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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

(Text with EEA relevance)

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THE EUROPEAN COMMISSION,

Having regard to 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 products ([1]), and in particular Article 15(1) thereof,

After consulting the Ecodesign Consultation Forum,

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 in accordance with the procedure referred to in Article 19(3) and the criteria set out in Article 15(2), and after consulting the Ecodesign Consultation Forum, the Commission shall, as appropriate, introduce implementing measures starting with those products that offer a high potential for cost-effective reduction of greenhouse gas emissions, such as lighting.

(3) The European Commission set ecodesign requirements for lighting products through three implementing measures: Commission Regulation (EC) No 244/2009 ([2]) and its

[1] OJ L 285, 31.10.2009, p. 10.

successive amendments ([3]), Commission Regulation (EC) No 245/2009 ([4]) and its successive amendments ([5]) and Commission Regulation (EU) No 1194/2012 ([6]) and its successive amendment ([7]). The three regulations require that the European Commission shall review them in light of technological progress.

(4) The Commission carried out a review study to analyse the technical, environmental and economic aspects of lighting products. The study was developed together with stakeholders and interested parties from the Union and third countries and the results have been made publicly available.

(5) The results of this study show 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.

(6) 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. 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, including incandescent, halogen, fluorescent, high-intensity discharge and light-emitting diodes (both inorganic – LED – and organic – OLED). 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 the three existing regulations.

(7) The environmental aspects 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.

(8) Ecodesign requirements for products subject to this Regulation should be set with a view to improving the environmental performance of the products concerned, contributing to the functioning of the internal market and to the Union objective of reducing energy consumption and promoting a circular economy.

(9) In 2015, the EU-28 electricity consumption for lighting was 335 TWh/y, covering 12.4% of the overall EU-28 electricity use. This corresponds to greenhouse gas (GHG) emissions of 132 megatons of CO_2 equivalent per year ($MtCO_2eq/y$) to 2.8% of the overall EU-28 GHG-emission.

(10) It is estimated that this Regulation will reduce the energy consumption for lighting by 40-60TWh/a in 2030 with respect to a Business-as-Usual scenario. This translates into around 20 $MtCO_2eq/a$ savings of GHG emissions in 2030. It is estimated that this Regulation will reduce the total user expense for lighting by 11-15 billion euros per year in 2030 with respect to a BAU-scenario.

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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
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

(11) Setting additional energy efficiency requirements for light sources should lead to a decrease in the overall mercury emissions. In addition, the mercury content of light sources is restricted by Directive 2011/65/EU of the European Parliament and of the Council (RoHS)[8]. Hence, no specific ecodesign requirements on mercury content should be set in this Regulation.

(12) The electricity consumption of products subject to this Regulation could be lowered by applying existing non-proprietary cost-effective technologies, which lead to a reduction of the combined expenses for purchasing and operating the equipment.

(13) The ecodesign requirements should not affect functionality from the user's perspective and should not negatively affect health, safety or the environment. In particular, the benefits of reducing the electricity consumption during the use phase should outweigh any potential additional environmental impact during the production phase of products subject to ecodesign requirements. In order to ensure consumer satisfaction with more energy efficient products, functional requirements should be set. Product information requirements should allow consumers to make informed choices.

(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) 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. Light sources that are currently allowed on the market to replace less efficient products, should remain available on the market to allow manufacturers and importers to benefit from the payback period of their investment.

(16) Low-quality LED light sources on the market have potential flicker problems which can cause health issues. As LED light sources are among the high-efficiency lighting technologies emerging on the market, it is appropriate to set a functional requirement on flicker for LED and OLED light sources that can be operated directly on the mains electricity supply.

(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 bodies, as listed in Annex I to Directive 98/34/EC of the European Parliament and of the Council ([9]).

(18) In accordance with Article 8 of Directive 2009/125/EC, this Regulation should specify the applicable conformity assessment procedures.

(19) In order to facilitate compliance checks, manufacturers should provide information in the technical documentation referred to in Annexes V and VI to Directive 2009/125/EC in so far as that information relates to the requirements laid down in this Regulation.

(20) Commission Regulation (EU) 2016/2282 ([10]) 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

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

9 OJ L 204, 21.7.1998, p. 37.

10 OJ L 346, 20.12.2016, p. 51.

three regulations on lighting products, but clarified that the intended use of tolerances for lighting products would be reassessed in conjunction with the review of the three regulations. Hence this Regulation specifies tolerance values for lighting parameters and adopts the approach of declared values as laid down in Commission Regulation (EU) 2016/2282. The mandatory information on verification testing, including the model of the product tested and the results of the procedure, will minimise unnecessary double testing while reducing the number of non-compliant models on the Union market.

(21) In addition to the legally binding requirements laid down in this Regulation, indicative benchmarks for best available technologies should be identified. This will help to ensure the wide availability and easy accessibility of information on the life cycle environmental performance of products subject to this Regulation, in particular for small and medium-sized enterprises, which will further facilitate the integration of best design technologies and the development of more energy- and resource efficient products.

(22) A further review of this Regulation should assess the appropriateness and effectiveness of its provisions in achieving its goals, and also address some topics that could not be considered in this Regulation because of a current lack of an agreed metric, measurement method or acceptability limits, such as flicker, colour rendering and light output. The timing of the review should be sufficient for all provisions to be implemented and show an effect on the market.

(23) This Regulation should apply from 1 September 2020, while allowing existing requirements from the three regulations repealed through this act to stay in force until that date. The application of the ecodesign requirements should provide sufficient time to manufacturers to re-design products subject to this Regulation. The timing should be such that any negative impact on functionalities of products on the market is avoided and that the cost impact for end-users and manufacturers, in particular small and medium-sized enterprises, is taken into account, while ensuring timely achievement of the objectives of this Regulation.

(24) 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. In accordance with Article 15 of Directive 2009/125/EC, this Regulation establishes ecodesign requirements for placing on the market of light sources and separate control gear for light sources. The requirements also apply to light sources and separate control gear placed on the market in a containing product.

2. This Regulation shall not apply to light sources and separate control gears specified in Annex I points 1 and 2. Light sources and separate control gears specified in Annex I point 3 shall comply only with the requirements of Annex III point 3.5.

Article 2

Definitions

In addition to the definitions set out in Directive 2009/125/EC, the following definitions shall apply for the purposes of this Regulation:

(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 < 1000 *lm per mm²* of projected light-emitting surface area as defined in Annex II;

(c) a luminous flux between 60 and 82 000 *lumen*;

(d) a colour rendering index CRI > 0 *Ra*;

using incandescence, fluorescence, high-intensity discharge, light emitting diodes or their combinations as lighting technology.

High-pressure sodium light sources (HPS, as defined in Annex II) that do not fulfil condition (1)(a) are anyway considered light sources in the sense of this Regulation.

If a containing product is itself a light source, the light source to be considered for the purpose of this Regulation is the smallest physical unit that can be readily removed from the containing product without permanent mechanical damage and that meets the definition for 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.

The term does not include power supplies within the scope of Commission Regulation (EC) No 278/2009 ([11]). The term does also not include lighting control parts and non-lighting parts (as defined in Annex II), 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.

(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 in scope of this Regulation. Manufacturers or importers of containing products shall enable verification by market surveillance authorities of compliance of light source(s) and/or control gear(s) as set out in Annex IV.

[11] OJ L93, 7.4.2009, p.3.

(5) *'light'* means electromagnetic radiation with a wavelength between 380 *nm* and 780 *nm*.

(6) *'mains'* or *'mains voltage'* or *'mains electricity supply'* (MV) means the electricity supply of 230 (±10%) *Volt* of alternating current at 50 *Hz*.

(7) *'chromaticity'* means the property of a colour stimulus defined by its chromaticity coordinates (x and y).

(8) *'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. *'Luminous flux*' without further specification is the total luminous flux in a 360˚ sphere. 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.

(9) *'colour rendering index'* (CRI), expressed in *Ra*, 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.

(10) *'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.

(11) *'halogen light source'* (HL) means an incandescent light source with a threadlike conductor made from tungsten surrounded by gas containing halogens or halogen compounds.

(12) *'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.

(13) *'high intensity discharge'* (HID) means an electric gas discharge 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*. 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 II.

(14) *'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.

(15) '*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.

(16) '*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.

(17) '*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.

(18) '*flicker*' means the perception of visual unsteadiness induced by a light stimulus the luminance or spectral distribution of which fluctuates with time, for a static observer in a static environment. The fluctuations can be periodic and non-periodic and may be induced by the light source itself, the power source or other influencing factors.

Other definitions are set out in Annex II.

Article 3

Ecodesign requirements

Any product in scope of this Regulation shall meet the ecodesign requirements specified in Annex III of this Regulation, except when exempt according to Annex I points 1 and 2. Products specified in Annex I point 3 shall comply only with the requirements set out in Annex III point 3.4.

Ecodesign requirements shall apply from 1 September 2020.

Article 4

Removal of light sources and separate control gears

Manufacturers and importers shall ensure that light sources and separate control gears in scope of this Regulation can be readily removed without permanent mechanical damage by the end-user from any product containing them that is placed on the market. Where light sources and separate control gears in scope of this Regulation cannot be readily removed by the end-user, manufacturers and importers shall ensure that the containing product is designed in such a way that light sources and separate control gears in scope of this Regulation can be readily removed by qualified professionals. Containing products shall be accompanied by instructions on how light sources and separate control gears can be readily removed by either the end-user or by qualified professionals.

Article 5

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 6

Conformity assessment

1. The conformity assessment procedure referred to in Article 8 of Directive 2009/125/EC shall be the internal design control set out in Annex IV to that Directive or the management system set out in Annex V to the same Directive.
2. For the purposes of conformity assessment pursuant to Article 8 of Directive 2009/125/EC, the technical documentation file shall:
   (a) contain the product information specified in Annex III.3.4 of this Regulation;
   (b) provide any other information required by this Regulation to be present in the technical documentation file.

Article 7

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 8

Indicative benchmarks

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

Article 9

Repeal

Commission Regulation (EC) No 244/2009, Commission Regulation (EC) No 245/2009 and Commission Regulation (EU) No 1194/2012 shall be repealed from 1 September 2020.

Article 10

Revision

The Commission shall review this Regulation in the light of technological progress and shall present the results of that review to the Ecodesign Consultation Forum no later than 1 September 2022. This review shall inter alia consider:

- 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;
- exploring stroboscopic effects;
- setting requirements on dimming, including the interaction with flicker;
- substituting the CRI colour rendering metric by a more adequate metric;
- 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 11

Entry into force

This Regulation shall enter into force on the twentieth day following that of its publication in the *Official Journal of the European Union*.

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