



Brussels, **XXX**
[...](2017) **XXX** draft

ANNEXES 1 to 9

ANNEXES

to the

Commission Delegated Regulation

**supplementing Regulation (EU) 2017/1369 of the European Parliament and of the
Council with regard to energy labelling of light sources**

repealing

**Regulation (EU) No 874/2012 with regard to energy labelling of electrical lamps and
luminaires**

ANNEX I

Definitions applicable for the Annexes

- (1) ‘mains light source (MLS)’ means a light source that can be operated directly on the mains electricity supply. Light sources that operate directly on the mains, and can also operate indirectly on the mains using a separate control gear, shall be considered to be mains light sources;
- (2) ‘non-mains light source (NMLS)’, means a light source that is not a mains light source. These light sources require a separate control gear to operate on the mains;
- (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) ‘directional light source’ (DLS) means a light source having at least 80% of total luminous flux within a solid angle of π sr (corresponding to a cone with angle of 120°);
- (5) ‘non-directional light source’ (NDLS) means a light source that is not a directional light source;
- (6) ‘connected light source’ (CLS) means a light source including data-connection parts that are physically or functionally inseparable from the light emitting parts to maintain the ‘reference control settings’;

The light source can have physically integrated data-connection parts in a single inseparable housing, or the light source can be combined with physically separate data-connection parts placed on the market together with the light source as a single product;

- (7) ‘data-connection parts’ means parts that perform any one of the following functions:
 - (a) reception or transmission of wired or wireless data signals and the processing thereof (either used to control the light emission function or otherwise),
 - (b) sensing and processing of the sensed signals (either used to control the light emission function or otherwise),
 - (c) actuation by audio control (including voice control),
 - (d) a combination of these;
- (8) ‘colour-tuneable light source’ (CTLS) means a light source that can be set to emit light with a large variation of colours outside the range defined in article 2(1) but can also be set to emit white light inside the range defined in article 2(1) for which the light source is in scope of this Regulation;

The term does not include tuneable-white light sources that can only be set to emit light, with different correlated colour temperatures, within the range defined in Article 2(1).

The term also does not include dim-to-warm light sources, that shift their white light output to lower correlated colour temperature when dimmed, simulating the behaviour of incandescent light sources;

- (9) ‘colour purity index’: a percentage computed for a CTLS set to emit light of a certain colour, using a procedure further defined in standards, by drawing a straight line on an (x,y) colour space graph from a point with colour coordinates $x=0.313$ and $y=0.330$ (D65 reference point, point 1), going through the point representing the

(x,y) colour coordinates of the light source (point 2), and ending on the outer border of the colour space (locus; point 3). The colour purity index is computed as the distance between points 1 and 2 divided by the distance between points 1 and 3. The full length of the line represents 100% colour purity (point on the locus). The D65 reference point represents 0% colour purity (white light);

- (10) ‘*lighting control parts*’ means parts that are integrated in a light source, or physically separated but marketed together with a light source as a single product, that are not strictly necessary for the light source to emit light at full-load, but that enable manual- or automatic-, direct- or remote-, control of luminous intensity, chromaticity, correlated colour temperature, light spectrum and/or beam angle. Dimmers shall also be considered as lighting control parts.

The term also includes data-connection parts, but the term does not include devices within the scope of Commission Regulation (EC) No 1275/2008¹;

- (11) ‘*non-lighting parts*’ means parts that are integrated in a light source, or physically separate but marketed together with a light source as a single product, that are not necessary for the light source to emit light at full-load, and that are not ‘lighting control parts’. Examples include, but are not limited to: speakers (audio), cameras, repeaters for communication signals to extend the range (e.g. WiFi), parts supporting grid balance (switching to own internal batteries when necessary), battery charging, visual notification of events (mail arriving, door bell ringing, alert), use of Light Fidelity (Li-Fi, a bidirectional, high-speed and fully networked wireless communication technology);

- (12) ‘useful luminous flux’ (Φ_{use}), means the part of the luminous flux of a light source that is considered when determining its energy efficiency:

- for non-directional light sources it is the total flux emitted in a solid angle of 4π sr (corresponding to a 360° sphere);
- for directional light sources with beam angle $\geq 90^\circ$ it is the flux emitted in a solid angle of π sr (corresponding to a cone with angle of 120°);
- for directional light sources with beam angle $< 90^\circ$ it is the flux emitted in a solid angle of 0.586π sr (corresponding to a cone with angle of 90°);

- (13) ‘beam angle’ of a directional light source means the angle between two imaginary lines in a plane through the optical beam axis, such that these lines pass through the centre of the front face of the light source and through points at which the luminous intensity is 50 % of the centre beam intensity, where the centre beam intensity is the value of luminous intensity measured on the optical beam axis;

For light sources that have different beam angles in different planes, the largest beam angle shall be the one taken into account;

For light sources with user-controllable beam angle, the beam angle corresponding to the ‘reference control setting’ shall be the one taken into account;

- (14) ‘full-load’ means the condition of a light source, within the declared operating conditions, in which it emits the maximum (undimmed) initial luminous flux;

- (15) ‘standby mode’ means the condition of a light source, where it is connected to the power supply but the light sources are intentionally not emitting light, and the light

¹ OJ L 339, 18.12.2008, p. 45 and later amendments.

source is awaiting a control signal (from a source different from a network) to return to a state with light emission. Lighting control parts enabling the standby function shall be in their control mode. Non-lighting parts shall be disconnected or switched off or their power consumption shall be minimized following manufacturer's instructions;

- (16) 'networked standby mode' means the condition of a connected light source (CLS) where it is connected to the power supply but the light source is intentionally not emitting light and is awaiting a remotely initiated trigger (from a network) to return to a state with light emission. Lighting control parts shall be in their control mode and data-connection parts shall be in a state enabling the networked standby function. Non-lighting parts shall be disconnected or switched off or their power consumption shall be minimized following manufacturer's instructions;
- (17) 'control mode' means the condition of lighting control parts where they are connected to the light source and performing their functions in such a way that a control signal can be internally generated or a remotely initiated trigger can be received, by wire or wireless, and processed to lead to a change in the light emission of the light source;
- (18) 'remotely initiated trigger' means a signal that comes from outside the light source via a network;
- (19) 'control signal' means an analogue or digital signal transmitted to the light source wirelessly or wired either via voltage modulation in separate control cables or via a modulated signal in the supply voltage. The signal transmission is not through a network but e.g. from an internal source or from a remote control delivered with the product;
- (20) 'remotely initiated trigger' means a signal that comes from outside the light source or separate control gear via a network;
- (21) 'network' means a communication infrastructure with a topology of links, an architecture, including the physical components, organisational principles, communication procedures and formats (protocols);
- (22) 'on-mode power' (P_{on}), expressed in Watt, is the electric power consumption of a light source in full-load with all lighting control parts and non-lighting parts disconnected. If these parts cannot be disconnected they shall be switched off or their power consumption shall be minimised following the manufacturer's instructions;

In case of a non-mains light source (NMLS) that requires a separate control gear to operate, P_{on} can be measured directly on the input to the light source, or P_{on} is determined using a control gear with known efficiency, whose electric power consumption is subsequently subtracted from the measured mains power input value;

- (23) 'standby power' (P_{sb}), expressed in Watts, is the electric power consumption of a light source in standby mode;
- (24) 'networked standby power' (P_{net}), expressed in Watts, is the electric power consumption of a connected light source (CLS) in networked standby mode;
- (25) 'reference control settings' (RCS) means a control setting or a combination of control settings that is used to verify compliance of a light source with this Regulation. These settings are relevant for light sources that allow the end-user to control, manually or automatically, directly or remotely, the luminous intensity,

colour, correlated colour temperature, spectrum, and/or beam angle of the emitted light.

In principle, the reference control settings shall be those predefined by the manufacturer as factory default values, and encountered by the user at first installation (out-of-the-box values). If the installation procedure foresees an automatic software update during first installation, or if the user has the option to perform such an update, the resulting change in settings (if any) shall be taken into account.

If the out-of-the-box value is deliberately set differently from the reference control setting (e.g. at low power for safety purposes), the manufacturer shall indicate in the technical documentation how to recall the reference control settings for compliance verification.

The light source manufacturer shall define the reference control settings such that:

- the light source is in scope of this Regulation according to Art.2(1) and none of the conditions for exemption of Annex I applies (if this is not possible, the light source is out-of-scope or exempted);
- the power consumption of lighting control parts and non-lighting parts is minimal (if these parts cannot be disconnected or switched-off);
- the full-load condition is obtained (maximum initial luminous flux given the other chosen settings);
- when the end-user opts to reset factory defaults, the reference control settings are obtained.

For light sources that allow the manufacturer of a containing product to make implementation choices that influence light source characteristics (e.g. definition of the operating current(s); thermal design), and that cannot be controlled by the end-user, the reference control settings need not be defined. In that case the test conditions defined in applicable standards apply;

- (26) ‘high-pressure mercury light source’ means a high intensity discharge light source in which the major portion of light is produced, directly or indirectly, by radiation from predominantly vaporized mercury operating at a partial pressure in excess of 100 kilopascals;
- (27) ‘metal halide light source’ (MH) means a high intensity discharge light source in which the light is produced by radiation from a mixture of metallic vapour, metal halides and the products of the dissociation of metal halides. MH light sources may have one (‘single-ended’) or two (‘double-ended’) connectors to their electricity supply. The material for the arc tube of MH light sources can be quartz (QMH) or ceramic (CMH);
- (28) ‘compact fluorescent light source’ (CFL) means a single-capped fluorescent light source with a bent-tube construction designed to fit in small spaces. CFLs may be primarily spiral-shaped (i.e. curly forms) or primarily shaped as connected multiple parallel tubes, with or without a second bulb-like envelope. CFLs are available with (CFLi) or without (CFLni) physically integrated control gear;
- (29) ‘T2’, ‘T5’, ‘T8’, ‘T9’ and ‘T12’ means a tubular light source with diameter of approximately 7, 16, 26, 29 and 38 mm respectively, as defined in harmonised standards. The tube can be straight (linear) or bent (e.g. U-shaped, circular);

- (30) ‘LFL T5-HE’ means a high-efficiency linear fluorescent T5 light source with driving current lower than 0.2 A;
- (31) ‘LFL T5-HO’ means a high-output linear fluorescent T5 light source with driving current higher than or equal to 0.2 A;
- (32) ‘HL R7s’ is a mains-voltage, double capped, linear halogen light source with a cap-diameter of 7 mm;
- (33) ‘battery-operated’ means a product that operates only on direct current (DC) supplied from a source contained in the same product, without being connected directly or indirectly to the mains electricity supply;
- (34) ‘second envelope’ means a second outer envelope on a HID light source that is not required for the production of light, such as an external sleeve for preventing mercury and glass release into the environment in case of lamp breakage. In determining the presence of a second envelope, the HID arc tubes shall not count as an envelope;
- (35) ‘non-clear envelope’ for a HID light source means a non-transparent outer envelope or outer tube in which the light producing arc tube is not visible;
- (36) ‘anti-glare shield’ means a mechanical or optical reflective or non-reflective impervious baffle designed to block direct visible radiation emitted from the light emitter in a directional light source, in order to avoid temporary partial blindness (disability glare) if viewed directly by an observer. It does not include surface coating of the light emitter in the directional light source;
- (37) ‘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.
- The metric for flicker used in this Regulation is the ‘Pst LM’, where ‘st’ stands for short term and ‘LM’ for light flickermeter method, as defined in standards. A value Pst LM=1 means that the average observer has a 50% probability of detecting flicker;
- (38) ‘stroboscopic effect’ means a change in motion perception induced by a light stimulus the luminance or spectral distribution of which fluctuates with time, for a static observer in a non-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.
- The metric for the stroboscopic effect used in this Regulation is the ‘SVM’ (Stroboscopic Visibility Measure), as defined in standards. SVM=1 represents the visibility threshold for an average observer;
- (39) ‘R9’ means the colour rendering index for a red coloured object as defined in standards
- (40) ‘declared value’ for a parameter means the value given by the manufacturer or importer in the technical documentation pursuant to Article 3(3) of Regulation 2017/1369;
- (41) ‘luminous intensity’ (candela or cd) means the quotient of the luminous flux leaving the source and propagated in the element of solid angle containing a given direction, by the element of solid angle;

- (42) ‘correlated colour temperature’ (CCT [K]) means the temperature of a Planckian (black body) radiator whose perceived colour most closely resembles that of a given stimulus at the same brightness and under specified viewing conditions;
- (43) ‘colour consistency’ means the maximum deviation of the initial (after a short period of time), spatially averaged chromaticity coordinates (x and y) of a single light source from the chromaticity centre point (cx and cy) declared by the manufacturer or the importer, expressed as the size (in steps) of the MacAdam ellipse formed around the chromaticity centre point (cx and cy);
- (44) ‘displacement factor (cos ϕ_1)’ means the cosine of the phase angle ϕ_1 between the fundamental harmonic of the mains supply voltage and the fundamental harmonic of the mains current. It is used for mains light sources using LED- or OLED-technology.

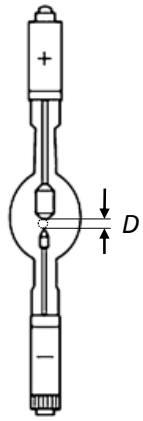
The displacement factor is measured at full-load, for the reference control settings where applicable, with any lighting control parts in control mode and non-lighting parts disconnected, switched off or set to minimum power consumption according to the manufacturer’s instructions;

- (45) ‘lumen maintenance factor’ (LMF) means the ratio of the luminous flux emitted by a light source at a given time in its life to the initial luminous flux;
- (46) ‘survival factor’ (SF) means the defined fraction of the total number of light sources that continue to operate at a given time under defined conditions and switching frequency;
- (47) ‘lifetime’ for LED and OLED light sources means the time in hours between the start of their use and the moment when for 50% of a population of light sources the light output has gradually degraded to a value below 70% of the initial luminous flux. This is also referred to as the $L_{70}B_{50}$ lifetime;
- (48) ‘equivalent model’ means a model with the same relevant technical and performance characteristics as another model placed on the market under a different commercial code;
- (49) ‘projected light-emitting surface area (A)’ is the surface area in mm² (square millimetres) of the view in an orthographic projection of the light-emitting surface from the direction with the highest light intensity, where the light-emitting surface area is the surface area of the light source that emits light with the declared optical characteristics, such as the approximately spherical surface of an arc (a), cylindrical surface of a filament coil (b) or a gas discharge lamp (c, d), flat or semi-spherical envelope of a light-emitting diode (e).

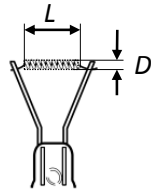
For light sources with a non-clear envelope or with anti-glare shield, the light-emitting surface area is the entire area through which light leaves the light source.

For light sources containing more than one light emitter, the projection of the smallest gross volume enveloping all emitters shall be taken as the light-emitting surface.

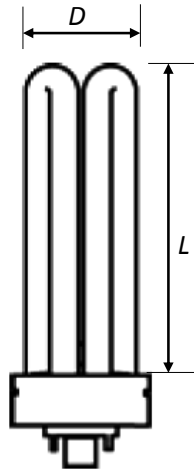
For HID light sources definition (a) applies, unless the dimensions defined in (d) apply with $L > D$, where L is the distance between the electrode tips and D the inner diameter of the arc tube.



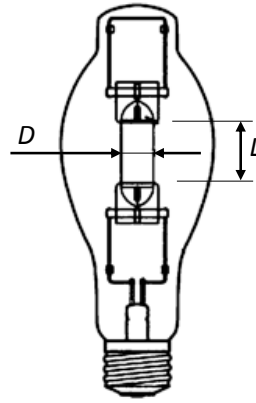
(a)
 $A = \frac{1}{4}\pi D^2$



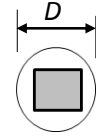
(b)
 $A = L \cdot D$



(c)
 $A = L \cdot D$



(d)
 $A = L \cdot D$



(e)
 $A = \frac{1}{4}\pi D^2$

ANNEX II

Energy Efficiency classes and calculation method

The energy efficiency class of light sources shall be determined on the basis of the efficacy values expressed in total mains efficacy η_{TM} , which is defined as the total initial luminous flux (in *lm*) divided by mains power input (in *W*) – (*lm/W*) – as set out in **Error! Reference source not found.**

Table 1: Energy efficiency classes of XXX

Energy Efficiency Class	Total mains efficacy h_{TM} (<i>lm /W</i>)
A (most efficient)	$210 \leq \eta_{TM}$
B	$185 \leq \eta_{TM} < 210$
C	$160 \leq \eta_{TM} < 185$
D	$135 \leq \eta_{TM} < 160$
E	$110 \leq \eta_{TM} < 135$
F	$85 \leq \eta_{TM} < 110$
G (least efficient)	$\eta_{TM} < 85$

The total mains efficacy η_{TM} is calculated by dividing the declared useful luminous flux Φ_{use} (expressed in *lm*) by the declared on-mode power consumption P_{on} (expressed in *W*) and multiplying by the applicable factor F_{TM} of Table 2, i.e.:

$$\eta_{TM} = (\Phi_{use} / P_{on}) * F_{TM} \text{ (lm/W)}.$$

Table 2: Factors F_{TM} to be used for determination of $\eta_{TM} = (\Phi_{use} / P_{on}) * F_{TM}$ (*lm/W*)

Light source type	Factor F_{TM}
Non-directional mains light source (NDLS, MLS)	1,000
Non-directional non-mains light source (NDLS, NMLS)	0,926
Directional mains light source (DLS, MLS)	1,176
Directional non-mains light source (DLS, NMLS)	1,089

ANNEX III
Label for light sources

1. LABEL FOR LIGHT SOURCES

(1) Label:

Label design to be introduced after consumer study finalised in July 2018, including for small packaging.

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

I supplier's name or trade mark;

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

III the energy efficiency class determined in accordance with Annex II; the head of the arrow containing the energy efficiency class shall be placed at the same height as the head of the arrow of the relevant energy efficiency class;

IV QR-code redirecting to the product database;

V the energy consumption (XYZ), expressed in kWh of electricity consumption per 1000 hours of light source on-mode operation.

(3) Label design

Label design to be introduced after consumer study finalised in July 2018, including for small packaging.

ANNEX IV
Exemptions

1. This Regulation shall not apply to light sources specifically tested and approved to operate:
- (a) in radiological and nuclear medicine installations, as defined in Article 3 of Directive 2009/71/EURATOM ⁽²⁾;
 - (b) in or on military or civil defence establishments, equipment, ground vehicles, marine equipment or aircraft as set out in Member States' Regulations or in documents issued by the European Defence Agency;
 - (c) in or on motor vehicles, their trailers and systems, components and separate technical units intended therefore, as set out in Regulation (EC) No 661/2009³, Regulation (EU) No 167/2013⁴, Regulation (EU) No 168/2013⁵ and their amendments;
 - (d) in or on non-road mobile machinery intended as set out in Regulation (EU) 2016/1628/EU⁶ and their amendments;
 - (e) in or on civil aviation aircrafts as set out in Commission Regulation 748/2012⁷;
 - (f) in railway vehicle lighting as set out in Directive 2008/57/EC⁸ and its amendments, as well as relevant Member State legislation;
 - (g) in marine equipment as set out in Council Directive 2014/90/EU⁹ and its amendments or recasts;
 - (h) in medical devices as set out in Council Directive 93/42/EEC ⁽¹⁰⁾ and in vitro medical devices as set out in Directive 98/79/EC ⁽¹¹⁾ and their amendments.

For the purpose of this point, 'specifically tested and approved' means that the light source:

- has been specifically tested for the mentioned operating condition or application, according to the European legislation mentioned or related implementing acts, relevant Member State legislation, and/or relevant European or international standards;
- is accompanied by evidence, in the form of a certificate, a type approval mark, a test report or other documentation, that the product has been specifically approved for the mentioned operating condition or application; and
- is placed on the market specifically for the mentioned operating condition or application, as evidenced at least by the technical documentation, information on the packaging and any advertising or marketing materials.

² OJ L 172, 2.7.2009, p. 18-

³ OJ L 200, 31.7.2009, p.1-24

⁴ OJ L60, 2.3.2013, p. 1–51

⁵ OJ L60, 2.3.2013, p. 52

⁶ OJ L252, 16.9.2016, p. 53–117

⁷ OJ L 224, 21.8.2012, p. 1-85

⁸ OJ L 191, 18.7.2008, p.1-45.

⁹ OJ L 257, 28.8.2014, p. 146–185

¹⁰ OJ L 169, 12.7.1993, p. 1

¹¹ OJ L331, 7.12.1998, p.1

2. In addition, this Regulation shall not apply to:
- (a) electronic displays (e.g. televisions, computer monitors, notebooks, tablets, mobile phones, e-readers, game consoles), including but not limited to displays in scope of Commission Regulation (EU) No 617/2013¹², Commission Decision (EU) 2015/1402¹³, Commission Regulation (EC) No 642/2009¹⁴, Commission Decision (EU) 2016/1756¹⁵, European Commission COM(2015)178¹⁶;
 - (b) Range hoods in the scope of Commission Delegated Regulation (EU) No 65/2014;
 - (c) light sources in battery-operated products, including but not limited to e.g. torches, mobile phones with integrated torch light, toys including light sources, desk lamps operating only on batteries, armband lamps for cyclists, solar-powered garden lamps;
 - (d) light sources on bicycles and other non-motorized vehicles;
 - (e) light sources that do not comply with requirements becoming applicable with Regulation *[XXX to insert the new ecodesign regulation for lighting]* implementing Directive 2009/125/EC of the European Parliament and of the Council.
3. Any light source in scope of this Regulation shall be exempt from the requirements of Articles 3 and 4, with the exception of Annex V point 4, if it has a specific technical design for its intended use in at least one of the following applications:
- (a) signalling (including, but not limited to, road-, railway-, marine- or air traffic-signalling, traffic control or airfield lamps);
 - (b) image capture and image projection (including, but not limited to, photocopying, printing (directly or in pre-processing), lithography, film and video projection, holography);
 - (c) light sources with specific effective ultraviolet power >2 mW/klm and intended for use in applications requiring high UV-content;
 - (d) light sources having the peak radiation around 253.7 nm and intended for germicidal use (destruction of DNA);
 - (e) light sources emitting 5% or more of total radiation power of the range 250-800 nm in the range of 250-315 nm and/or 20% or more of total radiation power of the range 250-800 nm in the range of 315-400 nm, and intended for disinfection or fly trapping;
 - (f) light sources having the primary purpose to emit radiation around 185.1 nm and intended to be used for the generation of ozone;
 - (g) light sources emitting 40% or more of total radiation power of the range 250-800 nm in the range of 400-480 nm, and intended for coral zooxanthellae symbioses;

¹² OJ L 175, 27.6.2013, p.13 (computers)

¹³ OJ L 217, 18.8.2015, p.9 (office equipment, computers)

¹⁴ OJ L 191, 23.7.2009, p.42 (televisions)

¹⁵ OJ L 268, 1.10.2016, p.90 (office equipment, displays)

¹⁶ COM(2015) 178 final, 22.4.2015 (related to self-regulatory initiative regarding game consoles)

- (h) FL light sources emitting 80% or more of total radiation power of the range 250-800 nm in the range of 250-400 nm, and intended for sun-tanning;
- (i) HID light sources emitting 40% or more of total radiation power of the range 250-800 nm in the range of 250-400 nm, and intended for sun-tanning;
- (j) light sources with a photosynthetic efficacy >1.2 mmol/J, and/or emitting 25% or more of total radiation power of the range 250-800 nm in the range of 700-800 nm, and intended for use in horticulture.

ANNEX V
Product information

1. Product information sheet

- 1.1. The product information sheet to be provided by the supplier of a light source, including when the light source is a part in a containing product, pursuant to Article 3(d) shall contain the information entered in the public part of the product database established by Regulation (EU) 2017/1369 in the following order and shall be included in the product brochure or other literature provided with the product:
- (a) supplier's name or trade mark, address, contact details and other legal identification of the supplier;
 - (b) supplier's model identifier, meaning the code, usually alphanumeric, which distinguishes a specific light source model from other models with the same trade mark or supplier's name;
 - (c) the energy label according to Annex III in electronic format;
 - (d) the energy efficiency class according to Annex II;
 - (e) the energy consumption expressed in kWh of electricity consumption per 1000 h of light source on-mode operation;
 - (f) the lighting technology used, i.e. HL, LFL T5 HE, LFL T5 HO, CFLni, other FL, HPS, MH, other HID, LED, OLED, mixed, other;
 - (g) if the light source is non-directional (NDLS) or directional (DLS) in the sense of this Regulation;
 - (h) if the light source is a mains light source (MLS) or a non-mains light source (NMLS) in the sense of this Regulation;
 - (i) if the light source is a connected light source (CLS) in the sense of this Regulation;
 - (j) if the light source is a colour-tuneable light source (CTLS) in the sense of this Regulation;
 - (k) if the light source has a second envelope, a non-clear envelope and/or an anti-glare shield in the sense of this Regulation;
 - (l) the date (day, month, year) of last update of the information;
 - (m) the date (month, year) of first production of the light source for the EU market;
 - (n) if the light source is still in production for sale on the EU-market (yes/no);
 - (o) if the light source is no longer in production for sale on the EU-market, the date (month, year) when production for the EU market stopped;
 - (p) the information specified in point 2.1 of this Annex;
 - (q) the outer dimensions in mm, without separate control gear, lighting control parts and non-lighting parts, if any;
 - (r) the mass in grams of the light source, without packaging, and without separate control gear, lighting control parts and non-lighting parts, if any and if they can be physically separated from the light source;
 - (s) the spectral power distribution in the range 250 nm to 800 nm, at full-load;

- (t) the displacement factor, $\cos(\phi_1)$, (for LED and OLED mains light sources);
- (u) the chromaticity coordinates (x,y);
- (v) the colour consistency in McAdam ellipses (for LED and OLED mains light sources);
- (w) the R9 colour rendering index value (for LED and OLED light sources);
- (x) the peak luminous intensity for directional light sources (in cd);
- (y) the lumen maintenance factor for FL and HID light sources at 2 000 h, 4 000 h, 6 000 h, 8 000 h, 12 000 h, 16 000 h and 20 000 h (up to 8 000 h only for new light sources on the market where no data is yet available), indicating which operation mode of the light source was used for the test if both 50 Hz and High Frequency operation are possible;
- (z) the survival factor for FL and HID light sources at 2 000 h, 4 000 h, 6 000 h, 8 000 h, 12 000 h, 16 000 h and 20 000 h (up to 8 000 h only for new light sources on the market where no data is yet available), indicating which operation mode of the light source was used for the test if both 50 Hz and High Frequency operation are possible;
- (aa) the lumen maintenance factor for LED and OLED;
- (bb) the survival factor for LED and OLED;
- (cc) the reference control settings, and instructions how they can be implemented, where applicable;
- (dd) instructions how to remove lighting control parts and/or non-lighting parts, if any, or how to switch them off or minimize their power consumption during light source testing;
- (ee) if it is dimmable, a list of dimmers it is compatible with, and the light source – dimmer compatibility standard(s) it is compliant with, if any;
- (ff) if it contains mercury, instructions on how to clean up the lamp debris in case of accidental breakage;
- (gg) recommendations on how to dispose of it at the end of its life for recycling in line with Directive 2012/19/EU.

For light sources that can be tuned to emit light at full-load with different characteristics, the values of parameters that vary with these characteristics shall at least be reported at the reference control settings.

1.2. One product information sheet may cover a number of light sources supplied by the same supplier.

2. Information to be displayed on the packaging

2.1. Light source

If a light source is placed on the market, not in a containing product, in a packaging containing information to be visibly displayed at a point-of-sale prior to its purchase, the following information shall be clearly and prominently displayed on the packaging in addition to the energy label of Annex III:

- (a) the useful luminous flux (Φ_{use}) in a font at least twice as large as the display of the on-mode power (P_{on}), clearly indicating if it refers to the flux in a sphere (360°), in a wide cone (120°) or in a narrow cone (90°);
- (b) the correlated colour temperature CCT in K, rounded to the nearest 100 K, also expressed graphically or in words, or the range of correlated colour temperatures that can be set;
- (c) the beam angle in degrees (for directional lamps), or the range of beam angles that can be set;
- (d) electrical interface details, e.g. cap- or connector-type, type of power supply (e.g. 230 V AC 50 Hz, 12 V DC);
- (e) the $L_{70}B_{50}$ lifetime for LED and OLED light sources, expressed in hours;
- (f) the on-mode power (P_{on}), expressed in W;
- (g) the standby power (P_{sb}), expressed in W and rounded to the second decimal. If the value is zero, it may be omitted from the packaging;
- (h) the networked standby power (P_{net}) for CLS, expressed in W and rounded to the second decimal. If the value is zero, it may be omitted from the packaging;
- (i) the colour rendering index CRI, rounded to the nearest integer, or the range of CRI-values that can be set;
- (j) if $\text{CRI} < 80$, and the light source is intended for use in outdoor applications, industrial applications or other applications where lighting standards allow a $\text{CRI} < 80$, a clear indication to this effect. For HID light sources with useful luminous flux > 4000 lm this indication is not mandatory;
- (k) if the light source is designed for optimum use in non-standard conditions (such as ambient temperature $T_a \neq 25^\circ\text{C}$ or specific thermal management is necessary), information on those conditions;
- (l) a warning if the light source cannot be dimmed or can be dimmed only with specific dimmers or with specific wired or wireless dimming methods. In the latter cases a list of compatible dimmers and/or methods could be provided on the manufacturer's website;
- (m) if it contains mercury, a warning about it including the mercury content in mg rounded to the first decimal place;
- (n) if it is in scope of Directive 2012/19/EU or contains mercury, a warning that it should not be disposed of in the general waste stream;
- (o) in addition to the QR-code included in the energy label of Annex III, the internet address for the supplier's website(s) could be provided.

Items (a) to (d) shall be displayed on the packaging in the direction meant to face prospective buyers; for other items this is also recommended, if space permits.

For light sources that can be set to emit light with different characteristics, the information shall be reported for the reference control settings. In addition a range of obtainable values may be indicated.

The information does not need to use the exact wording on the list above. In addition, it may be displayed in the form of graphs, drawings or symbols.

If the packaging is too small to accommodate all required information, following Annex III, a standard size or larger label shall be attached or placed in close proximity to the packaging, and some of the information not required to face the prospective buyer may be displayed on the same physical carrier as the label instead of on the packaging.

2.2. Light source in a containing product

If a light source is placed on the market as a part in a containing product the technical documentation for the containing product shall clearly identify the contained light source(s), including the energy efficiency class.

If a light source is placed on the market as a part in a containing product in a packaging containing information to be visibly displayed at a point-of-sale prior to its purchase, the following text shall be displayed, clearly legible, on the outside of the containing product's packaging:

'This product contains a light source of energy efficiency class <X>'

where <X> shall be replaced by the energy efficiency class of the contained light source according to Annex III.

The text can be replaced by a pictogram representing a light source and including the arrow of Annex VII.

In case the product contains more than one light source, the sentence can be in plural, or repeated per light source, as suitable. If pictograms are used, they can be repeated per light source.

The text shall be present in any advertisement, formal price quote or tender offer disclosing energy-related or price information on the containing product and in any technical promotional material for the containing product, which describes specific technical parameters.

2.3. Information for products specified in Annex IV point 3

For the light sources specified in Annex IV point 3, the intended purpose shall be stated on all forms of packaging, product information and advertisement, together with a clear indication that the light source is not intended for use in other applications.

The technical documentation file drawn up for the purposes of conformity assessment in accordance with Article 3.3 of Regulation 2017/1369 shall list the technical parameters that make the product design specific to qualify for the exemption

ANNEX VI
Technical documentation

1. The technical documentation referred to in Article 3(d) shall include:
 - (a) the name and address of the supplier;
 - (b) supplier's model identifier, meaning the code, usually alphanumeric, which distinguishes a specific light source model from other models with the same trade mark or supplier's name;
 - (c) the model identifier of all equivalent models already placed on the market
 - (d) identification and signature of the person empowered to bind the supplier;
 - (e) technical parameters for measurements, including the declared values, as follows:
 - (1) useful luminous flux (Φ_{use}) in *lm*;
 - (2) colour rendering index (CRI);
 - (3) on-mode power (P_{on}) in *W*;
 - (4) beam angle in degrees, for directional light sources (DLS);
 - (5) correlated colour temperature (CCT) in *K*, for FL and HID light sources;
 - (6) 'standby power (P_{sb}) in *W*, including when it is zero;
 - (7) networked standby power (P_{net}) in *W*, for connected light sources (CLS);
 - (8) displacement factor (DF, $\cos(\phi_1)$), for LED and OLED mains light sources;
 - (9) colour consistency in MacAdam ellipse steps, for LED and OLED light sources;
 - (10) flicker metric PstLM, for LED and OLED light sources;
 - (11) stroboscopic effect metric SVM, for LED and OLED light sources;
 - (12) colour purity index, only for CTLS, for the following colours and dominant wavelength within the given range:

Colour	Dominant wave-length range
Blue	440nm – 490nm
Green	520nm – 540nm
Red	610nm – 670nm
 - (13) other measurable parameters from the public part of the product database.
 - (f) the calculations performed with the measured parameters, including the determination of the energy efficiency class according to Annex IV;
 - (g) references to the harmonised standards applied or other measurements standards used;
 - (h) testing conditions if not described sufficiently in point (f);
 - (i) the reference control settings, and instructions how they can be implemented, where applicable;

- (j) instructions how to remove lighting control parts and/or non-lighting parts, if any, or how to switch them off or minimize their power consumption during light source testing;
- (k) specific precautions that shall be taken when the model is assembled, installed, maintained or tested.

ANNEX VII

Information to be provided in visual advertisements, in promotional material, in distance selling except distance selling on the internet

1. In visual advertisements, for the purposes of ensuring conformity with the requirements laid down in Article 3(1)(e) and Article 4(1)(c), the energy class and the range of efficiency classes available on the label shall be shown with an arrow matching the letter of the energy class, as indicated in Figure 1.
2. In promotional material, for the purposes of ensuring conformity with the requirements laid down in Article 3(1)(f) and Article 4(1)(d), the energy class and the range of efficiency classes available on the label shall be shown with an arrow matching the letter of the energy class, as indicated in Figure 1.
3. Any paper based distance selling must show the energy class and the range of efficiency classes available on the label with an arrow matching the letter of the energy class, as indicated in Figure 1.
4. Telemarketing based distance selling must specifically inform the customer of the energy class of the product and of the range of energy classes available on the label, and that they can access the full label and the product information sheet through a free access website, or by requesting a printed copy.



Figure 1: Coloured arrow example, with range of energy classes indicated

For all the situations mentioned in points 1 to 4, it must be possible for the customer to access the full label and the product information sheet through a link to the product database website, or to request a printed copy.

ANNEX VIII

Information to be provided in the case of distance selling through the Internet

1. The appropriate label made available by suppliers in accordance with Article 3(1)(g) shall be shown on the display mechanism in proximity to the price of the product. The size shall be such that the label is clearly visible and legible and shall be proportionate to the size specified in point 2 of Annex III. The label may be displayed using a nested display, in which case the image used for accessing the label shall comply with the specifications laid down in point 3 of this Annex. If nested display is applied, the label shall appear on the first mouse click, mouse roll-over or tactile screen expansion on the image.
2. The image used for accessing the label in the case of nested display shall:
 - (a) be an arrow in the colour corresponding to the energy efficiency class of the product on the label;
 - (b) indicate on the arrow energy efficiency class of the product in white in a font size equivalent to that of the price; and
 - (c) have one of the following two formats:



3. In the case of nested display, the sequence of display of the label shall be as follows:
 - (a) the image referred to in point 2 of this Annex shall be shown on the display mechanism in proximity to the price of the product;
 - (b) the image shall link to the label;
 - (c) the label shall be displayed after a mouse click, mouse roll-over or tactile screen expansion on the image;
 - (d) the label shall be displayed by pop up, new tab, new page or inset screen display;
 - (e) for magnification of the label on tactile screens, the device conventions for tactile magnification shall apply;
 - (f) the label shall cease to be displayed by means of a close option or other standard closing mechanism;
 - (g) the alternative text for the graphic, to be displayed on failure to display the label, shall be the energy efficiency class of the product in a font size equivalent to that of the price.
4. The appropriate product information sheet made available by suppliers in accordance with Article 3(1)(h) shall be shown on the display mechanism in proximity to the price of the product. The size shall be such that the product information sheet is clearly visible and legible. The product information sheet may be displayed using a nested display or by referring to the product registration database established under Regulation (EU) 2017/1369, in which case the link used for accessing the product information sheet shall clearly and legibly indicate 'Product information sheet'. If nested display is used, the product information sheet shall appear on the first mouse click, mouse roll-over or tactile screen expansion on the link.

ANNEX IX

Verification procedure for market surveillance purposes

The verification tolerances set out in this Annex relate only to the verification of the measured parameters by Member State authorities and shall not be used by the supplier as an allowed tolerance to establish the values in the technical documentation. The values and classes on the label or in the product fiche shall not be more favourable for the supplier than the values reported in the technical documentation.

When verifying the compliance of a product model with the requirements laid down in this Delegated Regulation, the authorities of the Member States shall apply the following procedure:

1. The Member State authorities shall verify one single unit of the model for 2(a) and 2(b).

The Member State authorities shall verify 10 units of the light source model or 3 units of the separate control gear model for 2(c). For light sources, if the acquisition costs for the 10 units would exceed 500 euros, Member State authorities may reduce the sample size to 3 units. The verification tolerances are laid down in Table 6

2. The model shall be considered to comply with the applicable requirements if:
 - (a) the values given in the technical documentation pursuant to Article 3.3 of Regulation (EU) 2017/1369 (declared values), and, where applicable, the values used to calculate these values, are not more favourable for the supplier than the corresponding values given in the test reports; and
 - (b) the values published on the label and in the product information sheet are not more favourable for the supplier than the declared values, and the indicated energy efficiency class is not more favourable for the supplier than the class determined by the declared values; and
 - (c) when the Member State authorities test the units of the model, the determined values comply with the respective verification tolerances as given in Table 6, where 'determined value' means the arithmetical mean over the tested units of the measured values for a given parameter or the arithmetical mean of parameter values calculated from other measured values.
3. If the results referred to in point 2(a) or (b) are not achieved, the model and all models that have been listed as equivalent models in the manufacturer's or importer's technical documentation shall be considered not to comply with this Delegated Regulation.
4. If the result referred to in point 2(c) is not achieved, the model and all models that have been listed as equivalent models in the manufacturer's or the importer's technical documentation shall be considered not to comply with this Delegated Regulation.
5. The Member State authorities shall provide all relevant information to the authorities of the other Member States and to the Commission without delay after a decision being taken on the non-compliance of the model according to points 3 and 4.

The Member State authorities shall use the measurement and calculation methods set out in Annex II.

The Member State authorities shall only apply the verification tolerances that are set out in Table 6 and shall use only the procedure described in this Annex. No other tolerances, such as those set out in harmonised standards or in any other measurement method, shall be applied.

Table 6

Parameter	Sample size	Verification tolerances
Full-load on-mode power P_{on} [W]:		
$P_{on} \leq 2W$	3	The determined value shall not exceed the declared value by more than 0.20 W
	10	The determined value shall not exceed the declared value by more than 0.20 W
$2W < P_{on} \leq 5W$	3	The determined value shall not exceed the declared value by more than 10 %
	10	The determined value shall not exceed the declared value by more than 10 %.
$5W < P_{on} \leq 25W$	3	The determined value shall not exceed the declared value by more than 10 %.
	10	The determined value shall not exceed the declared value by more than 5 %.
$25W < P_{on} \leq 100W$	3	The determined value shall not exceed the declared value by more than 7.5 %.
	10	The determined value shall not exceed the declared value by more than 5 %.
$100W < P_{on}$	3	The determined value shall not exceed the declared value by more than 5 %.
	10	The determined value shall not exceed the declared value by more than 2.5 %.
Displacement factor [0-1]	3	The determined value shall not be less than the declared value minus 0.1 units
	10	The determined value shall not be less than the declared value minus 0.1 units.
Useful luminous flux Φ_{use} [lm]	3	The determined value shall not deviate from the declared by more than 10 %.
	10	The determined value shall not deviate from the declared by more than 5 %.
Standby power P_{sb} and Networked standby power P_{net} [W]	3	The determined value shall not exceed the declared value by more than 0.10 W.
	10	The determined value shall not exceed the declared value by more than 0.10 W.
CRI and R9 [0-100]	3	The determined value shall not be less than the declared value by more than 3,0 units.
	10	The determined value shall not be less than the declared value by more than 2,0 units.
Flicker [P_{st} LM] and Stroboscopic effect [SVM]	3	The determined value shall not exceed the declared value by more than 10 %.
	10	The determined value shall not exceed the declared value by more than 10 %.
Colour Consistency [MacAdam ellips steps]	3	The determined number of steps shall not exceed the declared number of steps.
	10	The determined number of steps shall not exceed the declared number of steps.
Beam angle (degrees)	3	The determined value shall not deviate from the declared value by more than 25 %
	10	The determined value shall not deviate from the declared

		value by more than 25 %.
Efficacy [lm/W]	3	The determined value (quotient) shall not be less than the declared value minus 10 %.
	10	The determined value (quotient) shall not be less than the declared value minus 5 %.
L₇₀B₅₀ lifetime (for LED and OLED)	3	The determined value shall not be less than the declared value minus 20 %
	10	The determined value shall not be less than the declared value minus 10 %
Lumen Maintenance Factor (for LED and OLED)	3	The determined X _{LMF} % of the sample following the test in Annex V shall not be less than X _{LMF, MIN} % according to Regulation <i>[XXX to insert the new ecodesign regulation for lighting]</i>
	10	
Survival Factor (for LED and OLED)	3	All 3 light sources of the test sample must be operational after completing the endurance test in Annex V of Regulation <i>[XXX to insert the new ecodesign regulation for lighting]</i> .
	10	At least 9 light sources of the test sample must be operational after completing the endurance test in Annex V of Regulation <i>[XXX to insert the new ecodesign regulation for lighting]</i>
Lumen Maintenance Factor (for FL and HID)	3	The determined value shall not be less than 90% of the declared value
	10	The determined value shall not be less than 90% of the declared value
Survival factor (for FL and HID)	3	The determined value shall not be less than the declared value
	10	The determined value shall not be less than the declared value
Colour Purity Index [%]	3	The determined value shall not be less than the declared value minus 10 %
	10	The determined value shall not be less than the declared value minus 5 %
Chromaticity coordinates (x,y) [-]	3	The determined x and y values shall not deviate from the declared values by more than 0,01 units
	10	The determined x and y values shall not deviate from the declared values by more than 0,005 units
Correlated Colour Temperature [K]	3	The determined value shall not deviate from the declared value by more than 10 %
	10	The determined value shall not deviate from the declared value by more than 5 %
Luminous peak intensity [cd]	3	The determined value shall not deviate from the declared value by more than 25 %.
	10	The determined value shall not deviate from the declared value by more than 25 %.

Suppliers of containing products shall provide information on request on how light sources can be removed for verification without these being permanently damaged and without permanent damage to the containing product.

For light sources with linear geometry which are scalable but of very long length, such as LED strips or strings, verification testing of market surveillance authorities shall consider a length of 50 cm, or, if the light source is not scalable there, the nearest value to 50 cm. The light source manufacturer shall indicate which control gear is suitable for this length.