

Brussels, XXX
[...] (2018) XXX draft

COMMISSION REGULATION (EU) .../...

of XXX

implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for light sources and separate control gears

repealing Regulation (EC) No 244/2009 with regard to ecodesign requirements for non-directional household lamps,

Regulation (EC) No 245/2009 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 Regulation (EU) No 1194/2012 with regard to ecodesign requirements for directional lamps, light emitting diode lamps and related equipment

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(Text with EEA relevance)

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(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to Article 114 of the Treaty on the Functioning of the European Union,

Having regard to Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products¹, and in particular Article 15(1) thereof,

After consulting the Consultation Forum referred to in Article 18 of Directive 2009/125/EC,

Whereas:

- (1) Directive 2009/125/EC requires the Commission to set ecodesign requirements for energy-related products representing significant volumes of sales and trade, having a significant environmental impact and presenting significant potential for improvement through design in terms of their environmental impact, without entailing excessive costs.
- (2) Article 16(2)(a) of Directive 2009/125/EC provides that the Commission should, where appropriate, introduce implementing measures for products which offer significant potential for reducing greenhouse gas emissions in a cost-effective way, such as the lighting products in the scope of this Regulation. These implementing measures should be introduced in accordance with the procedure referred to in Article 19(3) and the criteria set out in Article 15(2) of the same Directive.
- (3) The Commission established ecodesign requirements for lighting products in three Commission Regulations implementing Directive 2009/125/EC: Commission Regulation (EC) No 244/2009² and its successive amendments³, Commission

¹ OJ L 285, 31.10.2009, p. 10.

² OJ L 76, 24.3.2009, p. 3.

³ OJ L 247, 19.9.2009, p.3 and OJ L 244, 27.8.2015, p.1

Regulation (EC) No 245/2009⁴ and its successive amendments⁵ and Commission Regulation (EU) No 1194/2012⁶ and its successive amendment⁷.

- (4) Article 7 of Commission Regulation (EC) No 244/2009, Article 8 of Commission Regulation (EC) No 245/2009 and Article 7 of Commission Regulation (EU) No 1194/2012 require the Commission to review the Regulations in light of technological progress.
- (5) The Commission has reviewed Commission Regulation (EC) No 244/2009, Commission Regulation (EC) No 245/2009 and Commission Regulation (EU) No 1194/2012 and analysed the technical, environmental and economic aspects of lighting products as well as real-life user behaviour. The review was undertaken in close cooperation with stakeholders and interested parties from the Union and third countries. The results of the review were made public and presented to the Consultation Forum established by Article 18 of Directive 2009/125/EC.
- (6) The review study shows the benefit of updating the requirements for lighting products. The review also shows the benefit of simplifying the requirements to be applied to lighting products, in particular by having one single regulation for this product group.
- (7) The unification of the three existing regulations is in line with the Commission's 'Better Regulation' policy with the main aim to decrease administrative burden for manufacturers and importers, and to facilitate verification by market surveillance authorities, inter alia by better defining the scope and exemptions, reducing the number of parameters for compliance testing and decreasing the time of some test procedures.
- (8) Following the review, a uniform formula is set to calculate the energy efficiency for all the lighting products that are in the scope of the three existing regulations. Light sources and their control gears as defined in Article 2 come within the subject of this Regulation resulting from the combination of the products in scope of Commission Regulation (EC) No 244/2009, Commission Regulation (EC) No 245/2009 and Commission Regulation (EU) No 1194/2012.
- (9) The annual electricity consumption of products subject to this Regulation in the Union was estimated at 336 TWh in 2015, covering 12.4 % of the overall EU28 electricity use, corresponding to 132 million tonnes of CO₂ equivalent. While the projected energy consumption of lighting products in a business as usual scenario will decrease by 2030, this reduction is expected to slow down unless the existing ecodesign requirements are updated.
- (10) The environmental aspects of lighting products in the scope of this Regulation that have been identified as significant for the purposes of this Regulation are energy consumption in the use phase along with mercury content and mercury emissions.
- (11) As the mercury content of light sources is restricted by Directive 2011/65/EU of the European Parliament and of the Council (RoHS)⁸, no specific ecodesign requirements on mercury content should be set in this Regulation. Moreover, setting additional energy efficiency requirements for light sources should lead to a decrease in the overall mercury emissions.

⁴ OJ L 76, 24.3.2009, p. 17.

⁵ OJ L 104, 24.4.2010, p.20 and OJ L 244, 27.8.2015, p.1

⁶ OJ L 342, 14.12.2012, p. 1.

⁷ OJ L 244, 27.8.2015, p.1

⁸ OJ L 174, 1.7.2011, p. 88, and amendments.

- (12) The Commission Communications on circular economy⁹ and on the ecodesign working plan¹⁰ underline the importance of using the ecodesign framework to support the move towards more resource efficient and circular economy. The WEEE Directive 2012/19/EU¹¹ refers to Directive 2009/125/EC indicating that ecodesign requirements should facilitate the re-use, dismantling and recovery of WEEE by tackling the issues upstream. The WEEE Directive already sufficiently covers end-of-life aspects of lighting products. Therefore this Regulation should not lay down further requirements contributing to recyclability.
- (13) This Regulation lays down specific requirements for standby and networked standby electric power demand of lighting products. Therefore, the requirements of Commission Regulation (EC) No 1275/2008¹² should not apply to lighting products covered by the scope of this Regulation and for which specific requirements are set.
- (14) Mandatory ecodesign requirements apply to products placed on the Union market wherever they are installed or used and should therefore not be made dependent on the application in which the product is used.
- (15) The ecodesign requirements should not affect functionality from the user's perspective and should not negatively affect health, safety or the environment.
- (16) Exemptions from the requirements set out in this Regulation should be made for light sources with special technical features for use in specific applications, including those related to health and safety, and for which higher energy efficiency alternatives are not available or not cost-effective.
- (17) Measurements of the relevant product parameters should be performed through reliable, accurate and reproducible measurement methods, which take into account the recognised state-of-the-art measurement methods including, where available, harmonised standards adopted by the European standardisation organisations, as listed in Annex I to Regulation (EU) No 1025/2012¹³.
- (18) In accordance with Article 8 of Directive 2009/125/EC, this Regulation should specify the applicable conformity assessment procedures.
- (19) To facilitate compliance checks, manufacturers should provide information in the technical documentation referred to in Annexes IV and V to Directive 2009/125/EC in so far as that information relates to the requirements laid down in this Regulation. The parameters of the technical documentation in accordance with this Regulation which are identical to the parameters of the product information sheet in accordance with Commission Regulation (EU) XXX with regard to energy labelling of light sources and which have been entered in the product database should no longer be included in the technical documentation of this Regulation.
- (20) Commission Regulation (EU) 2016/2282¹⁴ amends several ecodesign implementing measures with regard to the use of tolerances in verification procedures of the measured parameters by Member State authorities. However, it did not amend the three Regulations on lighting products, but clarified that the intended use of tolerances for lighting products would be reassessed in conjunction with their review. Hence this

⁹ COM/2015/0614 final of 02.12/2015

¹⁰ COM(2016) 773 final of 30.11.2016

¹¹ OJ L 197, 24.7.2012, p. 38

¹² OJ L 339, 18.12.2008, p 45

¹³ OJ L 316, 14.11.2012, p. 12

¹⁴ OJ L 346, 20.12.2016, p. 51.

Regulation specifies tolerance values for lighting parameters and adopts the approach of declared values as laid down in Commission Regulation (EU) 2016/2282.

- (21) To improve the effectiveness and credibility of the Regulation and to protect consumers, products that automatically alter their performance in test conditions to improve the declared parameters should be prohibited.
- (22) In addition to the legally binding requirements laid down in this Regulation, indicative benchmarks for best available technologies should be identified to make information on the life-cycle environmental performance of products subject to this Regulation widely available and easily accessible, in accordance with Directive 2009/125/EC, Annex 1, part 3(2).
- (23) A review of this Regulation should assess the appropriateness and effectiveness of its provisions in achieving its goals. The timing of the review should be sufficient for all provisions to be implemented and show an effect on the market.
- (24) Commission Regulation (EC) No 244/2009, Commission Regulation (EC) No 245/2009 and Commission Regulation (EU) No 1194/2012 should be repealed and new provisions should be laid down by this Regulation to ensure that the ecodesign requirements for lighting products continue to accelerate the market transformation towards energy- efficient technologies.
- (25) The measures provided for in this Regulation are in accordance with the opinion of the Committee established by Article 19(1) of Directive 2009/125/EC.

HAS ADOPTED THIS REGULATION:

Article 1

Subject matter and scope

1. This Regulation establishes ecodesign requirements for placing on the market of
 - (a) light sources;
 - (b) separate control gears.The requirements also apply to light sources and separate control gears placed on the market in a containing product.
2. This Regulation shall not apply to light sources and separate control gears specified in Annex III points 1 and 2.
3. Light sources and separate control gears specified in Annex III point 3 shall comply only with the requirements of Annex II point 3.5.

Article 2

Definitions

For the purpose of this Regulation the definitions in Article 2 of Directive 2009/125/EC shall apply. In addition, the definitions in Annex I of this Regulation and the following definitions shall apply:

1. 'light source' means an electrically operated product intended to emit and/or be possibly tuned to emit light with all of the following optical characteristics:
 - (a) chromaticity coordinates x and y in the range
 $0,270 < x < 0,530$ and

$$-2,3172 x^2 + 2,3653 x - 0,2199 < y < -2,3172 x^2 + 2,3653 x - 0,1595;$$

- (b) a luminous flux $< 500 \text{ lm per mm}^2$ of projected light-emitting surface area as defined in Annex I;
- (c) a luminous flux between 60 and 82 000 lumen;
- (d) a colour rendering index (CRI) $R_a > 0$;

using incandescence, fluorescence, high-intensity discharge, inorganic light emitting diodes (LED) or organic light emitting diodes (OLED), or their combinations as lighting technology, and that can be verified as a light source according to the procedure of Annex V.

High-pressure sodium light sources that do not fulfil condition (a) are anyway considered light sources in the sense of this Regulation.

For the purpose of this Regulation, the following products are not considered to be light sources:

- (a) LED dies or LED chips;
- (b) LED packages;
- (c) products containing light source(s) from which these light source(s) can be removed for verification;
- (d) light-emitting parts contained in a light source from which these parts cannot be removed for verification as a light source.

2. 'control gear' means one or more devices, possibly integrated in a light source, intended to prepare the mains electricity supply for the electric format required by one or more specific light sources within boundary conditions set by electric safety and electromagnetic compatibility. It may include transforming the supply and starting voltage, limiting operational and preheating current, preventing cold starting, correcting the power factor and/or reducing radio interference. 'Mains' or 'mains voltage' or 'mains electricity supply' (MV) means the electricity supply of 230 ($\pm 10\%$) Volt of alternating current at 50 Hz.

The term 'control gear' does not include power supplies within the scope of Commission Regulation (EC) No 278/2009¹⁵. The term does also not include lighting control parts and non-lighting parts (as defined in Annex I), although such parts may be physically integrated with a control gear or marketed together as a single product.

A Power over Ethernet (PoE) switch is not a control gear in the sense of this Regulation. 'Power-over-Ethernet switch' or 'PoE switch' means equipment for power-supply and data-handling that is installed between the mains and office equipment and/or light sources for the purpose of data transfer and power supply;

3. 'separate control gear', means a control gear that is not physically integrated with a light source and is placed on the market as a separate product or as a part of a containing product;
4. 'containing product' means a product containing one or more light sources and/or separate control gears. Examples of containing products are luminaires that can be taken apart to allow separate verification of the contained light source(s), household appliances containing light source(s), furniture (shelves, mirrors, display cabinets)

¹⁵ OJ L93, 7.4.2009, p.3.

containing light source(s), and other products that cannot be practically verified as light source themselves, so that the contained light source(s) have to be considered;

5. 'light' means electromagnetic radiation with a wavelength between 380 nm and 780 nm;
6. 'LED die or LED chip' means a small block of light-emitting semiconducting material on which a functional light emitting diode (LED) circuit is fabricated;
7. 'LED package' means a single electric part comprising principally at least one LED die. It does not include (parts of) a control gear, does not include a cap, is not connected directly to the supply voltage, and does not include active electronic components. It is used as a part of an LED module or of an LED lamp. It can include one or more of the following: optical elements, light converters (phosphors), thermal, mechanical and electric interfaces, parts to address electrostatic discharge concerns. So called Chip-on-Board (CoB) packages, and similar light-emitting devices that are intended to be used directly in an LED luminaire, are not considered to be LED packages, but LED modules;
8. 'chromaticity' means the property of a colour stimulus defined by its chromaticity coordinates (x and y).
9. 'luminous flux' or 'flux' (Φ), expressed in lumen (lm), means the quantity derived from radiant flux (radiant power) by evaluating the electromagnetic radiation in accordance with the spectral sensitivity of the human eye. It refers to the total flux emitted by a light source in a solid angle of 4π steradians under conditions (e.g. current, voltage, temperature) specified in applicable standards. It refers to the initial flux for the undimmed light source after a short operating period, unless it is clearly specified that the flux in a dimmed condition or the flux after a given period of operation is intended. For light sources that can be tuned to emit different light spectra and/or different maximum light intensities, it refers to the flux in the 'reference control settings' as defined in Annex II;
10. 'colour rendering index' (CRI) is the average Ra of the colour rendering for the first 8 test colours (R1-R8) defined in standards, and means the effect of an illuminant on the colour appearance of objects by conscious or subconscious comparison with their colour appearance under the reference illuminant;
11. 'incandescence' means a phenomenon where light is produced from heat, in light sources typically produced through a threadlike conductor ('filament') which is heated by the passage of an electric current. Incandescent light sources are either GLS - General Lamp Shape light sources or halogen light sources. Halogen light source means an incandescent light source with a threadlike conductor made from tungsten surrounded by gas containing halogens or halogen compounds;
12. 'fluorescence' or 'fluorescent light source' (FL) means the phenomenon or a light source using an electric gas discharge 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 light sources may have one ('single-capped') or two ('double-capped') connections ('caps') to their electricity supply. For the purposes of this Regulation, magnetic induction light sources are also considered as fluorescent light sources;
13. 'high intensity discharge' (HID) means an electric gas discharge in which the light-producing arc is stabilised by wall temperature and the arc chamber has a bulb wall loading in excess of 3 Watts per square centimetre. 'Gas discharge' means a

phenomenon where light is produced, directly or indirectly, by an electric discharge through a gas, plasma, metal vapour or mixture of gases and vapours. For the purpose of this Regulation, HID light sources are limited to metal halide, high-pressure sodium and mercury vapour types as defined in Annex I;

14. ‘inorganic light emitting diode’ (LED) means a technology in which light is produced from a solid state device embodying a p-n junction of inorganic material. The junction emits optical radiation when excited by an electric current;
15. ‘organic light emitting diode’ (OLED) means a technology in which light is produced from a solid state device embodying a p-n junction of organic material. The junction emits optical radiation when excited by an electric current;
16. ‘high-pressure sodium light source’ (HPS) means a high intensity discharge light source in which the light is produced mainly by radiation from sodium vapour operating at a partial pressure of the order of 10 kilopascals. HPS light sources may have one (‘single-ended’) or two (‘double-ended’) connectors to their electricity supply.

Article 3

Ecodesign requirements

Products in scope of this Regulation shall comply with the ecodesign requirements set out in Annex II from the dates indicated therein.

Article 4

Removal of light sources and separate control gears

1. Manufacturers and importers of containing products shall ensure that light sources and separate control gears can be removed without being permanently damaged for verification purposes by market surveillance authorities and without permanent damage to the containing product. For containing products, instructions should be available on request on how light sources and separate control gears can be removed for verification without these being permanently damaged and without permanent damage to the containing product.
2. Manufacturers and importers of containing products shall ensure that light sources and separate control gears can be dismantled from containing products at end of life. Instructions shall be available on request.
3. Manufacturers and importers of containing products shall provide information about the replaceability or non-replaceability of light sources and control gears by end-users or qualified persons without permanent damage to the containing product. Such information shall be available on free-access websites. For products sold directly to end-users, this information shall be on the packaging, at least in the form of a pictogram.

Article 5

Conformity assessment

1. The conformity assessment procedure referred to in Article 8 of Directive 2009/125/EC shall be the internal design control system set out in Annex IV to that Directive or the management system set out in Annex V to that Directive.
2. Where the information included in the technical documentation for a particular

model has been obtained by calculation on the basis of design, or extrapolation from another model, or both, the documentation shall include details of such calculations or extrapolations, or both, and of tests undertaken by manufacturers to verify the accuracy of the calculations undertaken.

Article 6

Verification procedure for market surveillance purposes

Member States shall apply the verification procedure described in Annex IV to this Regulation when performing the market surveillance checks referred to in Article 3(2) of Directive 2009/125/EC.

Article 7

Circumvention

The manufacturer or importer shall not place on the market products that have been designed so that a model's performance is automatically altered in test conditions with the objective of reaching a more favourable level for any of the parameters declared by the manufacturer in the technical documentation or included in any of the documentation provided with the product.

Where applicable, the power consumption of the product shall not increase after a software or firmware update when measured with the same test standard originally used for the declaration of conformity, except with explicit consent of the end-user.

Article 8

Indicative benchmarks

The indicative benchmarks for the best-performing products and technologies available on the market at the time of adopting this Regulation are set out in Annex VI.

Article 9

Evaluation

The Commission shall assess this Regulation and shall present the results of this assessment, including, if appropriate, a draft revision proposal, to the Consultation Forum no later than five years after its entry into force.

This assessment shall review the requirements in the light of the technological progress and shall address in particular:

- setting more stringent energy efficiency requirements for all light source types, in particular for non-LED light source types, and for separate control gears;
- setting requirements on lighting control parts;
- setting more stringent requirements on flicker and stroboscopic effects;
- setting requirements on dimming, including the interaction with flicker;
- setting more stringent requirements on (networked) standby power;
- lowering or abolishing the power bonus for colour-tuneable light sources and removing the exemption for high colour purity;
- substituting the CRI colour rendering metric by a more adequate metric;

- verifying the adequacy of lumen as a stand-alone metric for the quantity of visible light;
- setting additional resource efficiency requirements for products in accordance with the principles of the circular economy.

Article 10

Repeal

Commission Regulation (EC) No 244/2009, Commission Regulation (EC) No 245/2009 and Commission Regulation (EU) No 1194/2012 shall be repealed as from 31 August 2021.

Article 11

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. This Regulation shall apply from 1 September 2021.

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

Done at Brussels,

For the Commission
Jean-Claude JUNCKER
The President