

**ENERGY LABELLING  
WORKING DOCUMENT 2  
for discussion on 5 July 2011**

Draft

**COMMISSION DELEGATED REGULATION (EU) No .../..**

**of [...]**

**implementing Directive 2010/30/EU of the European Parliament and of the Council with  
regard to energy labelling of general lighting lamps and household luminaires**

**ENERGY LABELLING  
WORKING DOCUMENT 2  
for discussion on 5 July 2011**

Draft

**COMMISSION DELEGATED REGULATION (EU) No .../..**

**of [...]**

**implementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of general lighting lamps and household luminaires**

[blue highlight indicates text or comments highly relevant for further discussion]

[yellow highlight indicates places where formal revision is still needed]

[The green highlight in the preamble and recitals indicates text taken from another recent energy labelling delegated regulation, modified only for the product group covered.]

**THE EUROPEAN COMMISSION,**

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

**Having regard to Directive 2010/30/EU of the European Parliament and of the Council on the indication by labelling and standard product information of the consumption of energy and other resources by energy-related products<sup>1</sup>, and in particular Article 10 thereof,**

**Whereas:**

- (1) Directive 2010/30/EU requires the Commission to adopt delegated acts as regards the labelling of energy-related products representing significant potential for energy savings and having a wide disparity in performance levels with equivalent functionality.**
- (2) Provisions on the energy labelling of household lamps were established by Commission Directive 98/11/EC of 27 January 1998 implementing Council Directive 92/75/EEC with regard to energy labelling of household lamps<sup>2</sup>.**
- (3) The electricity used by general lighting lamps accounts for a significant share of total electricity demand in the Union. In addition to the energy efficiency improvements already achieved, the scope for further reducing the energy consumption of general lighting lamps is substantial.**

---

<sup>1</sup> OJ L 153, 18.6.2010, p.1.

<sup>2</sup> OJ L 71, 10.3.1998, p. 1.

- (4) Commission Directive 98/11/EC should be repealed and new provisions should be laid down by this Regulation in order to ensure that the energy label provides dynamic incentives for suppliers to further improve the energy efficiency of general lighting lamps and to accelerate the market transformation towards energy-efficient technologies. The scope of Directive 98/11/EC is limited to certain technologies within the category of household lamps. In order to use the label to improve the energy efficiency of other lamp technologies, including in professional lighting, this Regulation should cover also directional lamps, light emitting diodes, and lamps exclusively used in professional lighting, such as high-intensity discharge lamps.
- (5) Household luminaires are often sold with incorporated or accompanying lamps. This Regulation should ensure that consumers are informed about the energy efficiency of such lamps without imposing disproportionate administrative burden on luminaire manufacturers and retailers and without discriminating between luminaires as to the presence of energy efficiency information for consumers.
- (6) The information provided on the label should be obtained through reliable, accurate and reproducible measurement procedures, which take into account the recognised state-of-the-art measurement methods including, where available, harmonised standards adopted by the European standardisation bodies, as listed in Annex I to Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998 laying down a procedure for the provision of information in the field of technical standards and regulations and of rules on Information Society services<sup>3</sup>.
- (7) This Regulation should specify a uniform design and content for the label for general lighting lamps and household luminaires.
- (8) In addition, this Regulation should specify requirements as to the technical documentation and the fiche for general lighting lamps and household luminaires.
- (9) Moreover, this Regulation should specify requirements as to the information to be provided for any form of distance selling, advertisements and technical promotional materials for general lighting lamps and household luminaires.
- (10) It is appropriate to provide for a review of the provisions of this Regulation taking into account technological progress.
- (11) In order to facilitate the transition from Directive 98/11/EC to this Regulation, provisions should be made that household lamps labelled in accordance with this Regulation should be considered as compliant with Directive 98/11/EC.
- (12) Directive 98/11/EC should therefore be repealed.

---

<sup>3</sup> OJ L 204, 21.7.1998, p. 37.

HAS ADOPTED THIS REGULATION:

*Article 1*  
*Subject matter and scope*

This Regulation establishes requirements for the labelling of and the provision of supplementary product information on general lighting electric lamps and household electric luminaires, including when they are integrated into other products.

This Regulation does not apply to:

[the following three points cover the special purpose cases of most lamp technologies currently available on the market, thus avoiding the need to tackle declarations of special purpose in this Regulation]

- (a) special purpose lamps according to Regulation 244/2009, except directional lamps and lamps meant for general lighting applications other than household room illumination;
- (b) products defined as exempt from Annex III of Regulation 245/2009 according to its Annex I, except those referred to in Annex I part 1 paragraphs (b) and (i); [these are directional lamps and the non-street lighting HID lamps]
- (c) special purpose lighting products defined in other implementing measures of Directive 2009/125/EC. [We need to have this open wording, as when this Regulation is adopted the directional lamps ecodesign regulation will not be adopted yet. But the wording may prove useful also in the later future, should there be further ecodesign regulations on as yet unforeseen lighting products.]

*Article 2*  
*Definitions*

In addition to the definitions laid down in Article 2 of Directive 2010/30/EU, the following definitions shall apply for the purposes of this Regulation:

[Text in grey highlight shows definitions that are shared with the draft lamp energy labelling regulation. Any changes should be checked for implementation in the other regulation too.]

1. "general lighting" means the full or partial illumination of an area, by replacing or complementing natural light with artificial light, in order to enhance visibility in that area;
2. "source" means a surface or object emitting radiation produced by a transformation of energy;
3. "lamp" means a unit consisting of a source made in order to produce an optical radiation, usually visible. It is designed to be part of a luminaire, but its performance can be assessed independently. It includes any additional components necessary for starting, power supply or stable operation of the unit or for the distribution, filtering or transformation of the optical radiation, in case those components cannot be removed without permanently damaging the unit;

4. "directional lamp" means a lamp having at least 80% light output within a solid angle of  $\pi$  sr (corresponding to a cone with angle of  $120^\circ$ );
5. "filament lamp" means a lamp in which light is produced by means of a threadlike conductor which is heated to incandescence by the passage of an electric current. The lamp may or may not contain gases influencing the process of incandescence;
6. "incandescent lamp" means a filament lamp in which the filament operates in an evacuated bulb or is surrounded by inert gas;
7. "tungsten halogen lamp" means a filament lamp in which the filament is made of tungsten and is surrounded by gas containing halogens or halogen compounds. Tungsten halogen lamps are supplied either with or without integrated power supply;
8. "discharge lamp" means a lamp in which the light is produced, directly or indirectly, by an electric discharge through a gas, a metal vapour or a mixture of several gases and vapours;
9. "fluorescent lamp" means a discharge lamp of the low pressure mercury type in which most of the light is emitted by one or several layers of phosphors excited by the ultraviolet radiation from the discharge. Fluorescent lamps are supplied either with or without integrated ballasts;
10. "high intensity discharge lamp" means an electric discharge lamp in which the light producing arc is stabilized by wall temperature and the arc has a bulb wall loading in excess of 3 watts per square centimetre;
11. "light emitting diode" ("LED") lamp or "LED module" means a lamp in which the light is produced by a solid state device embodying a p-n junction, emitting optical radiation when excited by an electric current;
12. "lamp control gear" means one or more components between the electrical supply and one or more lamps which may serve to transform the supply voltage, limit the current of the lamp(s) to the required value, provide starting voltage and preheating current, prevent cold starting, correct power factor, reduce radio interference and to provide any other functionality related to the operation of the lamp(s);
13. "external lamp control gear" means lamp control gear designed to be installed outside the enclosure of a lamp or luminaire, or to be removed from the enclosure without permanently damaging the lamp or the luminaire;
14. "luminaire" means an apparatus which distributes, filters or transforms the light transmitted from one or more lamps and includes, except lamps themselves, all the parts necessary for fixing and protecting the lamps, together with the means for connecting them to the electric supply. It may or may not include the control gear necessary for operating the lamps;
15. "household luminaire" means a luminaire intended to provide general lighting in a household environment;
16. "point of sale" means a location where the product is displayed or offered for sale, hire or hire-purchase;

17. "final owner" means the person or entity owning a product during the use phase of its life cycle, or any person or entity acting on behalf of such a person or entity.

*Article 3  
Responsibilities of suppliers*

Suppliers shall ensure for general lighting lamps and household luminaires that:

- (a) if the model is meant to be marketed through a point of sale, a label produced in the format and containing information as set out in Annex I is placed or printed on, or attached to, the outside of the individual packaging of lamps and luminaires, or supplied on a separate sheet with luminaires;
- (b) a product fiche, as set out in Annex II, is made available;
- (c) the technical documentation as set out in Annex III is made available on request to the authorities of the Member States and to the Commission;
- (d) any offer or advertisement disclosing energy-related or price information for a specific model contains the energy efficiency class;
- (e) any technical promotional material concerning a specific model which describes its specific technical parameters includes the energy efficiency class of that model.

*Article 4  
Responsibilities of dealers*

Dealers shall ensure for general lighting lamps and household luminaires that:

- (a) each model presented at the point of sale outside of its packaging or in a packaging without a label printed or placed on or attached to it in accordance with Article 3(a), bears the label provided by the suppliers in accordance with Article 3(a) in such a way as to be clearly visible, or is accompanied by the label in such a way as to be clearly visible and identifiable as the label belonging to the luminaire;
- (b) each model offered for sale, hire or hire-purchase where the final owner cannot be expected to see the product displayed are marketed with the information to be provided by suppliers in accordance with Annex IV;
- (c) any offer or advertisement disclosing energy-related or price information for a specific model contains the energy efficiency class;
- (d) any technical promotional material concerning a specific model which describes its specific technical parameters includes the energy efficiency class of that model.

*Article 5*  
*Measurement methods*

The information to be provided under Articles 3 and 4 shall be obtained by reliable, accurate and reproducible measurement procedures, which take into account the recognised state-of-the-art measurement methods.

*Article 6*  
*Verification procedure for market surveillance purposes*

Member States shall apply the procedure laid down in **Annex V** when assessing the conformity of the declared energy efficiency class and of the annual energy consumption.

Household luminaires complying with this Regulation shall be regarded as having fulfilled the product information requirements applicable to lamps provided with the luminaire according to Commission Regulations 244/2009.

*Article 7*  
*Revision*

The Commission shall review this Regulation in the light of technological progress no later than four years after its entry into force. The review shall in particular assess the verification tolerances set out in **Annex V**.

*Article 8*  
*Repeal*

Directive 98/11/EC shall be repealed from **[date to be inserted: 12 months after entry into force]**.

References to Directive 98/11/EC shall be construed as references to this Regulation. References to Annex IV of Directive 98/11/EC shall be construed as references to **Annex VI** of this Regulation.

*Article 9*  
*Transitional provisions*

1. **Articles 3 and 4** shall not apply to luminaires before **[date to be inserted: 24 months after entry into force of this Regulation]**.
2. **Articles 3 (d) and (e) and Article 4 (b), (c) and (d)** shall not apply to printed advertisements and printed technical promotional material published before **[date to be inserted: 16 months after entry into force of this Regulation]**.
3. Lamps defined in Article 1(1) and (2) of Directive 98/11/EC placed on the market before **[date to be inserted: 12 months after entry into force of this Regulation]** shall comply with the provisions set out in Directive 98/11/EC.

4. Lamps defined in Article 1(1) and (2) of Directive 98/11/EC which comply with the provisions of this Regulation and which are placed on the market or offered for sale, hire or hire-purchase before [date to be inserted: 12 months after entry into force of this Regulation] shall be regarded as complying with the requirements of Directive 98/11/EC.

*Article 10*

*Entry into force and application*

1. This Regulation shall enter into force on the twentieth day following that of its publication in the *Official Journal of the European Union*.
2. It shall apply from [date to be inserted: 12 months after entry into force of this Regulation]. However, Article 3 (d) and (e) and Article 4 (b), (c) and (d) shall apply from [date to be inserted: 16 months after entry into force of this Regulation]

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels,

*For the Commission*  
*The President*

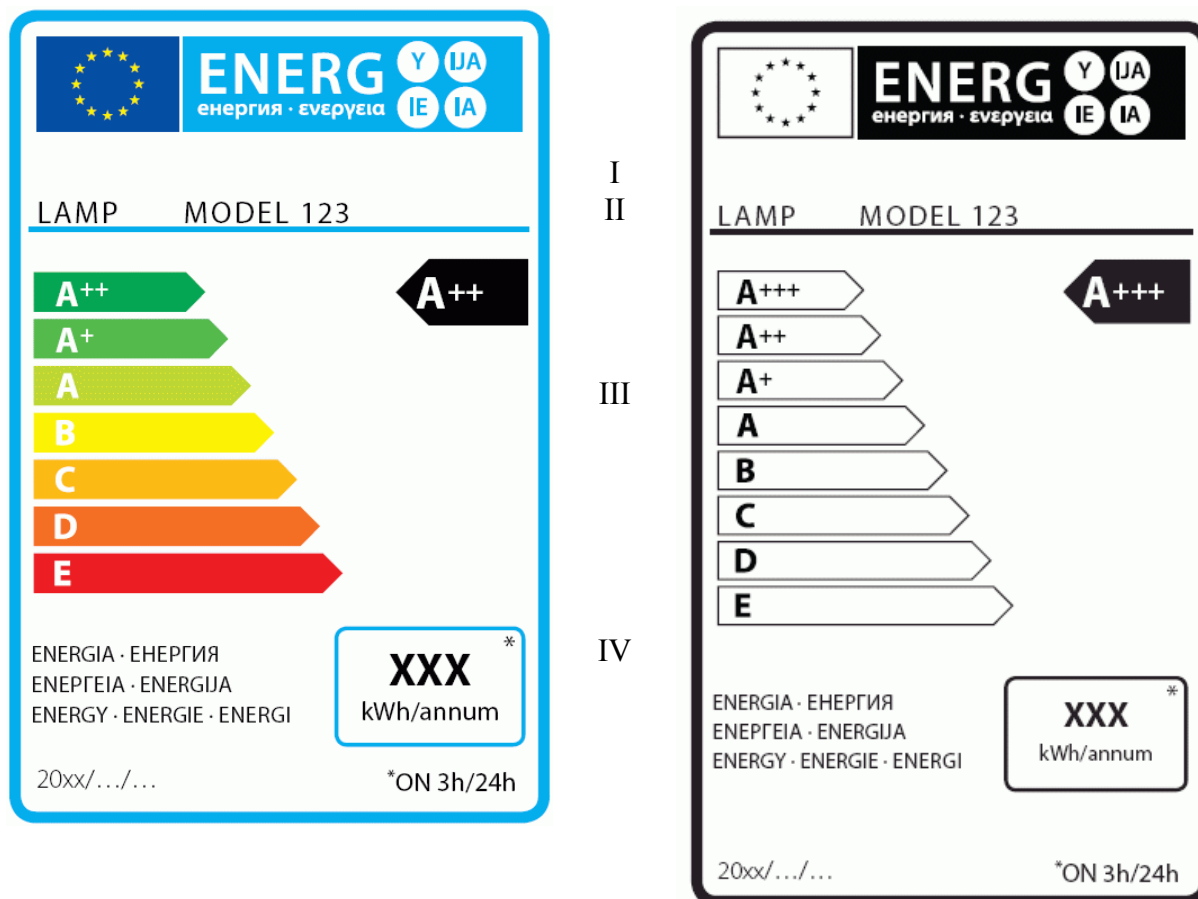


## ANNEX I Label

### 1. LABEL FOR GENERAL LIGHTING LAMPS

[The text in green highlight in this Annex comes from lamp labelling Directive 98/11/EC]

(1) The label shall be chosen from the following illustrations. Where the label is not printed on the packaging, the colour version shall be used.



[The B/W version above is provided as a graphical example of how the colour version will translate into B/W. It contains an A+++ class that does not exist according to the Draft Regulation. This will be corrected in the final B/W version, which will be inserted once there is a final agreement on the content of the label.]

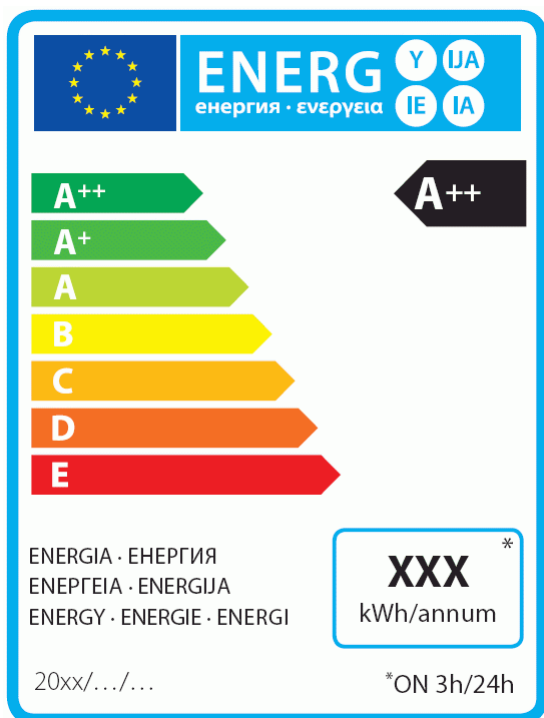
[\* Numbering of the Regulation to be added on the label before publication in the OJ]

(2) The following information shall be included in the label:

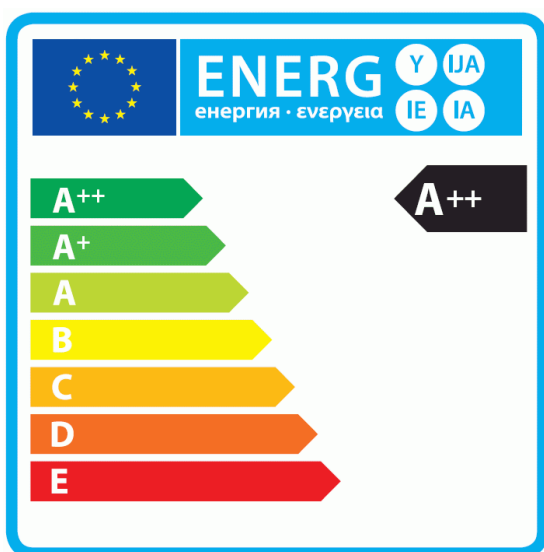
- I. supplier's name or trade mark;
- II. supplier's model identifier, meaning the code, usually alphanumeric, which distinguishes a specific lamp or luminaire model from other models with the same trade mark or supplier's name;

- III. the energy efficiency class determined in accordance with point 1 of Annex VI; the head of the arrow containing the energy efficiency class of the lamp shall be placed at the same height as the head of the arrow of the relevant energy efficiency class;
- IV. weighted annual energy consumption ( $AE_C$ ) in kWh per year, rounded up to the nearest integer in accordance with Annex VII, with a footnote indicating the average operating hours per day assumed in the calculation;

(3) In the case of lamps, where the information specified in I, II and IV of point (2) is included elsewhere on the packaging, it may be omitted from the label. The label shall then be chosen from the following illustrations:



[B/W versions to be added once the content of the label is finalised.]



[By mistake the number of the Regulation is missing in the bottom example above. It will be a requirement and will be added to the bottom of the label.]

[\* Numbering of the Regulation to be added on the label before publication in the OJ]

- (4) The design of the label shall be as in the figure below.

[The illustration to the specifications of the label will be added and the specifications will be revised once the content of the label is agreed. The specifications below are provided as an example and partly describe a label applied to another product not used in lighting]

Whereby:

- (a) The size specifications above and in (d) apply to a lamp label of 35 mm wide and 70 mm high. Where the label is printed in a different format, its content must nevertheless remain proportionate to the specifications above.

The label version specified in point (2) must be at least 35 mm wide and 70 mm high, and the label version specified in point (3) must be at least 35 mm wide and 50 mm high. Where there is no side of the packaging that is large enough to contain the label and this blank border, or where this would cover more than 50 % of the surface area of the largest side, the label and border may be reduced, but by no more than is required to meet both these conditions. However, in no case may the label be reduced to less than 40 % (by length) of its standard size. Where the packaging is too small to take such a reduced label, the label must be attached to the lamp or the packaging. However, where a full-size label is displayed together with the lamp (for example attached to the shelf on which the lamp is displayed), then the label may be omitted.

- (b) The background shall be white for the colour version of the label. If the 'black on white' version of the label is used, the printing and background may be in any colours that preserve the legibility of the label.

- (c) For the colour version of the label, colours shall be CMYK — cyan, magenta, yellow and black, following this example: 00-70-X-00: 0% cyan, 70% magenta, 100% yellow, 0% black.

- (d) The label shall fulfil all of the following requirements (numbers refer to the figure above, colour specifications apply only to the colour version of the label):

① **Border stroke:** 5 pt – colour: Cyan 100% – round corners: 3.5 mm.

② **EU logo** – colours: X-80-00-00 and 00-00-X-00.

③ **Energy logo:** colour: X-00-00-00.

Pictogram as depicted: EU logo and energy logo (combined): width: 92 mm, height: 17 mm.

④ **Sub-logos border:** 1 pt – colour: Cyan 100% – length: 92.5 mm.

⑤ **A-G scale**

– **Arrow:** height: 7 mm, gap: 0.75 mm – colours:

Highest class: X-00-X-00,

Second class: 70-00-X-00,

Third class: 30-00-X-00,

Fourth class: 00-00-X-00,

Fifth class: 00-30-X-00,

Sixth class: 00-70-X-00,

Last class: 00-X-X-00.

– **Text:** Calibri bold 18 pt, capitals and white; '+' symbols: Calibri bold 12 pt, capitals, white, aligned on a single row.

**6 Energy efficiency class**

– **Arrow:** width: 26 mm, height: 14 mm, 100% black;

– **Text:** Calibri bold 29 pt, capitals and white; '+' symbols: Calibri bold 18 pt, capitals, white, aligned on a single row.

**7 Energy:** text: Calibri regular 11 pt, capitals, 100% black.

**8 Weighted annual energy consumption**

– **Border:** 2 pt – colour: Cyan 100% – round corners: 3.5 mm.

– **Value:** Calibri bold 42 pt, 100% black; and Calibri regular 17 pt, 100% black.

**13 Supplier's name or trade mark**

**14 Supplier's model identifier**

**15** The supplier's name or trademark and model identifier should fit in a space of 92 x 15 mm.

**16 Numbering of the Regulation:** Calibri bold 12 pt, 100% black.

Nothing else placed or printed on, or attached to, the individual packaging shall obscure the label or reduce its visibility.

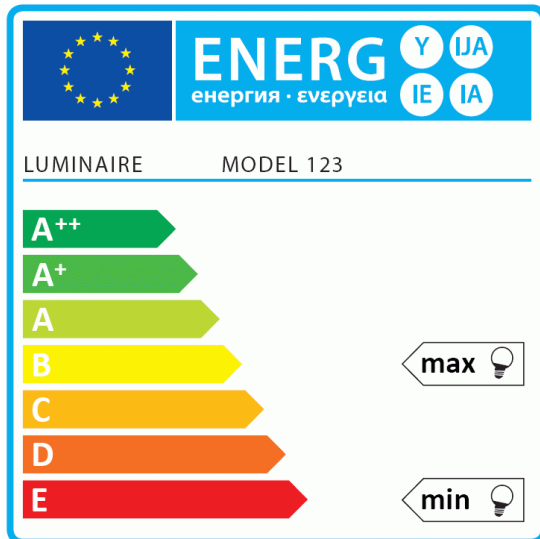
By way of derogation, where a model has been awarded an 'EU Ecolabel' under Regulation (EC) No 66/2010<sup>4</sup> of the European Parliament and of the Council, a copy of the EU Ecolabel may be added.

## 2. LABEL FOR HOUSEHOLD LUMINAIRES

- (1) For luminaires sold without lamps, the label shall be chosen from the following illustrations. Where the label is not printed on the packaging, the colour version shall be used.

---

<sup>4</sup> OJ L 27, 30.1.2010, p. 1.



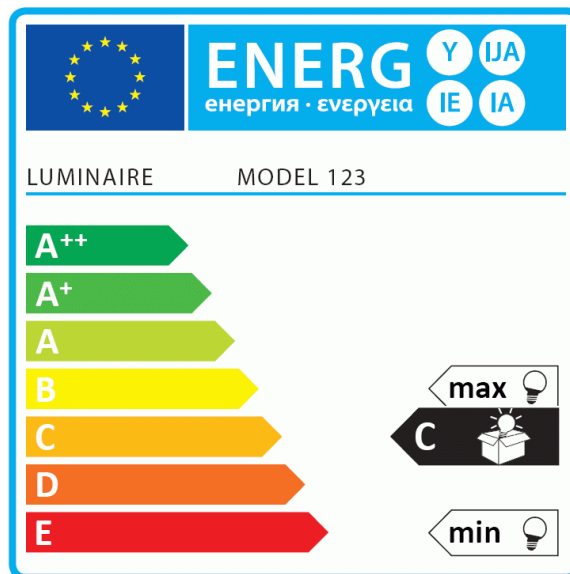
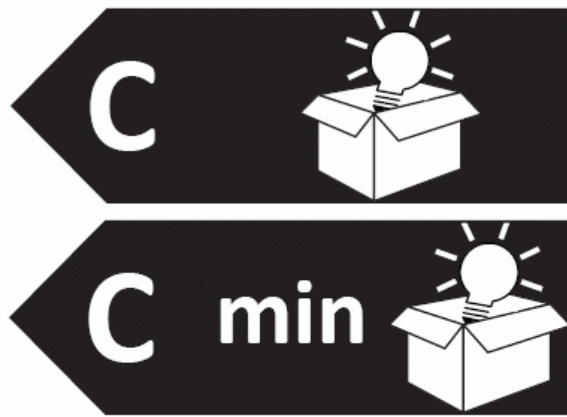
[B/W version to be added once the content of the label is finalised.]

I  
II  
III

[\* Numbering of the Regulation to be added on the label before publication in the OJ]

[By mistake the number of the Regulation is missing in this example. It will be a requirement and will be added to the bottom of the label.]

- (2) The following information shall be included in the label:
  - I. supplier's name or trade mark;
  - II. supplier's model identifier, meaning the code, usually alphanumeric, which distinguishes a specific lamp or luminaire model from other models with the same trade mark or supplier's name;
  - III. the energy efficiency class determined in accordance with point 2 of Annex VI; the head of the arrow containing a bulb icon and indicating the energy efficiency class of the lamp compatible with the luminaire shall be placed at the same height as the head of the arrow of the relevant energy efficiency class; if compatible lamps belong to different classes, an arrow containing the text "max" and a bulb icon shall be placed pointing to the top compatible class and another arrow containing the text "min" and a bulb icon shall be placed pointing to the bottom compatible class.
  
- (3) For luminaires sold together with lamps (either integrated into the luminaire or included in the packaging), one or more additional drawings, displaying the letter of the energy efficiency class of the corresponding lamp, shall be inserted into the label (either printed or placed as a sticker) in location(s) corresponding to the energy efficiency class(es) of the lamp(s), as in the following illustration. In case the drawing is placed in the position of the top or bottom energy efficiency class of the luminaire according to (2) III. above, it shall also contain the word "max" or "min" accordingly.



[\* Numbering of the Regulation to be added on the label before publication in the OJ]

[By mistake the number of the Regulation is missing in this example. It will be a requirement and will be added to the bottom of the label.]

- (4) The design of the label shall be as in the figure below.

[The illustration to the specifications of the label will be added and the specifications will be revised once the content of the label is agreed. The specifications below are provided as an example and partly describe a label applied to another product not used in lighting]

Whereby:

- (a) The label version specified in point (2) must be at least 110 mm wide and 220 mm high. Where the label is printed in a different format, its content must nevertheless remain proportionate to the specifications above.
- (b) The background shall be white for the colour version of the label. If the 'black on white' version of the label is used, the printing and background may be in any colours that preserve the legibility of the label.

(c) For the colour version of the label, colours shall be CMYK — cyan, magenta, yellow and black, following this example: 00-70-X-00: 0% cyan, 70% magenta, 100% yellow, 0% black.

(d) The label shall fulfil all of the following requirements (numbers refer to the figure above, colour specifications apply only to the colour version of the label):

① **Border stroke:** 5 pt – colour: Cyan 100% – round corners: 3.5 mm.

② **EU logo** – colours: X-80-00-00 and 00-00-X-00.

③ **Energy logo:** colour: X-00-00-00.

Pictogram as depicted: EU logo and energy logo (combined): width: 92 mm, height: 17 mm.

④ **Sub-logos border:** 1 pt – colour: Cyan 100% – length: 92.5 mm.

⑤ **A-G scale**

– **Arrow:** height: 7 mm, gap: 0.75 mm – colours:

Highest class: X-00-X-00,

Second class: 70-00-X-00,

Third class: 30-00-X-00,

Fourth class: 00-00-X-00,

Fifth class: 00-30-X-00,

Sixth class: 00-70-X-00,

Last class: 00-X-X-00.

– **Text:** Calibri bold 18 pt, capitals and white; '+' symbols: Calibri bold 12 pt, capitals, white, aligned on a single row.

⑥ **Energy efficiency class**

– **Arrow:** width: 26 mm, height: 14 mm, 100% black;

– **Text:** Calibri bold 29 pt, capitals and white; '+' symbols: Calibri bold 18 pt, capitals, white, aligned on a single row.

⑦ **Energy:** text: Calibri regular 11 pt, capitals, 100% black.

⑬ **Supplier's name or trade mark**

⑭ **Supplier's model identifier**

⑮ The supplier's name or trademark and model identifier should fit in a space of 92 x 15 mm.

⑯ **Numbering of the Regulation:** Calibri bold 12 pt, 100% black.

Nothing else placed or printed on, or attached to, the individual packaging shall obscure the label or reduce its visibility.

(5) The design of the additional drawing(s) for luminaires sold together with lamps shall be as in the figure below. [To be added later]

**ANNEX II**  
**Product Fiche**

1. The information in the product fiche shall be provided in the following order and shall be included in the product brochure or other literature provided with the product:
  - (a) supplier's name or trade mark;
  - (b) supplier's model identifier, meaning the code, usually alphanumeric, which distinguishes a specific model from other models with the same trade mark or supplier's name;
  - (c) energy efficiency class(es) in accordance with point 1 of Annex VI; for household luminaires, only the minimum and maximum classes need to be indicated, not the class(es) of any lamp(s) included with the luminaire;
  - (d) where the model has been awarded an 'EU Ecolabel' under Regulation (EC) No 66/2010<sup>5</sup> of the European Parliament and of the Council, this information may be included;

For general lighting lamps:

- (e) weighted annual energy consumption ( $AE_C$ ) in kWh per year, rounded up to the nearest integer; it shall be described as: 'Energy consumption "X" kWh per year, based on an average of 3 hours of operation per day with no dimming. Actual energy consumption will depend on how the appliance is used.';

For household luminaires:

- (f) power consumption of the off-mode.

2. One fiche may cover a number of models supplied by the same supplier.
3. The information contained in the fiche may be given in the form of a copy of the label, either in colour or in black and white. Where this is the case, the information listed in point 1 not already displayed on the label shall also be provided.

---

<sup>5</sup> OJ L 27, 30.1.2010, p. 1.



**Annex III**  
**Technical documentation**

The technical documentation referred to in **Article 3(c)** shall include:

- (a) the name and address of the supplier;
- (b) a general description of the model, sufficient for it to be unequivocally and easily identified;
- (c) where appropriate, the references of the harmonised standards applied;
- (d) where appropriate, the other technical standards and specifications used;
- (e) identification and signature of the person empowered to bind the supplier;
- (f) technical parameters for measurements as follows:
  - (i) energy consumption,
  - (ii) power consumption in 'off-mode' for household luminaires;
- (h) the results of calculations performed in accordance with **Annex VII**.

#### **ANNEX IV**

#### **Information to be provided in the cases where final owners cannot be expected to see the product displayed**

1. The information referred to in Article 4(b) shall be provided in the following order:
  - (a) the energy efficiency class as defined in point 1 of Annex VI;
  - (b) where required by Annex I, the weighted annual energy consumption in kWh per year, rounded up to the nearest integer and calculated in accordance with point 1(c) of Annex VII.
2. Where other information contained in the product fiche is also provided, it shall be in the form and order specified in Annex II.
3. The size and font, in which all the information referred in this Annex is printed or shown, shall be legible.

## **ANNEX V**

### **Verification procedure for market surveillance purposes**

Member State authorities shall use reliable, accurate and reproducible measurement procedures, which take into account the generally recognised state-of-the-art measurement methods, including methods set out in documents the reference numbers of which have been published for that purpose in the Official Journal of the European Union.

#### **1. VERIFICATION PROCEDURE FOR GENERAL LIGHTING LAMPS**

For the purposes of checking conformity with the requirements laid down in Articles 3 and 4, Member State authorities shall test a sample batch of minimum twenty lamps of the same model from the same manufacturer, randomly selected.

The batch shall be considered to comply with the requirements laid down in Articles 3 and 4 if the average results of the batch do not vary from the limit, threshold or declared values by more than 10%.

Otherwise, the model shall be considered not to comply with the requirements laid down in Articles 3 and 4.

#### **2. VERIFICATION PROCEDURE FOR HOUSEHOLD LUMINAIRES**

For the purposes of checking conformity with the requirements laid down in Articles 3 and 4, Member State authorities shall examine one single unit.

The model shall be considered to comply with the requirements laid down in Articles 3 and 4 if the maximum and minimum energy efficiency classes indicated in the label correspond to the energy efficiency classes of lamps that are compatible with the luminaire, and if any additional drawings indicating the energy efficiency classes of the lamps provided with the luminaire are in positions corresponding to the energy efficiency classes of those lamps.

Otherwise, the model shall be considered not to comply with the requirements laid down in Articles 3 and 4.

**ANNEX VI**  
**Energy efficiency classes**

**1. ENERGY EFFICIENCY CLASS FOR GENERAL LIGHTING LAMPS**

The energy efficiency class of lamps shall be determined on the basis of their Energy Efficiency Index (*EEI*) as set out in Table 1.

The Energy Efficiency Index (*EEI*) of lamps shall be determined in accordance with **Annex VII**.

**Table 1: Energy efficiency classes for lamps**

<b>Energy efficiency class</b>	<b>Energy Efficiency Index (EEI) for non-directional lamps</b>	<b>Energy Efficiency Index (EEI) for directional lamps</b>
A++ (most efficient)	$EEI \leq 0.11$	$EEI \leq 0.15$
A+	$0.11 < EEI \leq 0.20$	$0.15 < EEI \leq 0.34$
A	$0.20 < EEI \leq 0.24$	$0.34 < EEI \leq 0.65$
B	$0.24 < EEI \leq 0.6$	$0.65 < EEI \leq 1.20$
C	$0.6 < EEI \leq 0.8$	$1.20 < EEI \leq 1.75$
D	$0.8 < EEI \leq 0.95$	$1.75 < EEI \leq 2.00$
E (least efficient)	$EEI > 0.95$	$EEI > 2.00$

[As explained in the explanatory notes, these are the figures recommended by the European Lamp Companies' Federation. The appropriate values for this column will be discussed in subsequent consultation with technical experts, provided that the principle of allocating the same technologies to directional and non-directional label classes is maintained in the meeting.]

**2. ENERGY EFFICIENCY CLASSES FOR HOUSEHOLD LUMINAIRES**

The energy efficiency class of household luminaires shall be determined on the basis of the energy efficiency classes of the lamps that are compatible with the luminaire at the moment of its placing on the market by the supplier. If lamps of different energy efficiency classes are compatible with the luminaire, then the luminaire shall have a range of energy efficiency classes corresponding to those of the compatible lamps.

## ANNEX VII

### Method for calculating the Energy Efficiency Index and annual energy consumption

#### 1. CALCULATION OF THE ENERGY EFFICIENCY INDEX

For the calculation of the Energy Efficiency Index (*EEI*) of a model, its power corrected for any control gear losses is compared to its reference power. The reference power is obtained from the useful luminous flux, which is the total flux for non-directional general lighting lamps, and the flux in a 90° or 120° cone for directional general lighting lamps.

The Energy Efficiency Index (*EEI*) is calculated as follows and rounded to two decimal places:

$$EEI = P_{cor} / P_{ref}$$

where:

$P_{cor}$  is the rated power ( $P_{rated}$ ) for models without external control gear and the rated power ( $P_{rated}$ ) corrected according to Table 2 for models with external control gear.

**Table 2: Power correction if the model requires external control gear**

Scope of the correction	Power corrected for control gear losses ( $P_{cor}$ )
Halogen lamps	$P_{rated} \times 1.06$
LED	$P_{rated} \times 1.20$
Fluorescent lamps	$P_{rated} \times \frac{0.24\sqrt{\Phi} + 0.0103\Phi}{0.15\sqrt{\Phi} + 0.0097\Phi}$
High-intensity discharge lamps	$P_{rated} \times 1.10$

[For fluorescent lamps, the use of this complex formula here gives exactly the same overall result in A class as the dedicated formula used in 98/11/EC. This method allows applying the same ballast correction factor to formulas that define the newly added top classes A+ and A++ in which fluorescent lamps may be present, thus avoiding the need to have a separate column for the *EEI* of fluorescent lamps in Annex VI.]

$P_{ref}$  is the reference power obtained from the useful luminous flux of the model ( $\Phi_{use}$ ) according to the following formula:

$$\text{For models with } \Phi_{use} < 1300 \text{ lumen : } P_{ref} = 0.88\sqrt{\Phi_{use}} + 0.049\Phi_{use}$$

$$\text{For models with } \Phi_{use} \geq 1300 \text{ lumen : } P_{ref} = 0.07341\Phi_{use}$$

[The distinction between lamps under and over 1300 lm is a new concept explained in the explanatory notes.]

The useful luminous flux ( $\Phi_{use}$ ) is defined according to Table 3.

**Table 3: Definition of the useful luminous flux**

<b>Model</b>	<b>Useful luminous flux (<math>\Phi_{use}</math>)</b>
Non-directional general lighting lamps	Total rated luminous flux ( $\Phi$ )
Directional lamps with a beam angle $\geq 90^\circ$ and carrying a textual or graphical warning on their packaging that they are not suitable for accent lighting	Rated luminous flux in a $120^\circ$ cone ( $\Phi_{120^\circ}$ )
Other directional lamps	Rated luminous flux in a $90^\circ$ cone ( $\Phi_{90^\circ}$ )

## 2. CALCULATION OF THE ANNUAL ENERGY CONSUMPTION

The weighted annual energy consumption ( $AE_c$ ) is calculated in kWh/year as follows and is rounded to two decimal places:

$$AE_c = \frac{P_{cor} \times 1000 h}{1000}$$

Where  $P_{cor}$  is the power corrected for any control gear losses according to part 1 above.