



EUROPEAN COMMISSION

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

of 12.7.2012

**supplementing Directive 2010/30/EU of the European Parliament and of the Council
with regard to energy labelling of electrical lamps and luminaires**

(Text with EEA relevance)

EXPLANATORY MEMORANDUM

1. CONTEXT OF THE DELEGATED ACT

Grounds for and objectives of the proposal

The environmental impact of lighting lamps in the EU is significant, in particular their electricity consumption in the use phase, which was estimated to be 344 TWh per year in 2007 or 138 Mt of CO₂ equivalent.

To enable consumers to buy more energy-efficient lamps, Commission Directive 98/11/EC¹ set mandatory energy labelling requirements for household lamps (with the exclusion of directional lamps) under Directive 92/75/EEC on the energy labelling of household appliances² (now replaced by Directive 2010/30/EU of the European Parliament and of the Council on the energy labelling of energy-related products³). The scheme provided standardised information on the energy consumption of (non-directional) household lamps by ranking the products on a scale from A to G.

Commission Regulations 244/2009⁴ and 245/2009⁵ implemented Directive 2009/125/EC⁶ of the European Parliament and of the Council with regard to ecodesign requirements for non-directional household lamps and for lamps typically used in professional lighting. A possible ecodesign regulation is also planned on directional lamps.

Considering that the implementing measures on ecodesign expand the scope of EU energy efficiency policy on lighting products to the professional sector and to directional lamps and are transforming the market by raising the minimum energy efficiency of lighting products, to complement them it is appropriate to replace Commission Directive 98/11/EC with a delegated act, under Directive 2010/30/EU, which would introduce a wider scope and a revised scale for the energy labelling of electrical lamps.

General context

One of the main reasons for the persisting sales of low-efficiency lamps is that end-users base their purchase decisions on purchase costs rather than the life-cycle cost of the product, a situation which is not helped by the often enormous purchase price difference between energy-saving lamps and less efficient alternatives. Also, the information on energy efficiency available to buyers is limited to certain categories of lamps, which creates an imbalance. Cost-

¹ OJ L 71, 10.3.1998, p. 1.

² OJ L 297, 13.10.1992, p. 16.

³ OJ L 153, 18.6.2010, p. 1.

⁴ Commission Regulation (EC) No 244/2009 of 18 March 2009 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for non-directional household lamps, OJ L 76, 24.3.2009, p. 3, amended by Commission Regulation (EC) No 859/2009, OJ L 247, 19.9.2009, p. 3.

⁵ Commission Regulation (EC) No 245/2009 of 18 March 2009 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for fluorescent lamps without integrated ballast, for high intensity discharge lamps, and for ballasts and luminaires able to operate such lamps, and repealing Directive 2000/55/EC of the European Parliament and of the Council, OJ L 76, 24.3.2009, p. 17, amended by Commission Regulation (EU) No 347/2010, OJ L 104, 24.4.2010, p. 20.

⁶ OJ L 285, 31.10.2009, p. 10.

effective potential improvements for the end-user are therefore often not achieved. Another problem are split incentives, for example where a building owner who purchases and installs professional lamps aims for lower purchase costs, with the result that the tenants end up paying higher electricity bills.

Over the last 13 years, these problems have been partly addressed by the energy labelling scheme for household lamps set out in Commission Directive 98/11/EC, which led to an improvement of about 10% in energy efficiency from 1998 to 2008.

Although the current labelling scheme is continuing to drive the market towards further improvements in the energy efficiency of household lamps, the labelling scale does not cover professional lamps, directional lamps and extra low voltage lamps, and also draws no distinction between the most efficient class A appliances, where light-emitting diodes will be raising the bar higher and higher. Consequently, the preparatory study and impact assessments on non-directional household lamps and directional lamps demonstrated that if the current energy efficiency classes are not revised, the limited improvement in energy efficiency (1% per year) already achieved will remain stagnant. This is mainly due to the current design of the label.

According to the impact assessments, the total stock of lighting lamps was responsible for annual electricity consumption of 344 TWh in the EU-27 in 2005, which will increase to 445 TWh in 2020 if no further action is taken (i.e. if the current labelling scheme is left in place). This increase is mainly due to continuing growth in sales. The aim of this proposal is to reduce the increase otherwise expected in the energy consumption of these lamps. The combined effect of existing and possible new ecodesign requirements and the revised labelling scheme set out in this draft delegated regulation would lead to an estimated reduction of 100 TWh in 2020.

Existing provisions in the area of the proposal

In addition to the possible implementing measure on the ecodesign of directional lamps, the following measures address the environmental performance of electrical lamps:

- Commission Regulation (EC) No 244/2009 of 18 March 2009 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for non-directional household lamps;
- Commission Regulation (EC) No 245/2009 of 18 March 2009 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for fluorescent lamps without integrated ballast, for high intensity discharge lamps, and for ballasts and luminaires able to operate such lamps;
- Commission Directive 98/11/EC of 27 January 1998 implementing Council Directive 92/75/EEC with regard to energy labelling of household lamps;
- Commission Decision 2011/331/EU of 6 June 2011 on establishing the ecological criteria for the award of the EU Ecolabel for light sources⁷;

⁷ OJ L 148, 7.6.2011, pp. 13–19.

- Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003 on waste electrical and electronic equipment⁸;
- Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.⁹

Consistency with the other policies and objectives of the Union

Increased market take-up of energy-efficient lamps, as a result of the introduction of new energy efficiency classes and the existing and possible new ecodesign requirements, will contribute to achieving the 20% potential energy savings envisaged by 2020 in the Energy Efficiency Action Plan (COM(2006) 545).

Implementation of Directive 2010/30/EU in turn is contributing to the EU's objective of reducing greenhouse gas emissions by at least 20% by 2020.

Promoting market take-up of efficient lamps complies with the Lisbon Strategy and the renewed Sustainable Development Strategy, as it will encourage investment in R&D and make for a level playing field. It is also in line with the Sustainable Consumption and Production and Sustainable Industrial Policy Action Plan (COM (2008) 397).

The European Economic Recovery Plan (COM (2008) 800) mentions energy efficiency as one of the key priorities, in particular promotion of the rapid take-up of products offering 'high potential for energy savings', such as lamps.

Finally, this measure will contribute to the objective of decoupling economic growth from use of resources set in the Europe 2020 Strategy (COM (2010) 2020) under the flagship initiative 'resource-efficient Europe'.

2. CONSULTATIONS PRIOR TO THE ADOPTION OF THE ACT

Consultation of interested parties

Consultation methods, main sectors targeted and general profile of respondents

International and EU stakeholders and Member States' experts were consulted from the very beginning of the preparatory studies. Together with ecodesign requirements, energy labelling was discussed in the 'Ecodesign Consultation Forum' established by the Ecodesign Framework Directive 2009/125/EC. The Consultation Forum is made up of the experts of the Member States and a balanced representation of stakeholders, namely environmental and consumer NGOs, retailers and manufacturers. During the meeting of the Consultation Forum on 28 March 2008, Commission staff presented a working document on the ecodesign of general lighting lamps (currently Regulation 244/2009 on non-directional household lamps) and announced that an update of the energy labelling measure on lamps (Commission Directive 98/11/EC) would be discussed together with the ecodesign measure on directional lamps. At the meeting of the Forum on 5 July 2011, Commission staff presented a working

⁸ OJ L 37, 13.2.2003, p. 24.

⁹ OJ L 37, 13.2.2003, p. 19.

document suggesting ecodesign requirements for directional lamps and an energy efficiency ranking for all lighting lamps. A technical subgroup made up of the members of the Forum who had expressed interest discussed technical details related to the draft ecodesign and energy labelling regulations on 23 September 2011.

All relevant working documents were circulated to the experts and stakeholders and published in the Commission's CIRCA system along with the comments received in writing from stakeholders. They were also uploaded onto DG Energy's EUROPA website and sent to the European Parliament for information. In addition, the proposal was discussed at many meetings of Commission staff with stakeholders and Member States, but also with international partners such as the International Energy Agency, Australia and the USA. The draft delegated regulation was notified to the World Trade Organisation under the Technical Barriers to Trade agreement to make sure that no barrier to trade is created.

Summary of responses and how they have been taken into account

In general, a revised energy labelling scheme extended to all electrical lamps pursuant to the recast Energy Labelling Directive is well supported by stakeholders and Member States. The following responses on the main aspects of the proposal were received:

Product scope and classification

Initial responses from manufacturers showed reluctance about covering all lighting lamps, including those used predominantly in professional applications. However, all other stakeholders supported the extension, and in the end industry did not oppose it either. The Commission's initial proposal to extend the energy labelling obligation to luminaires (on the basis of the lamps with which they are compatible) was supported by industry but unanimously rejected by all other stakeholders, as it was found unintelligible to consumers. It was therefore decided to deviate from the pictogram-only approach and to provide additional information in textual form, in order to help consumers understand the precise scope of the label, including a warning if the luminaire is not compatible with energy-efficient lamps.

Energy labelling scales

Initially, several Member States, environmental NGOs and consumer NGOs suggested creating a single energy labelling scale for both non-directional and directional lamps. However, such an amalgam would disregard the different functions of the two technologies, namely that non-directional lamps are mostly used for lighting a full area, whereas the main purpose of directional lamps is to emphasise parts of an area or particular objects. Also, the choice of the owner of the installation where lamps need to be replaced will depend mostly on the existing installation: e.g. if the installation uses directional lamps, the owner will only look for and compare directional lamps.

Some stakeholders asked for a rescaling of the existing energy label for non-directional lamps, instead of introducing further classes on top of A. However, the Commission's assessment is that the transition from an incandescent-based lighting market towards one dominated by energy-saving lamps is not yet completed and that it would therefore be more appropriate to reassess the labelling scale (originally developed for the incandescent-based market) during the planned revision of the labelling measure in 2015. It is true that, as from 2012, the lowest energy class allowed under the regulation on non-directional lamps will be C, leaving classes D and E empty. However, the planned regulation on ecodesign of directional lamps will leave on the market, until 2016, halogen lamps, for which it makes sense to distinguish between class E, D, C and B lamps. Even though consumers are not expected to compare the two scales, it would be disturbing if halogen lamps were all in class E in a completely revised label scale for non-directional lamps, where the rest of the classes would be reserved for fluorescent lamps, LEDs and high intensity discharge lamps, while in the directional lamp scale, classes up to B still included halogen lamps. Lamps used for lighting in special conditions (such as emergency or rough environments) will be exempted from minimum requirements under ecodesign, but not from the labelling obligation. Applying the lowest classes to them can still usefully show to consumers that they should not be used for standard lighting.

Some stakeholders disagreed with the proposal to introduce a new calculation method for the energy efficiency index for the stronger professional lamps (more than 1 300 lumens) that would create a level playing field for the professional technologies (LED, fluorescent lamp

and high intensity discharge lamps) whose efficiency no longer depends on power, while keeping the old calculation method for the lower lumen output household market where filament lamps whose efficacy increases with power still dominate. However, the stakeholders recommending alternative options have not explained how they would tackle the disadvantages demonstrated for those options in the Commission's explanatory note to the Consultation Forum working document on energy labelling of lamps in July 2011. The Commission considers that no perfect solution exists for this issue, but that the one put forward in the draft regulation causes the least damage and brings the greatest benefits.

Information on other lamp parameters on the label

The consumer organisations, supported by a few Member States, were in favour of including a maximum number of lamp parameters (lifetime, number of switching cycles, colour temperature, warm-up time, etc.) in standardised graphical form on the label itself. They claimed that this would make it easier for consumers to compare lamps than in the current situation, where manufacturers are allowed to use their own graphics to represent lamp parameters anywhere on the packaging. By contrast, the Commission's proposal (supported by industry and some Member States) was to put only the lamp's electricity consumption per 1 000 hours on the label as an optional addition to the label scale. Evidence of the alleged insufficiency of the manufacturers' current product information practice is at present anecdotal. Requiring further parameters on the label would overlap with product information requirements in Commission Regulation 244/2009 on the ecodesign of non-directional household lamps. Before the scheduled review in 2014, the Commission has no intention of amending that Regulation in order to streamline it with any additional parameter requirements in the updated regulation on energy labelling of lamps. In addition, importantly, the extremely small lamp packaging would not allow inclusion of all the parameters on the label.

Collection and use of expertise

Input from scientific experts

A preparatory study and an impact assessment provided the relevant technical, market and economic analysis needed for setting up a revised energy labelling scheme. The studies were carried out by external consultants on behalf of the Commission's Directorate-General for Energy (DG ENER).

Main organisations/experts consulted

The preparatory study was conducted in an open process that took into account input from relevant stakeholders, including manufacturers and manufacturing associations, environmental NGOs, consumer and retail organisations, experts from EU/EEA Member States and international organisations such as the International Energy Agency (IEA). The draft measure was notified to the World Trade Organisation under the Technical Barriers to Trade agreement.

Summary of advice received and used

No potentially serious risks with irreversible consequences were mentioned.

Impact assessment

Labelling has to be considered together with other policy options, such as self-regulation or setting minimum performance (energy efficiency) requirements. An impact assessment carried out pursuant to Article 15(4)(b) of Directive 2009/125/EC also examined the option of labelling. The options listed below were discarded at an early stage:

- no EU action (legislation currently in place would not be amended and no new legislation would be adopted). This option implies that a substantial part of the potential improvement would not be achieved, because the barriers to improving the environmental performance of electrical lamps would persist. Furthermore, Member States could proceed to take individual, non-harmonised action. This would hamper the functioning of the internal market and lead to high administrative burdens and costs for manufacturers, contrary to the goals of EU legislation. In addition, the mandate from the legislator would not be observed;
- support a voluntary commitment by the industry. This option was discarded, as no such proposals were made by the industry;
- adopt ecodesign requirements only. This option was discarded, as it would fail to tap the additional potential savings offered by the most efficient remaining technologies, as consumers would have no indication of their energy efficiency (most of them would be in class A or not labelled);
- revise the existing labelling scheme only (without ecodesign requirements). This option was discarded, as it would not achieve the expected savings.

Consequently, the option of adopting ecodesign requirements together with revising the existing labelling scheme was chosen, as it delivers the biggest savings and is also preferred by all stakeholders.

It will ensure that:

- ongoing energy improvements are maintained and fostered;
- fair competition and product differentiation continue to operate on energy improvements;
- a cost-effective level of energy consumption is reached;
- the competitiveness of the industry is supported by expanding the EU internal market for sustainable products;
- the burdens on suppliers, including SMEs, are not excessive, as the transition periods take redesign cycles into account;
- there is no negative impact on employment in the EU.

3. LEGAL ELEMENTS OF THE DELEGATED ACT

Summary of the proposed action

The measure sets out new and revised mandatory energy labelling requirements for suppliers placing electrical lamps on the market and for dealers offering these

appliances at the point of sale or by distance selling, such as via catalogues or the internet. It extends the existing energy label to directional and professional lamps and introduces new classes above A to allow better distinction between the higher-end technologies, in particular singling out efficient LEDs as better performers than compact fluorescent lamps that have been on top of the scale until now. The scope of the measure is as far as possible aligned with existing and possible new implementing measures on ecodesign setting minimum energy efficiency, functionality and information requirements for lighting lamps. A label for luminaires is also introduced, showing the energy efficiency classes of those lamps with which the luminaire is compatible, and also of those included with the luminaire (if any).

Detailed explanation of certain provisions

Article 2 (definitions): the concept of ‘final owner’ has to be introduced in addition to ‘end-user’. Indeed, in the case of professional lamps, it is not the end-users (e.g. office workers, pedestrians, etc.) who make purchasing decisions and have to be influenced by label classes, but the person who will own the lamp at the end of the value chain, i.e. the owner of the lighting installation. In the case of household lighting, the final owner is also the end-user at the same time.

Article 9: A special transitional provision is needed because the new labelling regulation is of broader scope than Commission Directive 98/11/EC. The lamps newly falling within its scope will not have energy labels affixed until one year after entry into force. Additional time should be allowed for retailers to change their stocks afterwards and for luminaire producers to prepare their luminaire labels.

Annex V: In this delegated regulation the measurement methods and verification procedure for market surveillance purposes are as much as possible aligned with those used for the same parameters in any existing or possible new implementing measure on ecodesign.

Annex VI: The table below shows which lamp technologies belong to the classes with the limits set out in Table 1, including an indication of whether the technology is phased out or is planned to be phased out in the parallel ecodesign regulations.

Energy efficiency class	Non-directional lamps	Directional lamps
A++ (most efficient)	Class currently empty, apart from some low-pressure sodium lamps used in street lighting. Soon to include best LEDs	Class currently empty, soon to include best LEDs
A+	Best LED lamps in 2012, best linear fluorescent, compact fluorescent and high intensity discharge (HID) lamps.	Best LED lamps in 2012.
A	Average LEDs in 2012, average compact fluorescent lamps and poor linear fluorescents and poor HID (for the latter two, phase-out between 2010 and 2017).	Average LEDs in 2012, average to good compact fluorescents and HID (proposed to be phased out in stage 3 in 2016).
B	Poor compact fluorescent lamps and LEDs (phased out in 2009 with a few exceptions), best (infrared coated) lamps.	Poor compact fluorescent lamps and LEDs (proposed to be phased out in stage 1 in 2013), best extra low-voltage

		halogen reflector lamps (infrared coated or xenon-filled).
C	Xenon-filled mains-voltage halogen lamps (to be phased out in 2016, except G9 and R7s lamps).	Average conventional extra low-voltage halogens, proposed to be phased out in stages 1 and 2 (2013 and 2014).
D	Conventional halogens and best incandescents (full phase-out by 2012).	Poor conventional extra low-voltage halogens (proposed to be phased out in stage 1 in 2013), quality mains-voltage halogens (proposed to be phased out in stage 3 in 2016 if certain conditions are fulfilled).
E (least efficient)	Typical incandescent range (full phase-out by 2012).	Incandescent reflector lamps and poor mains-voltage halogens, proposed to be phased out in stages 1 and 2 (2013 and 2014).

Table 2: For fluorescent lamps, the use of a complex control gear correction factor gives exactly the same overall result in class A as the dedicated formula used in Commission Directive 98/11/EC. This clears the way for applying the same ballast correction factor to formulae 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.

Calculating the reference power (P_{ref}) for lamps < 1 300 lm (corresponding to classic household lighting with bulb-shaped lamps): the merit of using the old formula from Commission Directive 98/11/EC is that, in the still important halogen category, in the case of higher power lamps which are more efficient by nature but more energy-consuming too, consumers will not be pushed to use them as they cannot get into efficient classes so easily as they would in a linear scale. At the same time, consumers will be pushed to install lower power LEDs, because it is easier for them to appear more efficient than higher power LEDs, which have to achieve higher efficacy in order to obtain the same class (even though they are not more efficient by nature).

Calculating the reference power (P_{ref}) for lamps > 1 300 lm (corresponding to professional lighting): the merit of using the new linear formula is that it creates a level playing field for technologies where filament lamps are not dominant, so there is little relation between efficacy and light output.

Table 3: The useful light of directional lamps is normally under a 90° beam angle, which fits in with their aim of providing accent lighting. However, a compact fluorescent product range seems to have been developed as retrofits to halogen lamps incorrectly used in downlighting installations (providing illumination of a full area). In this case (and only then), light with a wider angle is useful, but users should still be warned against installing such CFLs as accent lighting.

Legal basis

This draft delegated Regulation supplements Directive 2010/30/EU, and in particular Article 10 thereof.

Subsidiarity principle

This draft delegated Regulation supplements Directive 2010/30/EU in line with Article 10.

Proportionality principle

In accordance with the principle of proportionality, this measure does not go beyond what is necessary in order to achieve the objective.

This supplementing measure takes the form of a delegated Regulation which is directly applicable in all Member States. This ensures that national and EU administrations will incur no costs for transposition of the supplementing legislation into national legislation.

In terms of conformity assessment, for household lamps there are no extra costs in comparison with the current situation, where energy labelling is already mandatory. The extra cost of extending the labelling to professional and directional lamps and luminaires will be requested from manufacturers and retailers and is estimated to have no significant impact on product prices.

Choice of instrument

Proposed instrument: delegated Regulation.

BUDGETARY IMPLICATION

The proposal has no implications for the EU budget.

ADDITIONAL INFORMATION

Repeal of existing legislation

The adoption of the delegated act will include a repeal of Directive 98/11/EC.

Review/revision/sunset clause

The draft includes a revision clause.

European Economic Area

The proposed act concerns an EEA matter and should therefore extend to the European Economic Area.

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

of 12.7.2012

**supplementing Directive 2010/30/EU of the European Parliament and of the Council
with regard to energy labelling of electrical lamps and luminaires**

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

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

Having regard to Directive 2010/30/EU of 19 May 2010 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 products¹⁰, 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 having significant potential for energy savings and 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/EC¹¹.
- (3) The electricity used by electrical 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 electrical lamps is substantial.
- (4) Commission Directive 98/11/EC should be repealed and new provisions should be set out in this Regulation in order to ensure that the energy label provides dynamic incentives for suppliers further to improve the energy efficiency of electrical lamps and to speed up the market shift 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 also cover directional lamps, extra low voltage lamps, light-emitting diodes, and lamps used predominantly in professional lighting, such as high-intensity discharge lamps.

¹⁰ OJ L 153, 18.6.2010, p. 1.

¹¹ OJ L 71, 10.3.1998, p. 1.

- (5) Luminaires are often sold with incorporated or accompanying lamps. This Regulation should ensure that consumers are informed about the compatibility of the luminaire with energy-saving lamps and about the energy efficiency of the lamps included with the luminaire. At the same time, this Regulation should not impose a disproportionate administrative burden on luminaire manufacturers and retailers, nor should it discriminate between luminaires as regards the obligation to provide consumers with information on energy efficiency.
- (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/EC¹².
- (7) This Regulation should specify a uniform design and content for the label for electrical lamps and luminaires.
- (8) In addition, this Regulation should specify requirements for the technical documentation of electrical lamps and luminaires and for the fiche of electrical lamps.
- (9) Moreover, this Regulation should specify requirements for the information to be provided for any form of distance selling, advertisements and technical promotional materials for electrical lamps and 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, household lamps labelled in accordance with this Regulation should be considered compliant with Directive 98/11/EC.
- (12) Directive 98/11/EC should therefore be repealed,

HAS ADOPTED THIS REGULATION:

Article 1
Subject matter and scope

1. This Regulation establishes requirements for labelling of and providing supplementary product information on electrical lamps such as
 - (a) filament lamps,
 - (b) fluorescent lamps,
 - (c) high-intensity discharge lamps,
 - (d) LED lamps and LED modules.

¹² OJ L 204, 21.7.1998, p. 37.

This Regulation also establishes requirements for labelling luminaires designed to operate such lamps and marketed to end users, including when they are integrated into other products that are not dependent on energy input in fulfilling their primary purpose during use (such as furniture).

2. The following products shall be excluded from the scope of this Regulation:
- (a) Lamps and LED modules with a luminous flux of less than 30 lumens.
 - (b) Lamps and LED modules marketed for operation with batteries.
 - (c) Lamps and LED modules marketed for applications where their primary purpose is not lighting, such as:
 - (i) emission of light as an agent in chemical or biological processes (such as polymerisation, photodynamic therapy, horticulture, petcare, anti-insect products);
 - (ii) image capture and image projection (such as camera flashlights, photocopiers, video projectors);
 - (iii) heating (such as infrared lamps);
 - (iv) signalling (such as airfield lamps).

These lamps and LED modules are not excluded when they are marketed for lighting.

- (d) Lamps and LED modules marketed as part of a luminaire and not intended to be removed by the end-user, except when they are offered for sale, hire or hire purchase or displayed separately to the end user, for example as spare parts.
- (e) Lamps and LED modules marketed as part of a product whose primary purpose is not lighting. However, if they are offered for sale, hire or hire purchase or displayed separately, for example as spare parts, they shall be included within the scope of this Regulation.
- (f) Lamps and LED modules that do not comply with requirements becoming applicable in 2013 and 2014 according to Regulations implementing Directive 2009/125/EC.¹³
- (g) Luminaires that are designed to operate exclusively with the lamps and LED modules listed in points (a) to (c).

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:

¹³ OJ L 285, 31.10.2009, p. 10.

1. 'Light source' means a surface or object designed to emit mainly visible optical radiation produced by a transformation of energy. The term 'visible' refers to a wavelength of 380-780 nm.
2. 'Lighting' means the application of light to a scene, objects or their surroundings so that they may be seen by humans.
3. 'Accent lighting' means a form of lighting where light is directed so as to highlight an object or a part of an area;
4. 'Lamp' means a unit whose performance can be assessed independently and which consists of one or more light sources. It may include additional components necessary for starting, power supply or stable operation of the unit or for distributing, filtering or transforming the optical radiation, in cases where those components cannot be removed without permanently damaging the unit.
5. 'Lamp cap' means that part of a lamp which provides connection to the electrical supply by means of a lamp holder or lamp connector and may also serve to retain the lamp in the lamp holder.
6. 'Lamp holder' or 'socket' means a device which holds the lamp in position, usually by having the cap inserted in it, in which case it also provides the means of connecting the lamp to the electric supply.
7. 'Directional lamp' means a lamp having at least 80 % light output within a solid angle of π sr (corresponding to a cone with angle of 120°).
8. 'Non-directional lamp' means a lamp that is not a directional lamp.
9. '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 contain gases influencing the process of incandescence.
10. 'Incandescent lamp' means a filament lamp in which the filament operates in an evacuated bulb or is surrounded by inert gas.
11. '(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. They may be supplied with an integrated power supply.
12. '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.
13. 'Fluorescent lamp' means a discharge lamp of the low pressure mercury type in which most of the light is emitted by one or more layers of phosphors excited by the ultraviolet radiation from the discharge. Fluorescent lamps may be supplied with an integrated ballast.
14. 'Fluorescent lamp without integrated ballast' means a single- or double-capped fluorescent lamp without integrated ballast.

15. 'High-intensity discharge lamp' means an electric discharge lamp in which the light producing arc is stabilised by wall temperature and the arc has a bulb wall loading in excess of 3 watts per square centimetre.
16. 'Light-emitting diode (LED)' means a light source which consists of a solid state device embodying a p-n junction. The junction emits optical radiation when excited by an electric current;
17. 'LED package' means an assembly having one or more LED(s). The assembly may include an optical element and thermal, mechanical and electrical interfaces.
18. 'LED module' means an assembly having no cap and incorporating one or more LED packages on a printed circuit board. The assembly may have electrical, optical, mechanical and thermal components, interfaces and control gear.
19. 'LED lamp' means a lamp incorporating one or more LED modules. The lamp may be equipped with a cap.
20. 'Lamp control gear' means a device located between the electrical supply and one or more lamps, which provides a functionality related to the operation of the lamp(s), such as transforming the supply voltage, limiting the current of the lamp(s) to the required value, providing a starting voltage and preheating current, preventing cold starting, correcting the power factor or reducing radio interference. The device may be designed to connect to other lamp control gear to perform these functions. The term does not include:
 - control devices;
 - power supplies converting the mains voltage to another supply voltage that are designed to supply in the same installation both lighting products and products whose primary purpose is not lighting.
21. 'Control device' means an electronic or mechanical device controlling or monitoring the luminous flux of the lamp by other means than power conversion for the lamp, such as timer switches, occupancy sensors, light sensors and daylight regulation devices. In addition, phase cut dimmers shall also be considered as control devices.
22. 'External lamp control gear' means non-integrated 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.
23. 'Ballast' means lamp control gear inserted between the supply and one or more discharge lamps which by means of inductance, capacitance or a combination of inductance and capacitance, serves mainly to limit the current of the lamp(s) to the required value.
24. 'Halogen lamp control gear' means lamp control gear that transforms mains voltage to extra low voltage for halogen lamps.
25. 'Compact fluorescent lamp' means a fluorescent lamp that includes all the components necessary for starting and stable operation of the lamp.

26. 'Luminaire' means an apparatus which distributes, filters or transforms the light transmitted from one or more lamps and which includes all the parts necessary for supporting, fixing and protecting the lamps and, where necessary, circuit auxiliaries together with the means for connecting them to the electric supply.
27. 'Point of sale' means a physical location where the product is displayed or offered for sale, hire or hire-purchase to the end-user.
28. 'End-user' means a natural person buying or expected to buy an electrical lamp or luminaire for purposes which are outside his trade, business, craft or profession.
29. '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

1. Suppliers of electrical lamps placed on the market as individual products shall ensure that:
 - (a) A product fiche, as set out in Annex II, is made available.
 - (b) 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.
 - (c) Any advertisement, formal price quote or tender offer disclosing energy-related or price information for a specific lamp states the energy efficiency class.
 - (d) Any technical promotional material concerning a specific lamp which describes its specific technical parameters states the energy efficiency class of that lamp.
 - (e) If the lamp is intended to be marketed through a point of sale, a label produced in the format and containing information as set out in Annex I.1 is placed or printed on, or attached to, the outside of the individual packaging, and the packaging displays the nominal power of the lamp outside the label.
2. Suppliers of luminaires intended to be marketed to end-users shall ensure that:
 - (a) 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.
 - (b) The information contained in the label according to Annex I.2 is provided in the following situations:
 - (i) in any advertisement, formal price quote or tender offer disclosing energy-related or price information for a specific luminaire;
 - (ii) in any technical promotional material concerning a specific lamp which describes its specific technical parameters.

In these cases the information may be provided in formats other than the one set out in Annex I.2., such as fully textual.

- (c) If the luminaire is intended to be marketed through a point of sale, a label produced in the format and containing information as set out in Annex I is made available free of charge to dealers in electronic or paper format. If the supplier chooses a delivery system in which labels are provided only on request from dealers, the supplier shall promptly deliver the labels on request.
- (d) If the luminaire is placed on the market in a packaging for end-users that includes electrical lamps which the end-user can replace in the luminaire, the original packaging of those lamps is included in the luminaire's packaging. If not, then the outside or inside of the luminaire packaging must present, in some other form, the information given on the lamps' original packaging and required by this Regulation and by Commission regulations setting ecodesign requirements for lamps pursuant to Directive 2009/125/EC¹⁴.

Suppliers of luminaires intended to be marketed through a point of sale who provide information under this Regulation shall be considered to have fulfilled their responsibilities as distributors with respect to the product information requirements for lamps laid down in Commission regulations setting ecodesign requirements for lamps pursuant to Directive 2009/125/EC.

Article 4 *Responsibilities of dealers*

1. Dealers of electrical lamps shall ensure that:
 - (a) Each model offered for sale, hire or hire-purchase where the final owner cannot be expected to see the product displayed is marketed with the information to be provided by suppliers in accordance with Annex IV.
 - (b) Any advertisement, formal price quote or tender offer disclosing energy-related or price information for a specific model states the energy efficiency class.
 - (c) Any technical promotional material concerning a specific model which describes its specific technical parameters states the energy efficiency class of that model.
2. Dealers of luminaires marketed to end-users shall ensure that:
 - (a) The information contained in the label in accordance with Annex I.2 is provided in the following situations:
 - (i) in any advertisement, formal price quote or tender offer disclosing energy-related or price information for a specific luminaire;

¹⁴ OJ L 285, 31.10.2009, p. 10.

- (ii) in any technical promotional material concerning a specific luminaire which describes its specific technical parameters.

In these cases the information may be provided in formats other than the one set out in Annex I.2., such as fully textual.

- (b) Each model presented at a point of sale is accompanied by the label as set out in Annex I.2. The label shall be displayed in one or both of the following ways:
 - (i) in proximity to the displayed luminaire, so as to be clearly visible and identifiable as the label belonging to the model, without having to read the brand name and model number on the label;
 - (ii) clearly accompanying the most directly-visible information about the displayed luminaire (such as price or technical information) in the point of sale.
- (c) If the luminaire is sold in a packaging for end-users that includes electrical lamps which the end-user can replace in the luminaire, the original packaging of those lamps is included in the luminaire's packaging. If not, then the outside or inside of the luminaire packaging must present, in some other form, the information given on the lamps' original packaging and required by this Regulation and by Commission regulations setting ecodesign requirements for lamps pursuant to Directive 2009/125/EC.

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, as set out in Annex V.

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 energy consumption.

Article 7 *Revision*

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

Article 8 *Repeal*

Commission Directive 98/11/EC shall be repealed with effect from 1 September 2013.

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

Article 9
Transitional provisions

1. Article 3(2) and 4(2) shall not apply to luminaires before 1 March 2014.
2. Articles 3(1)(c-d) and Article 4(1) (a-c) shall not apply to printed advertisements and printed technical promotional material published before 1 March 2014.
3. Lamps referred to in Article 1(1) and (2) of Directive 98/11/EC placed on the market before 1 September 2013 shall comply with the provisions set out in Directive 98/11/EC.
4. Lamps referred to 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 1 September 2013 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 1 September 2013, except in the cases listed in Article 9.

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

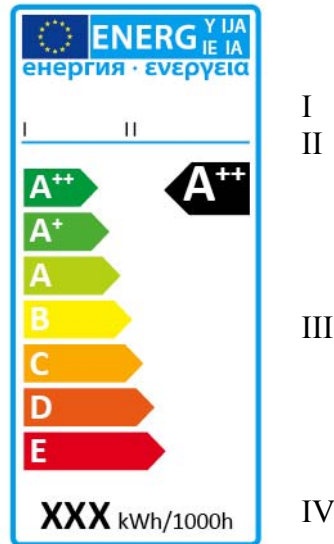
Done at Brussels, 12.7.2012

For the Commission
The President
José Manuel BARROSO

ANNEX I
Label

1. LABEL FOR ELECTRICAL LAMPS PRESENTED AT A POINT OF SALE

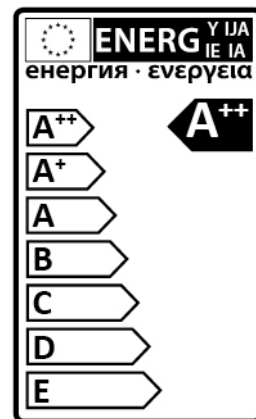
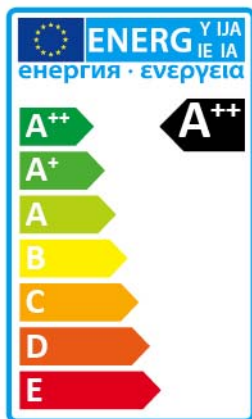
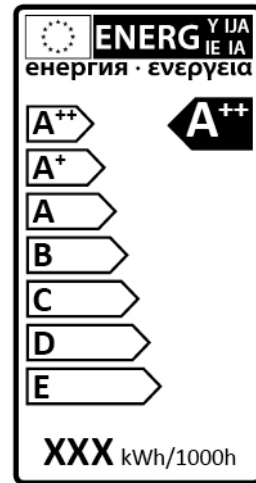
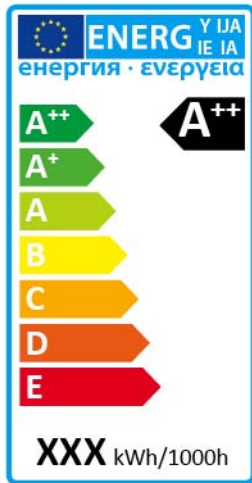
(1) The label shall be as in the following illustration if it is not printed on the packaging:



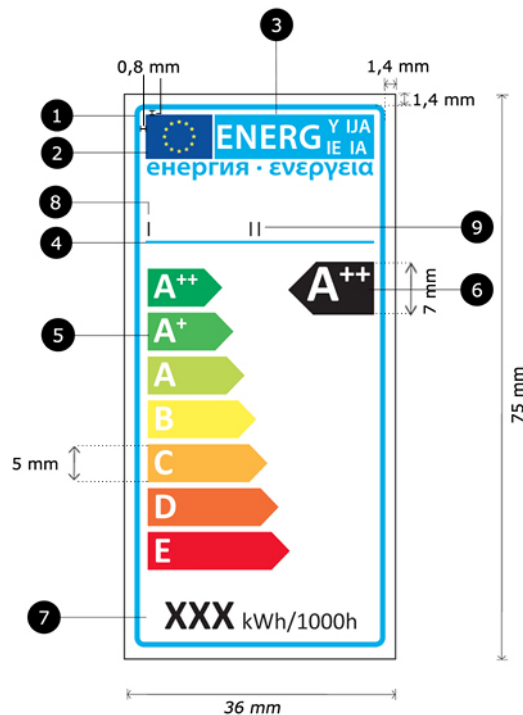
(2) The following information shall be included on the label:

- I. supplier's name or trade mark;
- II. supplier's model identifier, meaning the code, usually alphanumeric, which distinguishes a specific lamp model from other models with the same trade mark or supplier's name;
- III. the energy efficiency class determined in accordance with 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 energy consumption (E_C) in kWh per 1000 hours, calculated and rounded up to the nearest integer in accordance with Annex VII.

- (3) If the label is printed on the packaging and the information specified in point (2)(I), (II) and (IV) is included elsewhere on the packaging, that information may be omitted from the label. The label shall then be chosen from the following illustrations:



- (4) The design of the label shall be as follows.



where:

- (a) The size specifications in the figure above and in point (d) apply to a lamp label 36 mm wide and 75 mm high. If the label is printed in a different format, its content must nevertheless remain proportionate to the specifications above.

The label version specified in point (1) and (2) must be at least 36 mm wide and 75 mm high, and the versions specified in point (3) must be, respectively, at least 36 mm wide and 68 mm high and at least 36 mm wide and 62 mm high. If no side of the packaging is large enough to contain the label and its blank border or if 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 height) of its standard size. If the packaging is too small to take such a reduced label, a 36 mm wide and 75 mm high label must be attached to the lamp or the packaging.

- (b) The background shall be white for both the multi-coloured and the monochrome versions of the label.
- (c) For the multi-coloured version of the label, the 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 meet all the following requirements (numbers refer to the figure above; colour specifications apply only to the multi-coloured version of the label):

① **Border stroke:** 2 pt — colour: Cyan 100% — round corners: 1 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: 30 mm, height: 9 mm.

④ **Sub-logos border:** 1 pt — colour: Cyan 100% — length: 30 mm.

⑤ **A++-E scale**

– **Arrow:** height: 5 mm, gap: 0.8 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 15 pt, capitals and white; ‘+’ symbols: Calibri bold 15 pt, Superscript, white, aligned on a single row.

⑥ **Energy efficiency class**

– **Arrow:** width: 11.2 mm, height: 7 mm, 100% black;

– **Text:** Calibri bold 20 pt, capitals and white; ‘+’ symbols: Calibri bold 20 pt, Superscript, white, aligned on a single row.

⑦ **Weighted energy consumption**

Value: Calibri bold 16 pt, 100% black; and Calibri regular 9 pt, 100% black.

⑧ **Supplier’s name or trade mark**

⑨ **Supplier’s model identifier**

The suppliers’ name or trade mark and the model identifier shall fit in a space of 30 x 7 mm.

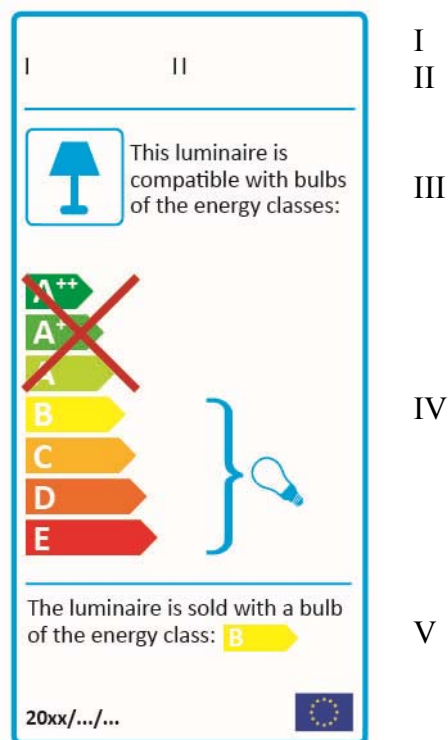
Nothing else placed or printed on, or attached to, the individual packaging shall obscure the label or reduce its visibility.

By way of derogation, if a model has been awarded an ‘EU ecolabel’ under Regulation (EC) No 66/2010¹⁵ of the European Parliament and of the Council, a copy of the EU ecolabel may be added.

¹⁵ OJ L 27, 30.1.2010, p. 1.

2. LABEL FOR LUMINAIRES PRESENTED AT A POINT OF SALE

- (1) The label shall be the relevant language version, and shall be as shown in the following illustration, or as in variants defined under points (2) and (3).



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

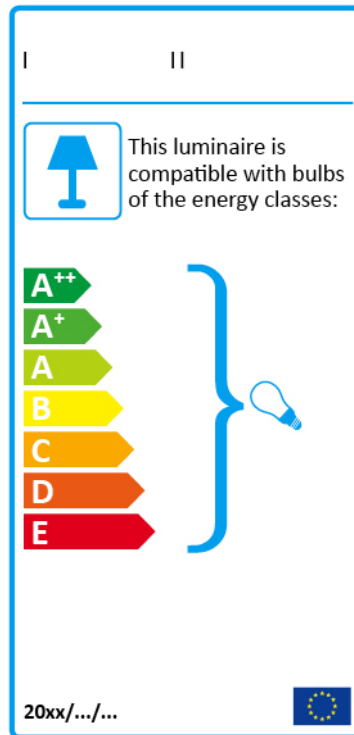
- (2) The following information shall be included in the label:
- I. The supplier's name or trade mark;
 - II. The supplier's model identifier, meaning the code, usually alphanumeric, which distinguishes a specific luminaire model from other models with the same trade mark or supplier's name;
 - III. The sentence as shown in the example in point (1), or one of its alternatives from the examples in point (3) below, as applicable. Instead of the word 'luminaire', a more precise term may be used describing the particular luminaire type or the product into which the luminaire is integrated (such as furniture), as long as it remains clear that the term refers to the product on sale that operates the light sources;
 - IV. The range of energy-efficiency classes according to part 1 of this Annex, accompanied by the following elements, as applicable:

- (a) a 'bulb' pictogram indicating the classes of user-replaceable lamps with which the luminaire is compatible according to state-of-the-art requirements for compatibility;
- (b) a cross over the classes of lamps with which the luminaire is not compatible according to state-of-the-art requirements for compatibility;
- (c) the letters 'LED' arranged vertically along the classes A to A++ if the luminaire contains LED modules not intended to be removed by the end-user. If such a luminaire does not contain sockets for user-replaceable lamps, the classes from B to E shall be covered by a cross;

V. One of the following options, as applicable:

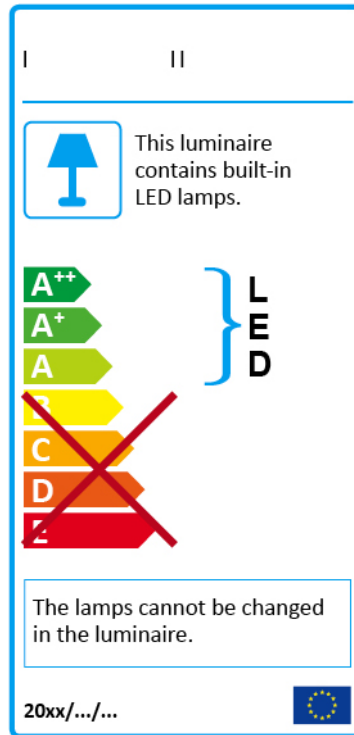
- (a) if the luminaire operates with lamps that are replaceable by the end-user, and such lamps are included in the packaging of the luminaire, the sentence as shown in the example in point (1), containing the appropriate energy classes. Where necessary, the sentence can be adjusted to refer to one lamp or several lamps, and several energy classes can be listed;
- (b) if the luminaire contains only LED modules not intended to be removed by the end-user, the sentence as shown in the example in point (3)(b);
- (c) if the luminaire contains both LED modules not intended to be removed by the end-user and sockets for replaceable lamps, and such lamps are not included with the luminaire, the sentence as shown in the example in point (3)(d);
- (d) if the luminaire operates only with lamps that are replaceable by the end-user and there are no such lamps included with the luminaire, the space shall be left empty, as shown in the example in point (3)(a).

- (3) The following illustrations provide examples of typical luminaire labels in addition to the illustration in point (1), without showing all possible combinations.
- (a) Luminaire operating with user-replaceable lamps compatible with lamps of all energy classes with no lamps included:



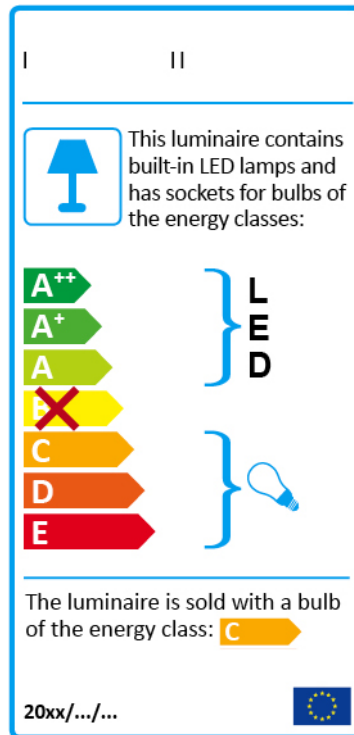
[* Numbering of the Regulation to be added on the label before publication in the OJ]

(b) Luminaire containing only non-replaceable LED modules:



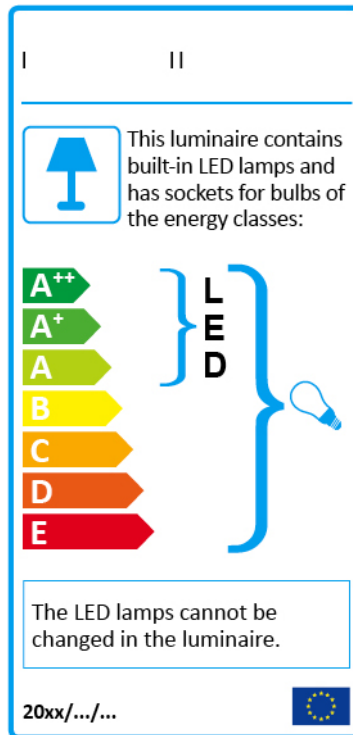
[* Numbering of the Regulation to be added on the label before publication in the OJ]

- (c) Luminaire containing both non-replaceable LED modules and sockets for user-replaceable lamps, with lamps included:



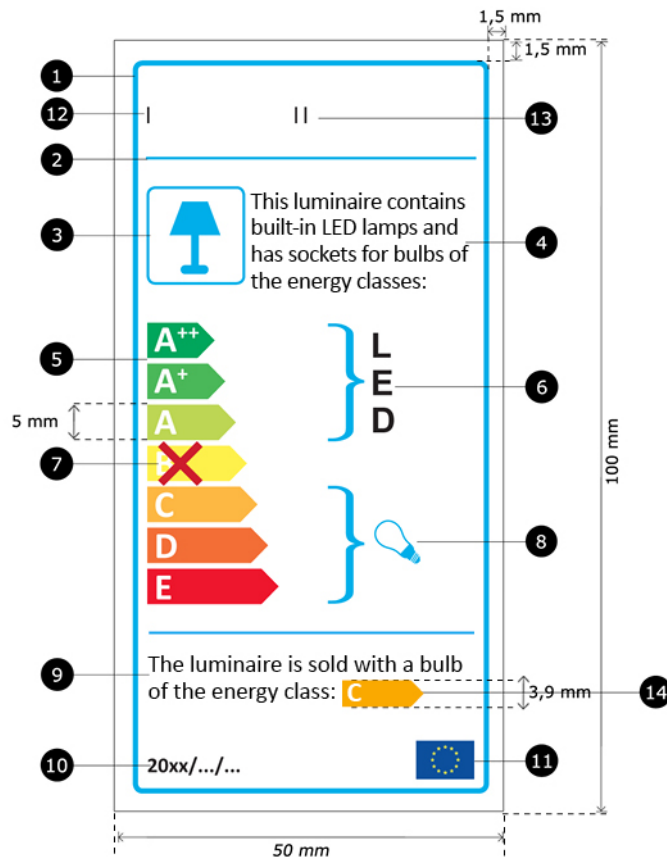
[* Numbering of the Regulation to be added on the label before publication in the OJ]

- (d) Luminaire containing both non-replaceable LED modules and sockets for user-replaceable lamps, with lamps not included:



[* 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 figures below:



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

- (a) The label version shall be at least 50 mm wide and 100 mm high.
- (b) The background shall be white or transparent, but the letters of the energy classes shall always be white. When the background is transparent, the dealer shall ensure that the label is applied to a surface which is white or a light shade of grey that preserves the legibility of all the elements of the label.
- (c) The 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 (the numbers refer to the figure above):
 - ① **Border stroke:** 2 pt — colour: Cyan 100% — round corners: 1 mm.
 - ② **Sub-logos border:** 1 pt — colour: Cyan 100% — length: 43 mm.
 - ③ **Luminaire logo:** stroke: 1 pt — colour: Cyan 100% — Size:13 mm x 13 mm — round corners: 1 mm. Pictogram as depicted, or the supplier's own pictogram or photo, if it describes better the luminaire belonging to the label.

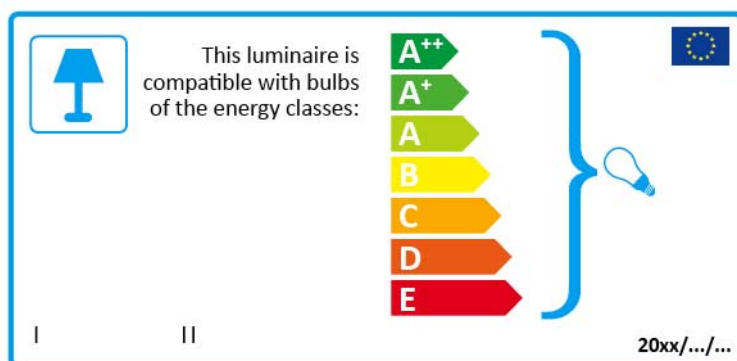
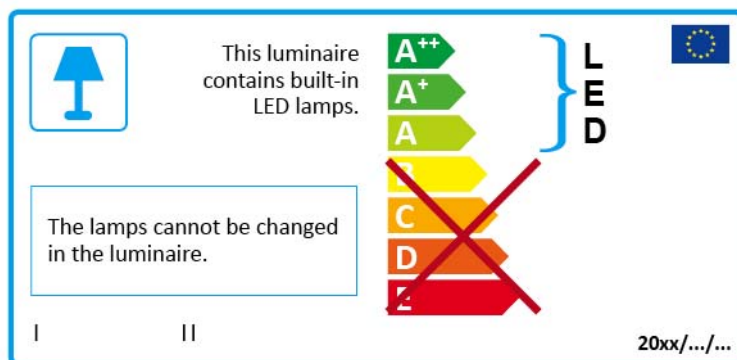
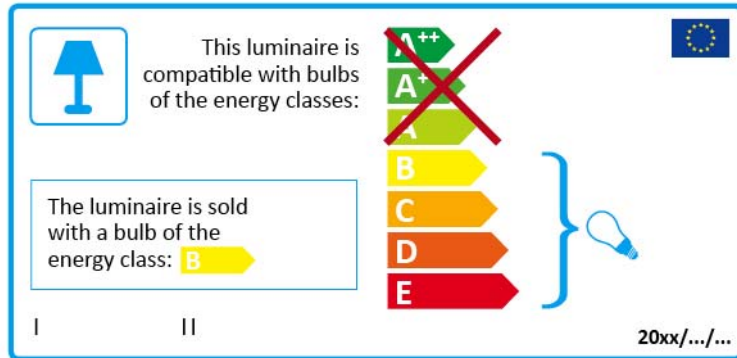
- ④ **Text:** Calibri Regular 9 pt or larger, 100% black
- ⑤ **A++-E scale**
 - **Arrow:** height: 5 mm, gap: 0.8 mm — colours:
 - Highest class: X-00-X-00,
 - Second class: 70-00-X-00,
 - Third class: 30-00-X-00,
 - Fourth class: 00-00-X-00,
 - Fifth class: 00-30-X-00,
 - Sixth class: 00-70-X-00,
 - Last class: 00-X-X-00.
 - **Text:** Calibri bold 14 pt, capitals and white; ‘+’ symbols: Calibri bold 14 pt, Superscript, white, aligned on a single row.
- ⑥ **LED text:** Verdana Regular 15 pt, 100% black
- ⑦ **Cross:** colour:13-X-X-04, stroke: 3 pt
- ⑧ **Bulb logo:** Pictogram as depicted
- ⑨ **Text:** Calibri Regular 10 pt or larger, 100% black
- ⑩ **Numbering of the Regulation:** Calibri bold 10 pt, 100% black.
- ⑪ **EU logo:** Colours: X-80-00-00 and 00-00-X-00.
- ⑫ **Supplier’s name or trademark.**
- ⑬ **Supplier’s model identifier:**

The supplier’s name or trade mark and the model identifier shall fit into a space measuring 43 x 10 mm.

- ⑭ **Energy class arrow**
 - **Arrow:** height: 3.9 mm, width: as shown in the illustration in point (4) but reduced in the same proportion as the height, colour: the colour defined in point ⑤, as applicable.
 - **Text:** Calibri bold 10.5 pt, capitals and white; ‘+’ symbols: Calibri bold 10.5 pt, Superscript, white, aligned on a single row.

If there is not enough space for displaying the energy class arrows within the area of the sentence referred to in point (2) V. (a), the area between the number of the Regulation and the EU logo may be used for that purpose.

- (e) The label may also be displayed in horizontal orientation, in which case it shall be at least 100 mm wide and 50 mm high. The components of the label shall be as described in points (b) to (d) and shall be arranged according to the following examples, as applicable. If there is not enough space for displaying the energy class arrows in the text box to the left from the A++ to E scale, the text box may be enlarged vertically as necessary.



ANNEX II
Product Fiche for electrical lamps

The fiche shall contain the information specified for the label. Where product brochures are not supplied, the label provided with the product can also be considered to be the fiche.

ANNEX III
Technical documentation

The technical documentation referred to in Article 3(1)(b) and (2)(a) 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) the identification and signature of the person empowered to bind the supplier;
- (f) the technical parameters for determining energy consumption and energy efficiency in the case of electrical lamps, and compatibility with lamps in the case of luminaires, specifying at least one realistic combination of product settings and conditions in which to test the product;
- (g) for electrical lamps, the results of calculations performed in accordance with Annex VII.

The information contained in this technical documentation may be merged with the technical documentation provided in accordance with measures under Directive 2009/125/EC.

ANNEX IV

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

1. The information referred to in Article 4(1)(a) shall be provided in the following order:
 - (a) the energy efficiency class as defined in Annex VI;
 - (b) where required by Annex I, the weighted energy consumption in kWh per 1000 hours, rounded up to the nearest integer and calculated in accordance with part 2 of Annex VII.
2. When 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 to in this Annex is printed or shown shall be legible.

ANNEX V
Verification procedure for market surveillance purposes

When carrying out market surveillance checks, the market surveillance authorities shall inform the other Member States and the Commission of the results of these checks.

Member States' 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 whose reference numbers have been published for that purpose in the Official Journal of the European Union.

1. VERIFICATION PROCEDURE FOR ELECTRICAL LAMPS AND LED MODULES MARKETED AS INDIVIDUAL PRODUCTS

For the purposes of checking conformity with the requirements laid down in Articles 3 and 4, Member States' authorities shall test a sample batch of a minimum of twenty lamps of the same model from the same manufacturer, where possible obtained in equal proportion from four randomly selected sources, and taking into account the technical parameters set out in the technical documentation according to point (f) in Annex III.

The model shall be considered to comply with the requirements laid down in Articles 3 and 4 if the model's energy efficiency index corresponds to its declared energy efficiency class and if the average results of the batch do not vary from the limit, threshold or declared values (including the energy efficiency index) by more than 10%.

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

The tolerances for variation indicated above relate only to the verification of the measured parameters by the Member States' authorities and shall not be used by the supplier as an allowed tolerance on the values in the technical documentation to achieve a more efficient energy class.

The declared values shall not be more favourable for the supplier than the values reported in the technical documentation.

2. VERIFICATION PROCEDURE FOR LUMINAIRES INTENDED TO BE MARKETED OR MARKETED TO THE END-USER

The luminaire shall be considered to comply with the requirements laid down in Article 3 and 4 if it is accompanied by the required product information, and if it is found to be compatible with any lamps with which it is claimed to be compatible according to points 2.2.IV(a) and (b) of Annex I, applying state-of-the-art methods and criteria for assessing compatibility.

ANNEX VI
Energy efficiency classes

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 EEI of lamps shall be determined in accordance with Annex VII.

Table 1: Energy efficiency classes for lamps

Energy efficiency class	Energy efficiency index (EEI) for non-directional lamps	Energy efficiency index (EEI) for directional lamps
A++ (most efficient)	$EEI \leq 0.11$	$EEI \leq 0.13$
A+	$0.11 < EEI \leq 0.17$	$0.13 < EEI \leq 0.18$
A	$0.17 < EEI \leq 0.24$	$0.18 < EEI \leq 0.40$
B	$0.24 < EEI \leq 0.60$	$0.40 < EEI \leq 0.95$
C	$0.60 < EEI \leq 0.80$	$0.95 < EEI \leq 1.20$
D	$0.80 < EEI \leq 0.95$	$1.20 < EEI \leq 1.75$
E (least efficient)	$EEI > 0.95$	$EEI > 1.75$

ANNEX VII

Method for calculating the energy efficiency index and 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 with its reference power. The reference power is obtained from the useful luminous flux, which is the total flux for non-directional lamps, and the flux in a 90° or 120° cone for directional lamps.

The 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 in accordance with Table 2 for models with external control gear. The rated power of the lamps is measured at their nominal input voltage.

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

Scope of the correction	Power corrected for control gear losses (P_{cor})
Lamps operating on external halogen lamp control gear	$P_{rated} \times 1.06$
Lamps operating on external LED lamp control gear	$P_{rated} \times 1.10$
Fluorescent lamps of 16 mm diameter (T5 lamps) and 4-pin single capped fluorescent lamps operating on external fluorescent lamp control gear	$P_{rated} \times 1.10$
Other lamps operating on external fluorescent lamp control gear	$P_{rated} \times \frac{0.24\sqrt{\Phi_{use}} + 0.0103\Phi_{use}}{0.15\sqrt{\Phi_{use}} + 0.0097\Phi_{use}}$
Lamps operating on external high-intensity discharge lamp control gear	$P_{rated} \times 1.10$
Lamps operating on external low pressure sodium lamp control gear	$P_{rated} \times 1.15$

P_{ref} is the reference power obtained from the useful luminous flux of the model (Φ_{use}) by the following formulae:

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

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

The useful luminous flux (Φ_{use}) is defined in accordance with Table 3.

Table 3: Definition of the useful luminous flux

Model	Useful luminous flux (Φ_{use})
Non-directional lamps	Total rated luminous flux (Φ)
Directional lamps with a beam angle $\geq 90^\circ$ other than filament lamps and carrying a textual or graphical warning on their packaging that they are not suitable for accent lighting	Rated luminous flux in a 120° cone (Φ_{120°)
Other directional lamps	Rated luminous flux in a 90° cone (Φ_{90°)

2. CALCULATION OF THE ENERGY CONSUMPTION

The weighted energy consumption (E_c) is calculated in kWh/1000h as follows and is rounded to two decimal places:

$$E_c = \frac{P_{\text{cor}} \times 1000 h}{1000}$$

Where P_{cor} is the power corrected for any control gear losses in accordance with part 1 above.