral ballast) | Compact fluorescent lamps without integral ballast | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class B |
| 3 | Energy class for replacement lamps of existing installations (reflector/chandelier type fluorescent lamps with integral ballast) | Globe shaped, pear shaped, reflector type or chandelier type compact fluorescent lamps with integral ballast | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class B |
| 4 | Energy class for replacement lamps of existing installations (All lamps other than halogen lamps with colour rendering index Ra>=90). | All lamps other than halogen lamps with colour rendering index Ra>=90 | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class B |
| 5 | Energy class for replacement lamps of existing installations (All other fluorescent lamps with integral ballast). | All other compact fluorescent lamps with integral ballast | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class A |
| 6 | Energy class for replacement lamps of existing installations (15W T8 tubular fluorescent lamps). | 15W T8 tubular fluorescent lamps, and miniature tubular fluorescent lamps | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class B |
| 7 | Energy class for replacement lamps of existing installations (Circular lamps). | Circular lamps | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class B |
| 8 | Energy class for replacement lamps of existing installations (Other tubular fluorescent lamps). | Other tubular fluorescent lamps | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class A |

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|---|---|---|---|---|---|
| ***Category – Level 1: Energy Efficiency*** | | | | | |
| ***Subcategory – Level 2: Indoor Lighting*** | | | | | |
| ***Subcategory – Level 3: Lamps*** | | | | | |
| ***Subcategory – Level 4: Existing installations*** | | | | | |
| ***Subcategory – Level 5: Energy Class*** | | | | | |
| ***Subcategory – Level 6: Directional lamps*** | | | | | |
| **Energy class "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 9 | Energy class for replacement lamps of existing installations (All other lamps incl. LED). | All other lamps including LEDs and discharge lamps | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class A |

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|---|---|---|---|---|---|
| ***Category – Level 1: Energy Efficiency*** | | | | | |
| ***Subcategory – Level 2: Indoor Lighting*** | | | | | |
| ***Subcategory – Level 3: Lamps*** | | | | | |
| ***Subcategory – Level 4: New & Renovated installations*** | | | | | |
| ***Subcategory – Level 5: Energy Class*** | | | | | |
| **Energy class "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Energy class for lamps of new & renovated installations (all lamps with colour rendering index Ra>=90) | All lamps with colour rendering index Ra>=90 (where this is required for the activities being carried out in the building) | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class B |
| 2 | Energy class for lamps of new & renovated installations (all other lamps) | All other lamps | Commission Directive 98/11/EC (Annex IV) | http://ec.europa.eu/environment/gpp/index_en.htm | Minimum energy class A |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Indoor Lighting* | | | | | |
| *Subcategory – Level 3: Lamps* | | | | | |
| *Subcategory – Level 4: Lamp life* | | | | | |
| **Lamp life (Hours) "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Lamp life (Tungsten halogen lamps) | Tungsten halogen lamps | EN 50285 | http://ec.europa.eu/environment/ecolabel/documents/part2_Light_bulbs.pdf | Minimum lamp life 2.000 hours |
| 2 | Lamp life (reflector/chandelier type compact fluorescent lamps) | Globe shaped, pear shaped, reflector type or chandelier type compact fluorescent lamps | EN 50285 | http://ec.europa.eu/environment/ecolabel/documents/part2_Light_bulbs.pdf | Minimum lamp life 6.000 hours |
| 3 | Lamp life (other compact fluorescent lamps) | All other compact fluorescent lamps | EN 50285 | http://ec.europa.eu/environment/ecolabel/documents/part2_Light_bulbs.pdf | Minimum lamp life 10.000 hours |
| 4 | Lamp life (circular lamps) | Circular lamps | EN 50285 | http://ec.europa.eu/environment/ecolabel/documents/part2_Light_bulbs.pdf | Minimum lamp life 7.500 hours |
| 5 | Lamp life (T8 tubular fluorescent lamps with electromagnetic ballasts) | T8 tubular fluorescent lamps with electromagnetic ballasts | EN 50285 | http://ec.europa.eu/environment/ecolabel/documents/part2_Light_bulbs.pdf | Minimum lamp life 15.000 hours |
| 6 | Lamp life (Other tubular fluorescent lamps) | Other tubular fluorescent lamps | EN 50285 | http://ec.europa.eu/environment/ecolabel/documents/part2_Light_bulbs.pdf | Minimum lamp life 20.000 hours |
| 7 | Lamp life (HID non-directional lamps) | HID non-directional lamps (primary burning position) | EN 50285 | http://ec.europa.eu/environment/ecolabel/documents/part2_Light_bulbs.pdf | Minimum lamp life 12.000 hours |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Indoor Lighting* | | | | | |
| *Subcategory – Level 3: Lamps* | | | | | |
| *Subcategory – Level 4: Lamp life* | | | | | |
| **Lamp life (Hours) "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 8 | Lamp life (HID directional lamps) | HID directional lamps (primary burning position) | EN 50285 | http://ec.europa.eu/environment/ecolabel/documents/part2_Light_bulbs.pdf | Minimum lamp life 9.000 hours |
| 9 | Lamp life (retrofit LEDs) | Retrofit LEDs with integrated control gear | EN 50285 | http://ec.europa.eu/environment/ecolabel/documents/part2_Light_bulbs.pdf | Minimum lamp life 15.000 hours |
| 10 | Lamp life (other than LEDs) | Other than LEDs | EN 50285 | http://ec.europa.eu/environment/ecolabel/documents/part2_Light_bulbs.pdf | Minimum lamp life 20.000 hours |
| 11 | Lamp life for LED Type E27 or E14 | Not applicable – No mandatory legislation – PA's GPP legislation | Not applicable | | Minimum lamp life 15.000 hours |
| 12 | Lamp life for LED Type Tube T8 or T5 | Not applicable – No mandatory legislation – PA's GPP legislation | Not applicable | | Minimum lamp life 30.000 hours |

| Category – Level 1: Energy Efficiency | | | | | |
|---|---|---|---|---|---|
| Subcategory – Level 2: Indoor Lighting | | | | | |
| Subcategory – Level 3: Lamps | | | | | |
| Subcategory – Level 4: Mercury content | | | | | |
| **Mercury content (mg/lamp) "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Mercury content (compact fluorescent lamps, less than 30W) | Compact fluorescent lamps, wattage less than 30W | Ecodesign Directive (2009/125/EC) Commission Regulation 245/2009 (Annex III) | http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009L0125, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:076:0017:0044:en:PDF | Max. mercury content 2,5 |
| 2 | Mercury content (compact fluorescent lamps, more than 30W) | Compact fluorescent lamps, wattage 30W or over | Ecodesign Directive (2009/125/EC) Commission Regulation 245/2009 (Annex III) | http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009L0125, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:076:0017:0044:en:PDF | Max. mercury content 3 |
| 3 | Mercury content (T5 tubular lamps, lifetime less than 25.000 hours) | T5 tubular fluorescent lamps, lifetime less than 25.000 hours | Ecodesign Directive (2009/125/EC) Commission Regulation 245/2009 (Annex III) | http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009L0125, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:076:0017:0044:en:PDF | Max. mercury content 2,5 |

| Category – Level 1: Energy Efficiency | | | | | |
|---|---|---|---|---|---|
| Subcategory – Level 2: Indoor Lighting | | | | | |
| Subcategory – Level 3: Lamps | | | | | |
| Subcategory – Level 4: Mercury content | | | | | |
| Mercury content (mg/lamp) "green" criteria | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 4 | Mercury content (T5 tubular lamps, lifetime more than 25.000 hours) | T5 lamps, lifetime 25.000 hours or more | Ecodesign Directive (2009/125/EC) Commission Regulation 245/2009 (Annex III) | http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009L0125, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:076:0017:0044:en:PDF | Max. mercury content 4 |
| 5 | Mercury content (T8 tubular lamps, wattages less than 70W, lifetime less than 25.000 hours) | T8 tubular fluorescent lamps, wattages less than 70W, lifetime less than 25.000 hours | Ecodesign Directive (2009/125/EC) Commission Regulation 245/2009 (Annex III) | http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009L0125, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:076:0017:0044:en:PDF | Max. mercury content 3,5 |
| 6 | Mercury content (T8 tubular lamps, wattages more than 70W) | T8 tubular fluorescent lamps, wattage 70W or over | Ecodesign Directive (2009/125/EC) Commission Regulation 245/2009 (Annex III) | http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009L0125, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:076:0017:0044:en:PDF | Max. mercury content 5 |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Indoor Lighting* | | | | | |
| *Subcategory – Level 3: Lamps* | | | | | |
| *Subcategory – Level 4: Mercury content* | | | | | |
| **Mercury content (mg/lamp) "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 7 | Mercury content (T8 lamps, lifetime more than 25.000 hours) | T8 lamps, lifetime 25.000 hours or more | Ecodesign Directive (2009/125/EC) Commission Regulation 245/2009 (Annex III) | http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009L0125, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:076:0017:0044:en:PDF | Max. mercury content 5 |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Indoor Lighting* | | | | | |
| *Subcategory – Level 3: Lamps* | | | | | |
| *Subcategory – Level 4: Packaging* | | | | | |
| **Packaging "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Lamps' packaging (cardboard and corrugated paper boxes) | Cardboard and corrugated paper boxes used for lamps' packaging | | | Shall be made of at least 50% post-consumer recycled material. |
| 2 | Lamps' packaging (plastic materials) | Plastic materials used for lamps' packaging | | | Shall be made of at least 50% post-consumer recycled material. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Indoor Lighting* | | | | | |
| *Subcategory – Level 3: Design of indoor lighting* | | | | | |
| *Subcategory – Level 4: Lighting power density* | | | | | |
| **Lighting power density (W/m²) "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Lighting power density (Car park) | Lighting power density for car parks | EN 12464-1 | | Max. density 2,5 |
| 2 | Lighting power density (Court) | Lighting power density for courts | EN 12464-1 | | Max. density 14 |
| 3 | Lighting power density (Exhibition space, museum) | Lighting power density for exhibition spaces, museums | EN 12464-1 | | Max. density 9 |
| 4 | Lighting power density (Fire station) | Lighting power density for fire stations | EN 12464-1 | | Max. density 12 |
| 5 | Lighting power density (Further education) | Lighting power density for further education | EN 12464-1 | | Max. density 13 |
| 6 | Lighting power density (Hospital) | Lighting power density for hospitals | EN 12464-1 | | Max. density 12 |
| 7 | Lighting power density (Library) | Lighting power density for libraries | EN 12464-1 | | Max. density 12 |
| 8 | Lighting power density (Offices-cellular) | Lighting power density for cellular offices | EN 12464-1 | | Max. density 13 |
| 9 | Lighting power density (Offices-open plan) | Lighting power density for open plan offices | EN 12464-1 | | Max. density 11 |
| 10 | Lighting power density (Police station) | Lighting power density for police stations | EN 12464-1 | | Max. density 14 |
| 11 | Lighting power density (Post office) | Lighting power density for post offices | EN 12464-1 | | Max. density 14 |
| 12 | Lighting power density (Prison) | Lighting power density for prisons | EN 12464-1 | | Max. density 9 |
| 13 | Lighting power density (Public hall) | Lighting power density for public halls | EN 12464-1 | | Max. density 9 |

| Category – Level 1: Energy Efficiency | | | | | |
|---|---|---|---|---|---|
| Subcategory – Level 2: Indoor Lighting | | | | | |
| Subcategory – Level 3: Design of indoor lighting | | | | | |
| Subcategory – Level 4: Lighting power density | | | | | |
| Lighting power density (W/m²) "green" criteria | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 14 | Lighting power density (Residential) | Residential Lighting power density | EN 12464-1 | | Max. density 11 |
| 15 | Lighting power density (Residential-communal spaces) | Residential (communal spaces) Lighting power density | EN 12464-1 | | Max. density 6 |
| 16 | Lighting power density (School) | Lighting power density for schools | EN 12464-1 | | Max. density 8 |
| 17 | Lighting power density (Sports centre) | Lighting power density for sports centers | EN 12464-1 | | Max. density 9 |
| 18 | Lighting power density (Town hall) | Lighting power density for town halls | EN 12464-1 | | Max. density 13 |

| Category – Level 1: Energy Efficiency | | | | | |
|---|---|---|---|---|---|
| Subcategory – Level 2: Indoor Lighting | | | | | |
| Subcategory – Level 3: Design of indoor lighting | | | | | |
| Subcategory – Level 4: Normalized lighting power density | | | | | |
| Normalized lighting power density (W/m²/100 lux) "green" criteria | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Normalized lighting power density (Bedrooms) | Normalized Lighting power density for bedrooms | EN 12464-1 | | Max. density 7,5 |
| 2 | Normalized lighting power density (Canteens) | Normalized lighting power density for canteens | EN 12464-1 | | Max. density 3,5 |
| 3 | Normalized lighting power density (car parks) | Normalized lighting power density for car parks | EN 12464-1 | | Max. density 2,2 |
| 4 | Normalized lighting power density (lifts, stairs) | Normalized lighting power density for lifts, stairs | EN 12464-1 | | Max. density 3,2 |

| Category – Level 1: Energy Efficiency | | | | | |
|---|---|---|---|---|---|
| Subcategory – Level 2: Indoor Lighting | | | | | |
| Subcategory – Level 3: Design of indoor lighting | | | | | |
| Subcategory – Level 4: Normalized lighting power density | | | | | |
| Normalized lighting power density (W/m²/100 lux) "green" criteria | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 5 | Normalized lighting power density (Conference rooms) | Normalized lighting power density for conference rooms | EN 12464-1 | | Max. density 2,8 |
| 6 | Normalized lighting power density (Gym) | Normalized lighting power density for gyms | EN 12464-1 | | Max. density 2,8 |
| 7 | Normalized lighting power density (Halls) | Normalized lighting power density for halls | EN 12464-1 | | Max. density 2,8 |
| 8 | Normalized lighting power density (Hospitals/examination rooms) | Normalized lighting power density for hospitals/examination rooms | EN 12464-1 | | Max. density 4 |
| 9 | Normalized lighting power density (Domestic kitchens) | Normalized lighting power density for domestic kitchens | EN 12464-1 | | Max. density 5 |
| 10 | Normalized lighting power density (restaurant kitchens) | Normalized lighting power density for restaurant kitchens | EN 12464-1 | | Max. density 2,8 |
| 11 | Normalized lighting power density (Laboratories) | Normalized lighting power density for laboratories | EN 12464-1 | | Max. density 2,8 |
| 12 | Normalized lighting power density (Libraries) | Normalized lighting power density for libraries | EN 12464-1 | | Max. density 3,2 |
| 13 | Normalized lighting power density (Lounges-long area) | Normalized lighting power density for long area lounges | EN 12464-1 | | Max. density 6 |
| 14 | Normalized lighting power density (Lounges-small area) | Normalized Lighting power density for small area lounges | EN 12464-1 | | Max. density 7,5 |
| 15 | Normalized lighting power density (open plan offices) | Normalized lighting power density for open plan offices | EN 12464-1 | | Max. density 2,3 |
| 16 | Normalized lighting power density (Cellular Offices) | Normalized lighting power density cellular offices | EN 12464-1 | | Max. density 3 |
| 17 | Normalized lighting power density (Plant rooms) | Normalized lighting power density for plant rooms | EN 12464-1 | | Max. density 3,2 |

| Category – Level 1: Energy Efficiency | | | | | |
|---|---|---|---|---|---|
| Subcategory – Level 2: Indoor Lighting | | | | | |
| Subcategory – Level 3: Design of indoor lighting | | | | | |
| Subcategory – Level 4: Normalized lighting power density | | | | | |
| Normalized lighting power density (W/m²/100 lux) "green" criteria | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 18 | Normalized lighting power density (Post rooms/switchboards) | Normalized lighting power density for post rooms/switchboards | EN 12464-1 | | Max. density 3,2 |
| 19 | Normalized lighting power density (Prison cells) | Normalized lighting power density for prison cells | EN 12464-1 | | Max. density 4 |
| 20 | Normalized lighting power density (Reception) | Normalized lighting power density for receptions | EN 12464-1 | | Max. density 4 |
| 21 | Normalized lighting power density (Rest rooms) | Normalized lighting power density for rest rooms | EN 12464-1 | | Max. density 5 |
| 22 | Normalized lighting power density (Retail) | Normalized lighting power density for retails | EN 12464-1 | | Max. density 3,5 |
| 23 | Normalized lighting power density (School classrooms) | Normalized lighting power density for school classrooms | EN 12464-1 | | Max. density 2,3 |
| 24 | Normalized lighting power density (Store rooms) | Normalized lighting power density for store rooms | EN 12464-1 | | Max. density 3,2 |
| 25 | Normalized lighting power density (waiting rooms) | Normalized lighting power density for waiting rooms | EN 12464-1 | | Max. density 3,2 |

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|---|---|---|---|---|---|
| ***Category – Level 1: Energy Efficiency*** | | | | | |
| ***Subcategory – Level 2: Indoor Lighting*** | | | | | |
| ***Subcategory – Level 3: Design of indoor lighting*** | | | | | |
| ***Subcategory – Level 4: Lighting controls*** | | | | | |
| **Lighting controls installation "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Lighting controls in infrequently occupied spaces | Installation of lighting controls in infrequently occupied spaces | | | Occupancy sensors which turn off the lighting after the space becomes unoccupied, unless this would endanger safety or security. |
| 2 | Lighting controls in unoccupied spaces at night/weekends | Installation of lighting controls in unoccupied spaces at night/weekends | | | Installation of either time switches or occupancy sensors to switch off the lighting after the space becomes unoccupied at night or at weekends. |
| 3 | Lighting controls in spaces with side windows | Installation of lighting controls in spaces with side windows | | | Should be controlled in rows parallel to the windows, so that the rows nearer to the windows can be switched off separately. |
| 4 | Lighting controls in offices/conference rooms/classrooms etc. | Installation of lighting controls in offices/conference rooms/classrooms etc. | | | Accessible by the occupants switches in convenient locations. |
| 5 | Lighting controls in daylight circulation areas | Installation of lighting controls in daylight circulation areas | | | Automatic daylight linked control (either switching or dimming). |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Indoor Lighting* | | | | | |
| *Subcategory – Level 3: Installation of indoor lighting* | | | | | |
| *Subcategory – Level 4: Installation of lighting systems* | | | | | |
| **Lighting controls installation "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Instructions about the new/renovated lighting installation | Written instructions regarding the new/renovated lighting system | | | Provision of:<br>• Disassembly instructions for luminaires<br>• Instructions on how to replace lamps, and which lamps can be used in the luminaires without increasing the stated power densities.<br>• Instructions on how to operate and maintain lighting controls<br>• For occupancy sensors, instructions on how to adjust their sensitivity and time delay, and advice on how best to do this to meet occupant needs without excessive increase in energy consumption<br>• For daylight linked controls, instructions on how to recalibrate and adjust them, for example to take into account changes to room layout.<br>• For time switches, instructions on how to adjust the switch off times, and advice on how best to do this to meet occupant without excessive increase in energy consumption. |
| 2 | Management of the installation wastes | Environmental measures to reduce and recover the waste that is produced during the installation of a new or renovated lighting system. | WEEE directive | http://ec.europa.eu/environment/waste/weee/index_en.htm | All waste lamps and luminaires and lighting controls shall be separated and sent for recovery. |

## *Office Building Design, Construction and Management*

| ***Category – Level 1: Energy Efficiency*** | | | | | |
|---|---|---|---|---|---|
| ***Subcategory – Level 2: Office Building Design, Construction and Management*** | | | | | |
| ***Subcategory – Level 3: Design and performance*** | | | | | |
| ***Subcategory – Level 4: New-built projects*** | | | | | |
| ***Subcategory – Level 5: Minimum Energy performance*** | | | | | |
| **Minimum Energy performance "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Energy performance for new-built projects | Energy performance of a new-built office building | EN 15603 | https://iet.jrc.ec.europa.eu/energyefficiency/sites/energyefficiency/files/events/High-Performance-Buildings-June-2013/Papers/session3/34_pap_socal_-_en_15603_new_features_-_2013-06-06.pdf | Energy Performance Certificate (EPC) class C or three times the kWh/m$^2$ cut-off value for the best class or a maximum of 135 kWh/m$^2$ (whichever is the strictest); |
| 2 | Lower energy consumption | The project with the lowest annual primary energy consumption (Qpmin) in building, will be assigned the largest share (Xmax). While project with a larger annual primary energy consumption (Qpi) is evaluated with the lowest share (Xi). | | | The share of this criteria in comparison to other criteria's should be at least 10%. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Design and performance* | | | | | |
| *Subcategory – Level 4: Renovations* | | | | | |
| *Subcategory – Level 5: Minimum Energy performance* | | | | | |
| **Minimum Energy performance "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Energy performance for renovation of building | Energy performance of a renovated office building | EN 15603 | https://iet.jrc.ec.europa.eu/energyefficiency/sites/energyefficiency/files/events/High-Performance-Buildings-June-2013/Papers/session3/34_pap_socal_-_en_15603_new_features_-_2013-06-06.pdf | Energy Performance Certificate (EPC) class D or four times the kWh/m$^2$ cut-off value for the best class or a maximum of 170 kWh/m$^2$ (whichever is the strictest); |
| 2 | Design team and contractors' competencies | Selection of the design team and contractors | | | • Competencies of the project manager<br>• Competencies of the design team<br>• Competencies of the main construction contractor and specialist contractors<br>• Competencies of DBO contractors and property developers |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Design and performance* | | | | | |
| *Subcategory – Level 4: Cost optimal performance* | | | | | |
| **Cost optimal performance "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Cost optimal performance | Cost optimal performance of new-build and major renovation projects | EN 15603, EU Delegated Regulation 244/2012 | https://iet.jrc.ec.europa.eu/energyefficiency/sites/energyefficiency/files/events/High-Performance-Buildings-June-2013/Papers/session3/34_pap_socal_-_en_15603_new_features_-_2013-06-06.pdf, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:081:0018:0036:en:PDF | The cost optimum primary energy demand for a public office building expressed in kWh/m2 as calculated according to the methodology in Commission Delegated Regulation No 244/2012. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Design and performance* | | | | | |
| *Subcategory – Level 4: Energy management system* | | | | | |
| **Energy management system "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Installation of a building energy management system | Installation and commission of a building energy management system | | | A building energy management system (BEMS) shall be installed and commissioned that provides occupants and facilities managers with real-time information on the building's energy use by using networked sensors and a minimum of half hourly utility metering. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Design and performance* | | | | | |
| *Subcategory – Level 4: Energy management system* | | | | | |
| **Energy management system "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 2 | Building energy management system interface | Guidelines for the interface of the Building energy management system interface | | | The user interface shall allow for information on the buildings energy use to be analyzed and downloaded by occupants and facilities managers without requiring significant training. |
| 3 | Key energy aspects control by the Building energy management system | Control of the building's key energy aspects | | | The performance of key aspects of the building that can be controlled by the system shall be easy to adjust i.e. lighting, heating, cooling. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Design and performance* | | | | | |
| *Subcategory – Level 4: Low or zero carbon energy sources* | | | | | |
| **Low or zero carbon energy sources "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Connection to cost-effective energy systems | Connection of a building's energy system to alternative cost-effective energy systems | | | Where the building is located so as to benefit from the potential to connect to a high efficiency and cost-effective alternative energy systems, the building's energy systems shall be designed to connect to this infrastructure. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Design and performance* | | | | | |
| *Subcategory – Level 4: Staff travel plan and infrastructure* | | | | | |
| **Staff travel plan and infrastructure "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Staff travel plan | Identification of a travel plan for the occupants of the building | | | The plan shall identify specific measures that, taking into account the local context, may reduce the need for commuting to the building by private car and promote the use of more sustainable modes of transport, to include cycling and walking, public transport, low emission vehicles, and car sharing. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Design and performance* | | | | | |
| *Subcategory – Level 4: Recyclable waste storage* | | | | | |
| **Recyclable waste storage "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Dedicated recyclable waste storage | Availability of a dedicated waste storage within the building | | | Dedicated recyclable waste storage shall be provided within the building, or within the curtilage of the building, to facilitate the segregation of recyclable materials and end-of-life products by occupiers. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Design and performance* | | | | | |
| *Subcategory – Level 4: Thermal comfort conditions* | | | | | |
| **Thermal comfort conditions "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Indoor thermal comfort conditions | Indoor temperature conditions | EN 15251 | https://ec.europa.eu/energy/intelligent/projects/en/projects/commoncense | Design indoor temperature values (minimum room temperature in winter, maximum room temperature in summer) for the office building shall comply with at least category II in accordance with EN 15251 or equivalent. Annex A1 shall be referred to for mechanically cooled buildings and A2 for passively cooled buildings. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Design and performance* | | | | | |
| *Subcategory – Level 4: Daylighting and glare control* | | | | | |
| **Daylighting and glare control "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Daylighting and glare control (Usable office space-externally facing facades) | Daylighting and glare control of the externally facing facades of usable office space | | | Useable office space shall for 80% of the useable floor area achieve an average Daylight Factor of 1.5% |
| 2 | Daylighting and glare control (Usable office space-interior facing facades) | Daylighting and glare control of the interior facing facades of usable office space | | | Useable office space shall for 80% of the useable floor area achieve an average Daylight Factor of 0.7% |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Design and performance* | | | | | |
| *Subcategory – Level 4: Ventilation and air quality* | | | | | |
| **Ventilation and air quality "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Ventilation system air supply (Normal outdoor air quality) | Indoor air supply by the building's ventilation system | EN 15251 | https://ec.europa.eu/energy/intelligent/projects/en/projects/commonconse nse | Quality rating of IDA 2 |
| 2 | Ventilation system air supply (Poor outdoor air quality-ODA class 2 or 3) | Indoor air supply by the building's ventilation system | EN 13779 | http://www.cres.gr/greenbuilding/PDF/prend/set4/WI_25_Pre-FV_version_prEN_13779_Ventilation_for_non-resitential_buildings.pdf | - No air intake should be positioned on a façade or facades exposed to busy roads (road to be indicated in the ITT). Where this is not possible, the opening should be positioned as high above the ground as possible. The design shall additionally be in compliance with guidance A2.2 in EN 13779;<br>- Ventilation system filters shall be in compliance with the specifications in table A.5 of EN 13779 or equivalent. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Strip-out, demolition and site preparation works* | | | | | |
| *Subcategory – Level 4: Demolition waste audit and management plan* | | | | | |
| **Demolition waste audit and management plan "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Re-use, recycling, material recovery of non-hazardous waste | Re-use of non-hazardous waste generated during demolition and strip-out works | | | Re-use of the demolition wastes at a minimum of 55% of the wastes' weight. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Construction of the building or major renovation works* | | | | | |
| *Subcategory – Level 4: Sourcing of legal timber* | | | | | |
| **Demolition waste audit and management plan "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Source of the timber | Identification of the timber's source | EU 995/2010 | http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:295:0023:0034:EN:PDF | All timber or timber products to be supplied must be legally harvested |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Construction of the building or major renovation works* | | | | | |
| *Subcategory – Level 4: Use of renewable/recycled building materials* | | | | | |
| **Use of renewable/recycled building materials "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Building materials sourced from renewable or recycled sources | Use of building products based on renewable raw materials such as wood, pulp, hemp, wool or on recycled raw materials | | | Used/installed renewable or recycled materials exceed 30% (by volume) of materials installed in the building (excluding interior fittings, panels ground floor and below-lying structures). |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Construction of the building or major renovation works* | | | | | |
| *Subcategory – Level 4: Site waste management* | | | | | |
| **Site waste management "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Site waste management | Management of the wastes arising during construction and renovation, excluding demolition waste | EU Directive 2008/98/EC | http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:312:0003:0030:en:PDF | Less than or equal to 11 tones per 100m$^2$ gross internal office floor area. |

| Category – Level 1: Energy Efficiency | | | | | |
|---|---|---|---|---|---|
| Subcategory – Level 2: Office Building Design, Construction and Management | | | | | |
| Subcategory – Level 3: Construction of the building or major renovation works | | | | | |
| Subcategory – Level 4: Selection of fit-out materials and finishes | | | | | |
| **Selection of fit-out materials and finishes emissions (µg/m³) "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Emissions of TVOCs (3 days) | TVOCs emissions (3 days) for the fit-out of the offices | CEN/TS 16516 | http://www.eurofins.com/media/2236/gst-2014-x738-oppl-cen-ts-16516.pdf | 10.000 µg/m³ |
| 2 | Emissions of TVOCs (28 days) | TVOCs emissions (28 days) for the fit-out of the offices | CEN/TS 16516 | http://www.eurofins.com/media/2236/gst-2014-x738-oppl-cen-ts-16516.pdf | <2.000 µg/m³ |
| 3 | Emissions of Formaldehyde (3 days) | Formaldehyde emissions (3 days) for the fit-out of the offices | CEN/TS 16516 | http://www.eurofins.com/media/2236/gst-2014-x738-oppl-cen-ts-16516.pdf | - |
| 4 | Emissions of Formaldehyde (28 days) | Formaldehyde emissions (28 days) for the fit-out of the offices | CEN/TS 16516 | http://www.eurofins.com/media/2236/gst-2014-x738-oppl-cen-ts-16516.pdf | < 120 µg/m³ |

| Category – Level 1: Energy Efficiency | | | | | |
|---|---|---|---|---|---|
| Subcategory – Level 2: Office Building Design, Construction and Management | | | | | |
| Subcategory – Level 3: Construction of the building or major renovation works | | | | | |
| Subcategory – Level 4: Construction products | | | | | |
| **Selection of construction products TVOC emissions "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Emissions of TVOCs in construction products installed | Emission of volatile organic compounds in construction products, which will be used in the | ISO 16000-9<br>ISO 16000-10<br>ISO 16000-11 | | |

| | | | | | |
|---|---|---|---|---|---|
| ***Category – Level 1: Energy Efficiency*** | | | | | |
| ***Subcategory – Level 2: Office Building Design, Construction and Management*** | | | | | |
| ***Subcategory – Level 3: Construction of the building or major renovation works*** | | | | | |
| ***Subcategory – Level 4: Construction products*** | | | | | |
| **Selection of construction products TVOC emissions "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| | | construction, must not exceed the amounts set out in the European standard BS EN ISO 16000-9, EN ISO 16000-10, EN ISO 16000-11 or an equivalent standard. | | | |

| | | | | | |
|---|---|---|---|---|---|
| ***Category – Level 1: Energy Efficiency*** | | | | | |
| ***Subcategory – Level 2: Office Building Design, Construction and Management*** | | | | | |
| ***Subcategory – Level 3: Completion and handover*** | | | | | |
| ***Subcategory – Level 4: Quality of the completed building fabric / Air tightness*** | | | | | |
| **Air tightness "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Design air tightness (new-build) | Air tightness for new-build buildings | EN 13829 | https://www.attma.org/wp-content/uploads/2016/09/ATTMA-TSL1-Issue-3-Rev-0-2016.09.09.pdf | 4 $m^3/(h.m^2)$ at 50 Pascals |
| 2 | Design air tightness (renovations) | Air tightness for renovated buildings | EN 13829 | https://www.attma.org/wp-content/uploads/2016/09/ATTMA-TSL1-Issue-3-Rev-0-2016.09.09.pdf | 8 $m^3/(h.m^2)$ at 50 Pascals |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Facilities management* | | | | | |
| *Subcategory – Level 4: Building energy management system* | | | | | |
| **Energy management system "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Energy Management system reports | Facilities management reports | | | Monthly reports which disaggregate heating, cooling, ventilation and lighting energy use on a seasonal basis. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Facilities management* | | | | | |
| *Subcategory – Level 4: Energy performance contract* | | | | | |
| **Energy performance contract "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Energy performance contract | Agreement regarding the limits of building's energy consumption | | | Agreement based on the preliminary modelling of the buildings energy consumption, limits on energy consumption associated with lighting, heating, cooling, ventilation and auxiliary power. |
| 2 | Energy performance contract duration | Duration (in years) of the agreement | | | At least 10 years |
| 3 | Contract liabilities | Contract liabilities between facilities manager and contracting authority | | | If energy usage were to exceed the limits set, the building operator or facilities manager (as appropriate) would be liable for the additional costs. If energy usage were to be below these limits, the savings would be shared 50:50 (or an alternative agreed apportionment of the savings) with the contracting authority. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Facilities management* | | | | | |
| *Subcategory – Level 4: Energy performance contract* | | | | | |
| **Energy performance contract "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| | | | | | The arrangement shall be subject to a review on an annual basis. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Office Building Design, Construction and Management* | | | | | |
| *Subcategory – Level 3: Facilities management* | | | | | |
| *Subcategory – Level 4: Waste management system* | | | | | |
| **Waste management system "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Installation of waste management system | Waste management systems for recycling/re-use of occupants' materials | | | Installation of a waste management system that will allow occupiers to segregate paper, cardboard, food and drink packaging (glass, plastic and other materials for which local separate collection systems exist) into separate streams for recycling. Batteries, ink and toner cartridges, IT equipment and furniture shall also be collected and arranged for re-use or recycling where possible. |

## *Combined Heat and Power*

| ***Category – Level 1: Energy Efficiency*** | | | | | |
|---|---|---|---|---|---|
| ***Subcategory – Level 2: Combined Heat and Power*** | | | | | |
| **CHP "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Combined Heat and Power equipment overall energy efficiency | Energy efficiency (annual sum of electricity and mechanical energy production and useful heat output divided by the fuel input used for heat produced in a cogeneration process and gross electricity and mechanical energy production) of CHP unit | Cogeneration Directive | http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32004L0008&from=EN | 75% |
| 2 | Combined Heat and Power equipment overall energy efficiency (energy savings calculated as follows: $PES = \left[1 - \frac{1}{\frac{CHPH\eta}{RefH\eta} + \frac{CHPE\eta}{RefE\eta}}\right] * 100\%$ | Energy efficiency (annual sum of electricity and mechanical energy production and useful heat output divided by the fuel input used for heat produced in a cogeneration process and gross electricity and mechanical energy production) of CHP unit | Cogeneration Directive | http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32004L0008&from=EN | 80% |
| 3 | Combined Heat and Power equipment overall energy efficiency (primary energy savings calculated based on PES by replacing:<br>• "CHP $H_\eta$" with "$H_\eta$"<br>• "CHP $E_\eta$" with "$E_\eta$" | Energy efficiency (annual sum of electricity and mechanical energy production and useful heat output divided by the fuel input used for heat produced in a cogeneration process and gross electricity and mechanical energy production) of CHP unit | Cogeneration Directive | http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32004L0008&from=EN | Above 70% |

## *Furniture*

| ***Category – Level 1: Energy Efficiency*** | | | | | |
|---|---|---|---|---|---|
| ***Subcategory – Level 2: Furniture*** | | | | | |
| **Furniture "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Wood and wood-based material furniture | Purchase of wood and wood-based furniture | FSC, PEFC, FLEGT | www.fsc.org, www.pefc.org, ec.europa.eu/environment/forests/flegt.htm | All wood and wood-based materials shall come from legally sourced timber. |
| 2 | Plastic parts of furniture | Furniture containing plastic parts | ISO 11469 | http://www.iso.org/iso/catalogue_detail.htm?csnumber=27946 | All plastic parts ≥ 50g shall be marked for recycling and must not contain additions of other materials that may hinder their recycling |
| 3 | Surface coating of wood, plastic and/or metal parts | Furniture with its surface coated with wood, plastic and/or metal parts | EU Directive 199/45/EC | http://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX:31999L0045 | • Not contain hazardous substances that are classified as carcinogenic (R40, R45, R49), harmful to the reproductive system (R60, R61, R62, R63), mutagenic (R46, R68), toxic (R23, R24 , R25, R26, R27, R28, R51), allergenic when inhaled (R42 ) or harmful to the environment (R50, R50/53, R51/53, R52, R52/53, R53). cause heritable genetic damage (R46), danger of serious damage to health by prolonged exposure (R48), possible risks of irreversible effects (R68).<br>• Not contain more than 5% by weight of volatile organic compounds (VOCs).<br>For phtalates: no use is allowed of phtalates that at the time of application fulfil the classification criteria of any of the following risk phrases (or combinations thereof):<br>R60, R61, R62, in accordance with Directive 67/548/EEC and its amendments. |

| Category – Level 1: Energy Efficiency | | | | | |
|---|---|---|---|---|---|
| Subcategory – Level 2: Furniture | | | | | |
| Furniture "green" criteria | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| | | | | | • Not contain aziridine<br>• Not contain Chromium (VI) compounds |
| 4 | Adhesives and glues | Adhesives and glues used in the assembly of furniture | | | VOC contain of adhesives shall not exceed 10% by weight |
| 5 | Furniture packaging materials | Recycling of packaging materials | Ecolabel type I | | Packaging must consist of readily recycled material, and/or materials taken from renewable resources, or be a multi-use system. |
| 6 | Separation of furniture packaging materials | Packaging material separation by hand | | | All packaging materials shall be easily separable by hand into recyclable parts consisting of one material (e.g. cardboard, paper, plastic, textile). |
| 7 | Outdoor furniture | Outdoor wooden furniture | EN 350-2 | https://www.en-standard.eu/csn-en-350-2-durability-of-wood-and-wood-based-products-natural-durability-of-solid-wood-part-2-guide-to-natural-durability-and-treatability-of-selected-wood-species-of-importance-in-europe/?gclid=Cj0KEQiAkO7CBRDeqJ_ahuiPrtEBEiQAbYupJcVAX-V0-j5fpnTKR08FEAQr80ZDUKDfXu5v6C6YEGoaAmpB8P8HAQ | The wood used for outdoor furniture, should be:<br>a) Classified in 1st or 2nd class for resistance or durability in accordance to EN350-2 standard or equivalent and should not be coated with preservatives or biocidal products<br>b) If not classified in above mentioned classes, several additional standards, risk phrases and precautionary statements referring to the law regulating chemical should be taken in consideration (R40/H351, R42/ H334, R45/H350, R46/H340, R49/H350i, R60/H360F, R61/H360D, R62/H361f , R63/H361d, R68/ H341 |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Furniture* | | | | | |
| **Furniture "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 8 | Share of wood and/or wood materials in furniture | The share of wood or wood materials in the furniture must be at least 70% of the volume of materials used. The exception may be chairs and furniture where wood and wood materials are not permitted. | FSC, PEFC, FLEGT | www.fsc.org, www.pefc.org, ec.europa.eu/environment/forests/flegt.htm | At least 70% (of volume) of furniture must be made of wood or wood materials, the exception may be chairs and furniture where wood and wood materials are not permitted. |
| 9 | Textile products- PESTICIDES | Textile products (used in furniture) with low levels of toxic substances - PESTICIDES | | http://ec.europa.eu/environment/gpp/pdf/criteria/textiles.pdf | For products made from cotton or other natural cellulosic fibers, the final product shall not contain more than 0.05 ppm (parts per million) of each of the following substances The total sum content of the following substances shall not exceed 0.75 ppm:<br>- 2,4,5-T<br>- Aldrin<br>- Captafol<br>- Chlordane<br>- Chlordimeform<br>- DDT<br>- Dieldrin<br>- Dinoseb and salts<br>- Endrine<br>- Heptachlor<br>- Hexachlorobenzene<br>- Hexachlorcyclohexane, α<br>- Hexachlorcyclohexane, β<br>- Hexachlorcyclohexane, δ |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Furniture* | | | | | |
| **Furniture "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| | | | | | - Metamidophos<br>- Monocrotophos<br>- Parathion<br>- Parathion-methyl<br>- Propethamphos<br>- Toxaphene |
| 10 | Textile products-DYES | Textile products (used in furniture) with low levels of toxic substances - DYES | | http://ec.europa.eu/environment/gpp/pdf/criteria/textiles.pdf | Dyes classified as sensitising/allergenic, carcinogenic, mutagenic or toxic to reproduction<br>The following dyes shall not be used in the manufacture of the final product:<br>• C.I. Basic Red 9<br>• C.I. Disperse Blue 1<br>• C.I. Acid Red 26<br>• C.I. Basic Violet 14<br>• C.I. Disperse Orange 11<br>• C. I. Direct Black 38<br>• C. I. Direct Blue 6<br>• C. I. Direct Red 28<br>• C. I. Disperse Yellow 3<br>• C.I. Disperse Yellow 23<br>• C.I. Disperse Yellow 149<br>The following dyes shall only be used if the fastness to perspiration (acid and alkaline) of the dyed fibres, yarn or fabric is at least 4:<br>• C.I. Disperse Blue 3 C.I. 61 505<br>• C.I. Disperse Blue 7 C.I. 62 500<br>• C.I. Disperse Blue 26 C.I. 63 305<br>• C.I. Disperse Blue 35 |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Furniture* | | | | | |
| **Furniture "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| | | | | | • C.I. Disperse Blue 102<br>• C.I. Disperse Blue 106<br>• C.I. Disperse Blue 124<br>• C.I. Disperse Orange 1 C.I. 11 080<br>• C.I. Disperse Orange 3 C.I. 11 005<br>• C.I. Disperse Orange 37<br>• C.I. Disperse Orange 76<br>• (previously designated Orange 37)<br>• C.I. Disperse Red 1 C.I. 11 110<br>• C.I. Disperse Red 11 C.I. 62 015<br>• C.I. Disperse Red 17 C.I. 11 210<br>• C.I. Disperse Yellow 1 C.I. 10 345<br>• C.I. Disperse Yellow 9 C.I. 10 375<br>• C.I. Disperse Yellow 39<br>• C.I. Disperse Yellow 49 |
| 11 | Textile products - ARYLAMINES | Textile products (used in furniture) with low levels of toxic substances - ARYLAMINES | | http://ec.europa.eu/environment/gpp/pdf/criteria/textiles.pdf | The final product shall not contain the following arylamines:<br>• 4-aminodiphenyl (CAS no. 92-67-1)<br>• Benzidine (CAS no. 92-87-5)<br>• 4-chloro-o-toluidine (CAS no. 95-69-2)<br>• 2-naphthylamine (CAS no. 91-59-8)<br>• o-amino-azotoluene (CAS no. 97-56-3)<br>• 2-amino-4-nitrotoluene (CAS no. 99-55-8)<br>• p-chloroaniline (CAS no. 106-47-8)<br>• 2,4-diaminoanisol (CAS no. 615-05-4)<br>• 4,4'-diaminodiphenylmethane (CAS no. 101-77-9)<br>• 3,3'-dichlorobenzidine (CAS no. 91-94-1)<br>• 3,3'-dimethoxybenzidine (CAS no. 119-90-4) |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Furniture* | | | | | |
| **Furniture "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| | | | | | • 3,3'-dimethylbenzidine (CAS no. 119-93-7)<br>•3,3'-dimethyl-4,4'-diaminodiphenylmethane (CAS no. 838-88-0)<br>• p-cresidine (CAS no. 120-71-8)<br>• 4,4'-methylene-bis-(2-chloraniline) (CAS no. 101-14-4)<br>4,4'-oxydianiline (CAS no. 101-80-4)<br>• 4,4'-thiodianiline (CAS no. 139-65-1)<br>• o-toluidine (CAS no. 95-53-4)<br>• 2,4-diaminotoluene (CAS no. 95-80-7)<br>• 2,4,5-trimethylaniline (CAS no. 137-17-7)<br>• 4-aminoazobenzene (CAS no. 60-09-3)<br>• o-anisidine (CAS no. 90-04-0) |
| 12 | Textile products-FLAME RETARDANTS | Textile products (used in furniture) with low levels of toxic substances - FLAME RETARDANTS | | http://ec.europa.eu/environment/gpp/pdf/criteria/textiles.pdf | The following flame retardants shall not be used in the final product:<br>• PBB (Polybrominated biphenyls) CAS no. 59536-65-1<br>• pentaBDE (Pentabromodiphenylether) CAS no. 32534-81-9<br>• octaBDE (Octabromodiphenyl ether) CAS no. 32536-52-9<br>• decaBDE (Decabromodiphenyl ether) CAS no. 1163-19-5 |
| 13 | Textile products-POLYURETHANE FOAMS | Textile products (used in furniture)-POLYURETHANE FOAMS | | http://ec.europa.eu/environment/gpp/pdf/toolkit/furniture_GPP_product_sheet.pdf | The blowing agents of polyurethane foams used for furniture (PUR-foams) must not be HFC or methylene chloride. |

## *Toilets & Urinals*

| ***Category – Level 1: Energy Efficiency*** | | | | | |
|---|---|---|---|---|---|
| ***Subcategory – Level 2: Toilets & Urinals*** | | | | | |
| ***Subcategory –Level 3: Flushing toilet equipment*** | | | | | |
| ***Subcategory – Level 4: Water Efficiency*** | | | | | |
| **Water efficiency "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Full flush volume | Nominal full flush volume | EN 997 | http://www.nccs.org.cn/yujing/cbunuser/1/down/b_fileupload_2010519152058.pdf | Up to 6 lt/flush |
| 2 | Water saving | Water saving in toilets of a flush volume more than 4 lt. | EN 997 | http://www.nccs.org.cn/yujing/cbunuser/1/down/b_fileupload_2010519152058.pdf | Up to 3 lt/flush |
| 3 | Flush volume adjustment (plain toilets) | Flush adjustment of plain toilets | EN 997 | http://www.nccs.org.cn/yujing/cbunuser/1/down/b_fileupload_2010519152058.pdf | Up to 6 lt/flush |
| 4 | Flush volume adjustment (toilets with water saving device) | Flush adjustment of toilets equipped with water saving device | EN 997 | http://www.nccs.org.cn/yujing/cbunuser/1/down/b_fileupload_2010519152058.pdf | Up to 3 lt/flush |

| ***Category – Level 1: Energy Efficiency*** | | | | | |
|---|---|---|---|---|---|
| ***Subcategory – Level 2: Toilets & Urinals*** | | | | | |
| ***Subcategory –Level 3: Flushing toilet equipment*** | | | | | |
| ***Subcategory – Level 4: Product performance*** | | | | | |
| **Product performance "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | WC and urinal cisterns performance | Flushing performance of WC and urinal flushing cisterns | EN 14055 | http://www.nccs.org.cn/yujing/cbunuser/1/down/b_fileupload_20105191451323.pdf | Comply with the standard |

| Category – Level 1: Energy Efficiency | | | | | |
|---|---|---|---|---|---|
| Subcategory – Level 2: Toilets & Urinals | | | | | |
| Subcategory –Level 3: Flushing toilet equipment | | | | | |
| Subcategory – Level 4: Product performance | | | | | |
| **Product performance "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 2 | Pressure flushing valves and automatic closing urinal valves PN 10 performance | Flushing performance of sanitary tapware - Pressure flushing valves and automatic closing urinal valves PN 10 | EN 12541 | http://www.nccs.org.cn/yujing/cbunuser/1/down/B_fileUpload_2010519144443.pdf | Comply with the standard |
| 3 | Electronic opening and closing sanitary tapware performance | Flushing performance of sanitary tapware - Electronic opening and closing sanitary tapware | EN 15091 | http://www.ceir.eu/files/Standardisation%20guide%20for%20sanitary%20tapware.pdf | Comply with the standard |
| 4 | Flush performance | Flush performance of toilet suites and toilet receptacles | EN 997 | http://www.nccs.org.cn/yujing/cbunuser/1/down/b_fileupload_2010519152058.pdf | Comply with the standard. The toilets should have double flush and should not use more than 6 lt of water for full and 3 lt of water for partial flushing |
| 5 | Longevity | Toilet flushing equipment warranty | | | At least, 10 years |
| 6 | Installation instructions | Printed/electronic installation instructions | | | Provision by the installer with installation instructions containing info on specific operating pressures, how to adjust flushing volumes, how rational use can minimize environmental impact, recommendations on the proper use, etc. |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Toilets & Urinals* | | | | | |
| *Subcategory –Level 3: Urinal equipment* | | | | | |
| *Subcategory – Level 4: Water Efficiency* | | | | | |
| **Water efficiency "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Full flush volume | Nominal full flush volume | EN 13407 | http://www.nccs.org.cn/yujing/cbunuser/1/down/B_fileUpload_20105119430.pdf | Up to 2 lt/flush |
| 2 | Water saving | Water saving in urinals (flush control) | | | On-demand flush control for not more than 60 cm width of continuous wall. |
| 3 | Flush volume adjustment | Flush adjustment of urinal with flushing system | | | Up to 2 lt/flush |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Toilets & Urinals* | | | | | |
| *Subcategory –Level 3: Urinal equipment* | | | | | |
| *Subcategory – Level 4: Product performance* | | | | | |
| **Product performance "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | WC and urinal flushing cisterns performance | Flushing performance of WC and urinal flushing cisterns | EN 14055 | http://www.nccs.org.cn/yujing/cbunuser/1/down/b_fileupload_2010519145323.pdf | Comply with the standard |
| 2 | Pressure flushing valves and automatic closing urinal valves PN 10 performance | Flushing performance of sanitary tapware - Pressure flushing valves and automatic closing urinal valves PN 10 | EN 12541 | http://www.nccs.org.cn/yujing/cbunuser/1/down/B_fileUpload_2010519144443.pdf | Comply with the standard |

| Category – Level 1: Energy Efficiency | | | | | |
|---|---|---|---|---|---|
| Subcategory – Level 2: Toilets & Urinals | | | | | |
| Subcategory –Level 3: Urinal equipment | | | | | |
| Subcategory – Level 4: Product performance | | | | | |
| **Product performance "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 3 | Electronic opening and closing sanitary tapware performance | Flushing performance of sanitary tapware - Electronic opening and closing sanitary tapware | EN 15091 | http://www.ceir.eu/files/Standardisation%20guide%20for%20sanitary%20tapware.pdf | Comply with the standard |
| 4 | Flush performance | Flush performance of urinal suites and urinals | EN 13407 | http://www.nccs.org.cn/yujing/cbunuser/1/down/B_fileUpload_20105119430.pdf | Comply with the standard |
| 5 | Flush-free urinal performance | Flush-free urinals' performance | Commission Decision 2013/641/EU (Appendix 2) | http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32013D0641 | Comply with the standard. In case of flush-free urinals the biodegradable liquid or rather no liquid should be used. |
| 6 | Longevity | Urinal flushing equipment warranty | | | At least, 10 years |
| 7 | Fluid biodegradability and maintenance of flush-free urinals | Flush-free urinals | | | Use of a biodegradable fluid or operation completely without fluid. |
| 8 | Installation instructions of the urinal flushing equipment | Printed/electronic installation instructions | | | Provision by the installer with installation instructions containing info on specific operating pressures, how to adjust flushing volumes, how rational use can minimize environmental impact, recommendations on the proper use, etc. |

### *Wall panels*

| ***Category – Level 1: Energy Efficiency*** | | | | | |
|---|---|---|---|---|---|
| ***Subcategory – Level 2: Wall panels*** | | | | | |
| ***Subcategory –Level 3: Gypsum Plasterboard Wall panels*** | | | | | |
| **Gypsum Plasterboard wall panels "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Panel recycling materials | Recyclable materials used in the manufacture of gypsum panels | | | Panel made from 100% recycled wood/paper |
| 2 | Wood paper panels | Panels made by wood paper | FSC, PEFC, FLEGT | www.fsc.org, www.pefc.org, ec.europa.eu/environment/forests/flegt.htm | Paper made of wood, wood fibres or wood particles stemming from legally harvested forests. |
| 3 | Gypsum content | Recyclable gypsum content | | | At least 2% by weight |

| ***Category – Level 1: Energy Efficiency*** | | | | | |
|---|---|---|---|---|---|
| ***Subcategory – Level 2: Wall panels*** | | | | | |
| ***Subcategory –Level 3: Wood-Based Wall panels*** | | | | | |
| **Wood-based wall panels "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Virgin wood panels | Origin of the panels' wood | FSC, PEFC, FLEGT | www.fsc.org, www.pefc.org, ec.europa.eu/environment/forests/flegt.htm | Virgin wood material shall come from legal sources |
| 2 | Formaldehyde emission | Wood panels formaldehyde emission | EN 13986, EN 300, EN 312, EN 622, EN 636 | http://apawood-europe.org/official-guidelines/european-standards/individual-standards/en-13986 http://apawood-europe.org/official-guidelines/european-standards/individual-standards/en-300/ | Up to 0.13 mg/m$^3$ |

### *Water-based Heaters*

| ***Category – Level 1: Energy Efficiency*** | | | | | |
|---|---|---|---|---|---|
| ***Subcategory – Level 2: Water-based Heaters*** | | | | | |
| ***Subcategory –Level 3: Heaters' Energy Efficiency*** | | | | | |
| **Heaters' Energy Efficiency "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Minimum energy efficiency (All heaters except solid biomass boiler heaters) | Seasonal space heating energy efficiency ($\eta_s$) | 2014/314/EU | http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=urisery%3AOJ.L_.2014.164.01.0083.01.ENG | ($\eta_s$) >= 90% |
| 2 | Minimum energy efficiency (Solid biomass boiler heaters) | Seasonal space heating energy efficiency ($\eta_s$) | 2014/314/EU | http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=urisery%3AOJ.L_.2014.164.01.0083.01.ENG | ($\eta_s$) >= 75% |
| 3 | Greenhouse gas emissions (All heaters, except heat pump heaters) | Greenhouse gas (GHG) emission limits | 2014/314/EU | http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=urisery%3AOJ.L_.2014.164.01.0083.01.ENG | 220 g $CO_2$ – equivalent/kWh heating output |
| 4 | Greenhouse gas emissions (pump heaters) | Greenhouse gas (GHG) emission limits | 2014/314/EU | http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=urisery%3AOJ.L_.2014.164.01.0083.01.ENG | 170 g $CO_2$ – equivalent/kWh heating output |
| 5 | Longevity | Water-based heaters warranty | 2014/314/EU | http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=urisery%3AOJ.L_.2014.164.01.0083.01.ENG | At least, 4 years |

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| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Water-based Heaters* | | | | | |
| *Subcategory –Level 3: Heaters' Energy Efficiency* | | | | | |
| **Heaters' Energy Efficiency "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 6 | Installation instructions of the water-based heaters | Printed/electronic installation instructions | | | Provision by the installer with installation instructions containing info on appropriate dimensions of heaters for each building, info on energy consumption, operating instructions, recommendations on appropriate disposal at product's end-of-life |

### *Sanitary Tapware*

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Sanitary tapware* | | | | | |
| *Subcategory –Level 3: Water consumption/Energy saving* | | | | | |
| **Water consumption/Energy saving "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Maximum water flow rate (kitchen taps) | Maximum water flow rates to the basin/sink for kitchen taps | EN 200, EN 816, EN 817, EN 1111, EN 1112, EN 1286, EN 1287, EN 15091, EN 248, EN 60335-1, EN 60335-2-35 | | Max. 8 lt/min |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Sanitary tapware* | | | | | |
| *Subcategory –Level 3: Water consumption/Energy saving* | | | | | |
| **Water consumption/Energy saving "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 2 | Maximum water flow rate (Basin taps) | Maximum water flow rates to the basin/sink for basin taps | EN 200, EN 816, EN 817, EN 1111, EN 1112, EN 1286, EN 1287, EN 15091, EN 248, EN 60335-1, EN 60335-2-35 | | Max. 7 lt/min |
| 3 | Maximum water flow rate (Showerheads or showers) | Maximum water flow rates to the basin/sink for showerheads or showers | EN 200, EN 816, EN 817, EN 1111, EN 1112, EN 1286, EN 1287, EN 15091, EN 248, EN 60335-1, EN 60335-2-35 | | Max. 9 lt/min |
| 4 | Lowest Maximum water flow rate (kitchen taps) | Lowest maximum water flow rates to the basin/sink for kitchen taps | EN 200, EN 816, EN 817, EN 1111, EN 1112, EN 1286, EN 1287, EN 15091, EN 248, EN 60335-1, EN 60335-2-35 | | Lowest max. 2 lt/min |
| 5 | Lowest Maximum water flow rate (Basin taps) | Lowest Maximum water flow rates to the basin/sink for basin taps | EN 200, EN 816, EN 817, EN 1111, EN 1112, EN 1286, EN 1287, EN 15091, EN 248, EN 60335-1, EN 60335-2-35 | | Lowest max. 2 lt/min |
| 6 | Lowest Maximum water flow rate (Showerheads or showers) | Lowest Maximum water flow rates to the basin/sink for showerheads or showers | EN 200, EN 816, EN 817, EN 1111, EN 1112, EN 1286, EN 1287, EN 15091, EN 248, EN 60335-1, EN 60335-2-35 | | Lowest max. 4,5 lt/min |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Sanitary tapware* | | | | | |
| *Subcategory –Level 3: Water consumption/Energy saving* | | | | | |
| **Water consumption/Energy saving "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 7 | Lowest Maximum water flow rate (Electric showers and low pressure showers) | Lowest Maximum water flow rates to the basin/sink for electric showers and low pressure showers | EN 200, EN 816, EN 817, EN 1111, EN 1112, EN 1286, EN 1287, EN 15091, EN 248, EN 60335-1, EN 60335-2-35 | | Lowest max. 3 lt/min |
| 8 | Temperature management (Hot water barrier) | Sanitary tapware equipped with an advance device or technical solution which allows temperature management | | | Equipped with hot water barrier |
| 9 | Temperature management (Thermostatic adjustment) | Sanitary tapware equipped with an advance device or technical solution which allows temperature management | | | Sanitary tapware shall allow thermostatic adjustment |
| 10 | Temperature management (Cold water supply) | Sanitary tapware equipped with an advance device or technical solution which allows temperature management | | | Sanitary tapware shall be designed with a cold-water supply in middle position |
| 11 | Time control system (taps) | Time control for stopping water flow of taps | | | Up to 15 seconds |
| 12 | Time control system (showers) | Time control for stopping water flow of showers | | | Up to 35 seconds |
| 13 | Sensor control system (taps) | Shut off delay time after usage for stopping water flow of taps | | | Up to 2 seconds |
| 14 | Sensor control system (showers) | Shut off delay time after usage for stopping water flow of showers | | | Up to 3 seconds |

| *Category – Level 1: Energy Efficiency* | | | | | |
|---|---|---|---|---|---|
| *Subcategory – Level 2: Sanitary tapware* | | | | | |
| *Subcategory –Level 3: Product quality/Longevity* | | | | | |
| **Product quality/Longevity "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Ni-Cr coating | Sanitary products with a metallic Ni-Cr coating | EN 248 | http://www.nccs.org.cn/yujing/cbunuser/1/down/B_fileUpload_2010511143933.pdf | Should comply with the standard |
| 2 | Reparability/Availability of spare parts | Reparability and availability of the tapware's 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 |
| 3 | Warranty | Sanitary tapware warranty | | | At least, 4 years |
| 4 | User information | Printed/electronic information | | | The product shall be supplied with installation instructions, proper use recommendations, advice on maintenance, advice on cleaning sanitary tapware, instructions for replacement, etc. |

## Cyprus

In general, Cyprus adopts the common EU "green" criteria for buildings' refurbishment. Nevertheless, there are some minor exceptions of harmonized criteria, which are presented below.

### *Indoor lighting*

| ***Category – Level 1: Energy Efficiency*** | | | | | |
|---|---|---|---|---|---|
| ***Subcategory – Level 2: Indoor Lighting*** | | | | | |
| ***Subcategory – Level 3: Design of indoor lighting*** | | | | | |
| ***Subcategory – Level 4: Lighting power density*** | | | | | |
| **Lighting power density (W/m$^2$) "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Lighting power density (Offices-cellular) | Lighting power density for cellular offices | EN 12464-1, Cyprus national law 119/2016 | | Max. density 10 |
| 2 | Lighting power density (Offices-open plan) | Lighting power density for open plan offices | EN 12464-1, Cyprus national law 119/2016 | | Max. density 10 |

### *Thermal insulation*

| ***Category – Level 1: Energy Efficiency*** | | | | | |
|---|---|---|---|---|---|
| ***Subcategory – Level 2: EE-Building renovation & retrofitting*** | | | | | |
| ***Subcategory –Level 3: Implementation of external and roof thermal insulation*** | | | | | |
| **Thermal transmittance "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Thermal transmittance coefficient (roofs, exposed floors and wall insulation) | Thermal transmittance coefficient for roofs, exposed floors and wall insulation | Cyprus national law 119/2016 | | Max. 0,4 W/m2K |
| 2 | Thermal transmittance coefficient (Openings) | Thermal transmittance coefficient for openings | Cyprus national law 119/2016 | | Max. 2,9 W/m2K |

## Italy

As in the most cases, Italy adopts the common EU "green" criteria for buildings' refurbishment, with some harmonized/specific criteria, which are presented below:

| ***Category – Level 1: Energy Efficiency*** | | | | | |
|---|---|---|---|---|---|
| ***Subcategory – Level 2: Electricity*** | | | | | |
| ***Subcategory – Level 3: Static autotrasformers*** | | | | | |
| **Static autotransformers"green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Static autotransformer electricity saving | Static autotransformer with electronic control and PWM technology electricity saving | Directive 2009/28/EC, VDE standard | http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex%3A32009L0028, https://www.vde-verlag.de/standards.html | Min. 12% |

| ***Category – Level 1: Renewable Energy Sources*** | | | | | |
|---|---|---|---|---|---|
| ***Subcategory – Level 2: Energy self sufficiency*** | | | | | |
| **Energy self sufficiency "green" criteria** | | | | | |
| **n.** | **Name** | **Description** | **International Standard** | **URL of standard** | **Value Description** |
| 1 | Biomass co-generation (gasification) | Biomass co-generation (gasification) energy self sufficiency rate | Directive 2009/28/EC | http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex%3A32009L0028 | 70% |
| 2 | Fotovoltaic plant introduction | Fotovoltaic plant self sufficiency rate | Directive 2009/28/EC | http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex%3A32009L0028 | 40% |

## Bosnia – Herzegovina

### *Public procurement procedure in BiH*

The public procurement procedure in Bosnia and Herzegovina is conducted under the **Law on Public Procurement** and verification of the bidders' qualifications is performed solely according to the criteria already fixed in the bidding documentation. All requested criterions ("green" and any other) equally have to be included in the bidding documentation and provided to the economic operators. Thus, the green evaluation system (within the procurement procedure itself) is not mandatory.

The Law on Public Procurement defines the main types of public procurement procedures. They are:

1) Open procedure,
2) Restricted procedure,
3) Negotiated procedure with prior publication of a procurement notice,
4) Negotiated procedure without prior publication of a procurement notice,
5) Competitive dialogue,
6) Public procurement procedures for award of small value contracts: a) competitive request for quotations and b) direct agreement.

- **Open procedure** (the procedure whereby any interested bidder may submit a bid) is the basic, regular public procurement procedure, usually used by contracting authorities in procurement of goods, services and works.
- **Restricted procedure** is the procedure in which an economic operator may request participation and in which, following the publication of qualification, the contracting authority invites all qualified candidates to submit bids.

- **Negotiated procedure** is the procedure whereby the contracting authority negotiates the contract terms with one or several invited bidders. This procedure may be conducted with or without prior publication of a procurement notice, exclusively under the conditions set out in the Law.

- **Competitive dialogue** is the procedure whereby any interested economic operator may request participation in procedure and the contracting authority leads a dialogue with participants invited to the procedure with the purpose of developing one or more adequate solutions that may satisfy the needs of the contracting authority, and based on which the selected bidders will be invited to submit bids.

- **Small value contracts**: a) Competitive request for quotations is a procedure in which the contracting authority sends a request for bid submission for procurement of supplies, services, or works to a certain number of bidders, where that number cannot be lower than three, and it is under obligation to publish an additional procurement notice on the public procurement portal; b) Direct agreement is the procedure in which the contracting authority, following market analysis, requires a written proposal of price or bid from one or more bidders and negotiates or accepts that price, as the condition for final agreement.

The contracting authority applies the open or restricted procedure for the public procurement contract award, as the basic and regular procedures. Negotiated procedure with or without publication of notice and competitive dialogue may be applied exceptionally, provided the legal conditions for that stipulated by the Law are met.

In conducting an open procedure the contracting authority is under obligation to:
a) prepare bidding documentation;
b) publish a procurement notice;
c) provide the economic operators with bidding documentation;
d) carry out the public opening of bids received in due time;
e) perform the verification of the bidders' qualifications according to the participation criteria fixed in the bidding documentation and evaluate the bids according to contract award criteria;
f) inform the bidders about the outcome of the public procurement procedure;
g) offer the contract to the most successful bidder;
h) publish the notice and submit a report to the Public Procurement Agency.

Restricted procedure is conducted in the following manner:
a) publishing the procurement notice in which the contracting authority invites all interested candidates to request the documentation for pre-qualification phase;
b) providing or rendering accessible the documentation for pre-qualification phase to the candidates;
c) performing the verification of the candidates' qualifications;
d) informing the candidates that have not qualified;
e) providing the qualified candidates simultaneously with the bidding documentation together with the invitation to submit bids;

f) carrying out the public opening of bids received in due time;
g) evaluating the bids according to the contract award criteria fixed in the bidding documentation;
h) informing the bidders about the outcome of the public procurement procedure;
i) offering the contract to the most successful bidder;
j) publishing the notice and submitting the report to the Public Procurement Agency.

### *Regulations on planning and construction*

Although the public procurement procedure does not consider the "green" criterions directly, the criterions are involved indirectly and they are considered in the phase of preparation of bidding documentation. The bidding documentation is based on technical specifications and planning documentation.

Namely, the planning documentation on building construction/refurbishment has to be prepared according to national regulations, mainly according to specific rulebooks that define some energy criterions. These rulebooks are stipulated by the **Law on Spatial Planning and Land Use on the Level of Federation of Bosnia and Herzegovina**. The main rulebooks are:

The Rulebook on Technical Conditions for Thermal Protection of Buildings and Efficient Energy Consumption (Federal level) determines the minimal conditions on energy performance of new buildings and of buildings in reconstruction, as well as technical characteristics of some materials used in process of (re)construction.

The Rulebook on Technical Characteristics of Heating and Cooling Systems in Buildings (Federal level) determines technical characteristics of these systems and conditions in planning, installation, usage and maintenance.

The Rulebook on Technical Characteristics of Systems of Ventilation, Partial Air-conditioning and Air-conditioning in Buildings (Federal level) determines technical characteristics of these systems and conditions in planning, installation, usage and maintenance.

The Rulebook on Technical Characteristics of Windows and Doors (Federal level) determines technical characteristics and other requests for construction products – windows and doors that will be mounted.

The above listed rulebooks contain some definitions, standards and calculations that, in some level, can be considered similar to the ones listed in tables with EU criterions, but it is not possible to define the direct links or to find the appropriate analogy needed to harmonise the EU and specific national construction criterions. Furthermore, for the most criterions from the EU tables (Indoor lighting, Combined Heat and Power, Furniture, Toilets & Urinals, Sanitary Tap-ware) we do not have any equivalents in our rulebooks, so in the best case, the harmonisation would be partially possible just for some criterions and upon the analysis of experts from the sectors of construction, energy efficiency and related laws.