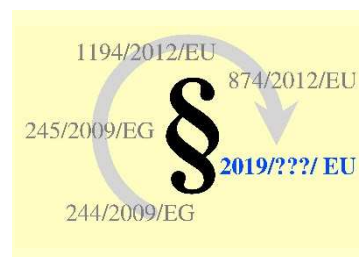


Texte zu den geplanten neuen EU-Regelungen zur umweltgerechten Produktgestaltung und zur Energieverbrauchs-kennzeichnung in der Beleuchtung – Zusammenstellung* des Umweltbundesamtes (UBA), Deutschland



Entwürfe der EU-Kommission vom 13. November 2017

Konsultationsforum am 7. Dezember 2017

– Vortrag von Frau Orsola Mautone, EU-Kommission –

Hinweis: Bitte beachten Sie, daß der angehängte Text nur in Englisch verfaßt ist.

EN: Information on the coming EU Lighting Regulations – Ecodesign and Energy Labelling – Compilation* of the Federal Environment Agency (UBA), Germany

The EU Commission's drafts of 13 November 2017

**Consultation Forum on 7 December 2017 —
Presentation by Mrs. Orsola Mautone, EU Commission**

FR: Informations sur les futures réglementations de l'UE concernant l'éclairage – l'écoconception et l'étiquetage énergétique – Compilation* de l'Agence Fédérale de l'Environnement (UBA), Allemagne

Les projets de la Commission Européenne du 13 novembre 2017

**Forum consultatif du 7 décembre 2017 —
Exposé de Mme. Orsola Mautone, Commission européenne**

Indication: Veuillez noter que le présent texte n'est disponible qu'en anglais.

* <https://www.eup-network.de/de/eup-netzwerk-deutschland/offenes-forum-eu-regelungen-beleuchtung/dokumente/texte/>

Liste der Dokumente zum Konsultationsforum am 7. Dezember 2017 und Kennzeichnung des vorliegenden Textes

EN: List of the documents on the Consultation Forum on 7 December 2017 and identification of the text at hand

FR: Liste des documents du forum consultatif du 7 décembre 2017 et marquage de le présent document

Diskussion ◇ **EN:** Discussion ◇ **FR:** Discussion

- Protokoll ◇ **EN:** Protocol ◇ **FR:** Protocole
- Schwerpunkte der Diskussion; Notizen von Christoph Mordziol, UBA ◇ **EN:** Focuses of the discussion; notes by Christoph Mordziol, UBA ◇ **FR:** Thèmes principaux de la discussion; notes de Christoph Mordziol, UBA

Vorträge und Hintergrundinformationen ◇ **EN:** Presentations and background information ◇ **FR:** Exposés et informations de fond

- Vortrag von Herrn Leo Wierda, Van Holsteijn en Kemna ◇ **EN:** Presentation by Mr. Leo Wierda, Van Holsteijn en Kemna ◇ **FR:** Exposé de M. Leo Wierda, Van Holsteijn en Kemna
- Vortrag von Frau Orsola Mautone, EU-Kommission ◇ **EN:** Presentation by Mrs. Orsola Mautone, EU Commission ◇ **FR:** Exposé de Mme. Orsola Mautone, Commission européenne
- Vortrag von Frau Ourania Georgoutsakou, Lighting Europe ◇ **EN:** Presentation by Mrs. Ourania Georgoutsakou, Lighting Europe ◇ **FR:** Exposé de Mme. Ourania Georgoutsakou, Lighting Europe
- Vortrag von Herrn Michael Scholand, CLASP (der Vortrag konnte aus Zeitgründen nicht mehr gehalten werden) ◇ **EN:** Presentation by Mr. Michael Scholand, CLASP (due to lack of time, the presentation could not been held) ◇ **FR:** Exposé de M. Michael Scholand, CLASP (faute de temps l'exposé n'a pas été donné)

Es folgt ein unveränderter Originaltext.

EN: The following is an unmodified original text.

FR: Ce qui suit est un texte original.



Lighting products

Consultation forum 7/12/2017

Orsola Mautone
Policy officer
DG ENER, C.3.

Current acts on Lighting

ECODESIGN

- Commission Regulation (EC) No 244/2009
 - non-directional household lamps
- Commission Regulation (EC) No 245/2009
 - products normally used as street lighting and office lighting
- Commission Regulation (EU) No 1194/2012
 - directional lamps, LEDs and related equipment

ENERGY LABELLING

- Commission Regulation (EU) No 874/2012



Ecodesign - Why the review?

1.

Commission Regulation (EC) No 244/2009 – art. 7

Commission Regulation (EU) No 245/2009 – art. 7

Commission Regulation (EU) No 1194/2012 – art. 8

= To reflect technological progress

Results of the review to be presented to the Consultation Forum

2.

Ecodesign Working Plan 2016-2019

lighting products as one of the major savings opportunities



Energy label – why the review?

New Energy Labelling Framework Regulation (EU) 2017/1369, entered into force 01/08/2017:

➡ Rescaling of the energy labels from an **A to G scale**

For lighting products:

➡ Energy labelling regulation introducing A to G rescaled labels should be adopted **by 2 November 2018**

MAIN DRIVERS FOR BOTH REVIEWS

Technology development

Simplification, including for market surveillance authorities

Updating tests and verification tolerances

Restrict loopholes with a redefinition of the scope



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ECODESIGN THE PROPOSAL

SCOPE

Placing on the market of **LIGHT SOURCES** and **SEPARATE CONTROL GEARS**

LIGHT SOURCES (art. 2(1))

an electrically operated product intended to emit and/or be possibly tuned to emit light, using incandescence (GLS and HL), fluorescence (FL), high-intensity discharge (HID), light emitting diodes (LED/OLED) or their combinations as lighting technology, with:

- (a) "white light" = 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 mm^2 of projected light-emitting surface area
- (c) a luminous flux between 60 and 82 000 lumen
- (d) a colour rendering index $\text{CRI} > 0$ Ra

+ High Pressure Sodium light sources (HPS), even if they do not fulfil (a)

SCOPE

LIGHT SOURCES

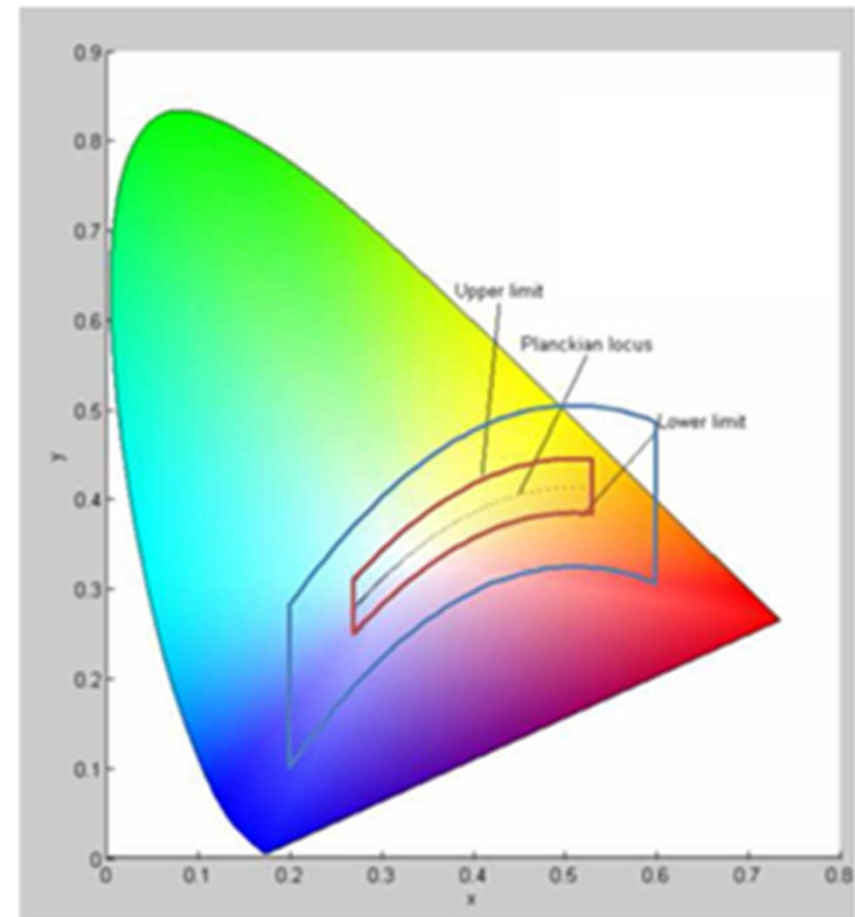
Definition of "**white light**" as in

Regulation (EU) No 245/2009

Regulation (EU) No 1194/2012

+

Regulation (EC) No 244/2009 for
information requirements for
special purposes lamps



Slide 8

MO(1

in the figure I would remove 'scope limit' and 'white limit'. Our scope is the red line, not the blue one ! (the figure is of a previous proposal)

MAUTONE Orsola Irene (ENER); 05/12/2017

SCOPE

LIGHT SOURCES

In scope	Out-of-scope (examples)
electrically operated , intended to emit and/or be possibly tuned to emit light with <u>all</u> following optical characteristics:	oil-, gas-, chemical-, bioluminescent- and low radio-active lamps.
'white light'	many of: IR, UV, horticulture, collagen, photodynamic therapy, medical skin treatment, pet-care, insect-killing, disinfection, neon, argon, coloured lamps
& flux density < 1000 lm per mm² (exact definition in regulation) (better < 500 lm/mm ² ?)	light projection, light guidance, laser sources, Xe/Kr flashtubes, vision systems, lithography, some HID
& flux > 60	huge variety of dashboard-, status-display, pilot-lights, purely decorative lamps
& flux < 82000 lm	some street-, sports-, studio-, stage-light
& CRI > 0 Ra	low-pressure sodium, monochrome lasers
& using incandescence (GLS,HL), FL, HID (as defined), LED (or combination)	HID different from MH, HPS and HPM, low-pressure sodium, plasma lamps

EXEMPTIONS

LIGHT SOURCES

Scope definition already excludes many products
→ **less exemptions needed**

To exempt products: clear, verifiable definitions needed to avoid loopholes and facilitate market surveillance
→ **specific exemptions and listed**

Precautionary principle
→ **exemptions for products related to health and safety**

 Annex I

SCOPE

SEPARATE CONTROL GEARS (art. 2.2 and 2.3)

a control gear that:

- is not physically integrated with a light source
- is placed on the market as a separate product or as a part of a containing product

'Control gear': a device 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.

Light source + integrated control gear = light source

Not a control gear → not in scope:

Electronics not taking mains as input

Power supplies in scope of Reg.(EC) No 278/2009

Lighting control parts

Non-lighting parts

Power over Ethernet (PoE) switch

SCOPE

The requirements also apply to light sources and separate control gear placed on the market in a **containing product**

*Containing products **are not** in scope, but the contained light sources and control gears are.*

Manufacturers/importers shall enable verification of compliance of light sources and control gears by market surveillance authorities.

Art. 4 + Annex IV:

To ensure that light sources and separate control gears are removable:

- without permanent mechanical damage
- by end-user or qualified professionals



Circular economy

ECODESIGN REQUIREMENTS

- 1. ENERGY EFFICIENCY REQUIREMENT**
- 2. FUNCTIONAL REQUIREMENTS**
- 3. INFORMATION REQUIREMENTS**

AS OF SEPTEMBER 2020

1. ENERGY EFFICIENCY REQUIREMENTS

LIGHT SOURCES

Max. allowed power in W at full-load:

$$P_{onmax} = C * (L + \Phi_{use} / (F * \eta)) * R$$

C = correction factor -----per light source type and special feature (Table 2)

R = CRI factor -----0.65 for CRI ≤ 25, (CRI+80)/160 for CRI > 25

F = efficacy factor ----- 1.00 for NDLS, 0.85 for DLS

Φ_{use} = useful luminous flux, in lm

L = end loss factor

η = threshold efficacy (in lm/W)

Table 1 sets out η and L

1. ENERGY EFFICIENCY REQUIREMENTS

LIGHT SOURCES

Annex III
Table 1

REMAIN
ON
THE
MARKET

	η [lm/W]	L [W]
LFL T5-HE	98,8	1,9
LFL T5-HO, $4000 \leq \Phi \leq 5000$ lm	83	1,9
LFL T5-HO, other lm output	79	1,9
FL T5 circular	79	1,9
FL T8 other than LFL 2-, 4- and 5-foot (incl. FL T8 U-shaped)	89,7	4,5
FL using magnetic induction, any length/flux	70,2	2,3
CFLni	70,2	2,3
FL T9 circular	71,5	6,2
HPS single-ended	88	50
HPS double-ended	78	47,7
MH ≤ 405 W single-ended	84,5	7,7
MH > 405 W single-ended	79,3	12,3
MH ceramic double-ended	84,5	7,7
MH quartz double-ended	79,3	12,3
Organic light-emitting diode (OLED)	65	1,5
HL R7s ≤ 2700 lm	26	13
Other	120	1,5
		2,0 for CLS

SAME
LEVEL

NEW

15

1. ENERGY EFFICIENCY REQUIREMENTS

LIGHT SOURCES



as a consequence not allowed as of September 2020:

LFL T8 2-,4-,5-foot length

HL LV DLS (MR11-GU4, MR16-GU5.3, AR111-G53)

HL LV capsules (G4 and GY6.35)

HL MV capsules (G9)

HL linear R7s > 2700 lm

CFLi

1. ENERGY EFFICIENCY REQUIREMENTS

Reminder:

GLS (legacy incandescent)
HL MV NDLS (2018)
HL MV DLS
HPM
LFL T12, T8halophosphor

Phased-out by existing regulations
Remain phased-out under proposed regulation

1. ENERGY EFFICIENCY REQUIREMENTS

SEPARATE CONTROL GEARS

For HL, FL, HID same requirements as in existing regulation
(see Table 3 in proposal)

For LED from 70% below 10 W to 90% above 300 W

 **no phase-out expected other than due to existing regulation**



1. ENERGY EFFICIENCY REQUIREMENTS

LIGHT SOURCES and SEPARATE CONTROL GEARS

- All light sources: standby power $< 0.5 \text{ W}$
- Connected light sources: networked standby power $< 0.5 \text{ W}$

- Separate control gear: no-load power $< 0.5 \text{ W}$
standby power $< 0.5 \text{ W}$

2. FUNCTIONAL REQUIREMENTS

Ensure functionality is maintained when increasing energy efficiency
Reduced compared to existing regulation: facilitate market surveillance

For light sources:

Colour Rendering: CRI \geq 80

except for HID $>$ 4000 lm (outdoor use)

except applications where standards allow CRI $<$ 80

Colour consistency: $<$ six-step MacAdam ellipse (only for LED and OLED)

same requirement as in CR 1194/2012

better definition (spatially averaged) resolves MSA doubts

Displacement factor:

($\cos \phi_1$)

$P \leq 2W$

$2W < P \leq 5W$

$5W < P \leq 25W$

$25W < P$

no limit

$DF \geq 0.4$

$DF \geq 0.7$

$DF \geq 0.9$

only for LED and OLED MLS

power factor for CFLi no longer relevant (CFLi phased-out)

distortion factor (harmonics) already in IEC 61000-3-2

2. FUNCTIONAL REQUIREMENTS

Flicker

Flicker depends on combination of light source and control gear (and dimmer; and grid)

Causes discomfort, can affect health

Good LEDs do not flicker, but bad LEDs can flicker (especially when dimmed)

Criterion: **Pst LM < 1 at full load (only for LED and OLED MLS)**

(st=short term, LM=Light Meter, IEC/TR 61547-1-2015).

Basis for criterion: CIE TC 1-83, CIE TN 006:2016.

Pst LM=1 means that **average observer has 50% probability of detecting flicker**

Also proposed in AUS and by US NEMA standard 77-2017

2. FUNCTIONAL REQUIREMENTS

Accelerated Endurance Testing – 1000 h (Annex V)

It will replace the current 6000 h test for survival factor and lumen maintenance

Only for LED and OLED (both light sources and separate control gears)

Composed of three tests:

Temperature cycling test
Supply switching test
Accelerated life test



This is the only
functional requirement for
separate control gears

3. INFORMATION REQUIREMENTS

On the light source itself

On the packaging

On a free – access website

Technical documentation

For both light sources and
separate control gears



For light sources:
reference to the info in the new
Energy Label delegated act

+ On the intended purpose of light sources and control gears of Annex I.3



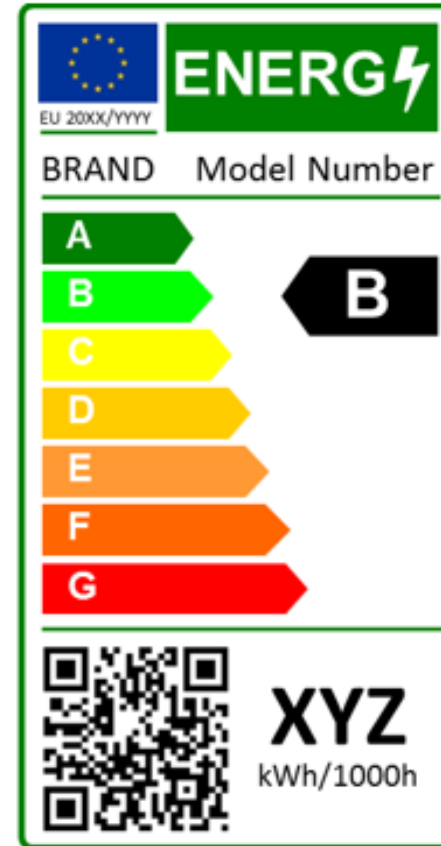
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ENERGY LABEL THE PROPOSAL

Applies from September 2020

Use A-G scale (instead of A⁺⁺-E)

The new scale will allow to distinguish between future LEDs
(rather than between LED and conventional)



Packaging



Packaging (facing buyer)
& internet

→ scale 85 - 210 lm/W, equal steps of 25 lm/W

Built in a way that:

- Classes A and B empty at September 2020
- Majority of models falls into class A at least 10 years later

Energy efficiency class	Total mains efficacy η_{TM} (lm /W)
A	$\eta_{TM} \geq 210$
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	$\eta_{TM} < 85$

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

NDLS, MLS $F_{TM}=1.000$
(total flux, mains input)

NDLS, NMLS $F_{TM}=0.926$
(total flux, external CG, =1/1.08)

DLS, MLS $F_{TM}=1.176$
(cone flux, mains input, =1/0.85)

DLS, NMLS $F_{TM}=1.089$
(cone flux, external CG, =0.926*1.176)

Applies to the same light sources in scope of the ecodesign proposal (**not** to *separate control gears*)

But: **less exemptions**

- *E.g. lamp in oven: only information requirements in ecodesign but subject to energy label*
- *E.g. light sources with a beam angle $< 10^\circ$: exempted from ecodesign but subject to energy label*
- *E.g. HID with $T_c > 7000$ K: exempted from ecodesign but subject to energy label*

Applies the same principle of containing product than in ecodesign, **but** no label to be provided/exposed (only info on the class)

No label on luminaire any longer

INFORMATION REQUIREMENTS ANNEX V

Product information sheet

Technical documentation

On the packaging

**In the product database
(Reg. (EU) 2017/1369)**

For distance selling

For distance selling via internet

Light source as an independent
product (including the label)

Light source in a containing
product (no label)

+ On the intended purpose of light sources and control gears of Annex 1.3²⁸



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Thank you for your attention



Orsola Mautone

Email: orsola.mautone@ec.europa.eu

Website: https://ec.europa.eu/energy/efficiency/index_en.htm