

Note: The blue highlights in the document indicate the changes compared to the version of this document discussed in the Ecodesign Consultation Forum on 15 September 2009.

WORKING DOCUMENT 5

on a possible Commission Regulation amending
Commission Regulation (EC) No 245/2009 of 18 March 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

AMENDMENTS PROPOSED IN THE REGULATION

(...)

Article 1

Subject matter and scope

This Regulation establishes ecodesign requirements for the placing on the market of fluorescent lamps without integrated ballast, of high intensity discharge lamps, and of ballasts and luminaires able to operate such lamps as defined in Article 2, even when they are integrated into other energy-using products.

This Regulation also provides indicative benchmarks for products intended for use in office lighting and public street lighting.

Conditions for exempting certain The products are listed in Annex I ~~shall be exempt from the requirements set out in this Regulation.~~

Rationale: This change is needed in view of the proposed reorganisation of the exemptions in Annex I (see explanation under part 2 of that Annex).

(...)

ANNEX I

General exemptions

Rationale: This change is needed in view of the proposed reorganisation of the exemptions (see explanation under part 2 of this Annex).

1. The following lamps shall be **exempted** from the provisions of ~~this regulation~~ **Annex III, provided that the technical documentation file drawn up for the purposes of conformity assessment pursuant to Article 8 of Directive 2005/32/EC states which of the technical parameters listed hereunder provide(s) a basis for their exemption:**

Rationale: As agreed in the Consultation Forum, even products exempted based on technical parameters should indicate to market surveillance the reason for their exemption.

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- a) lamps that are not white light sources as defined in Annex II; this exemption does not apply to high pressure sodium lamps,
- b) lamps that are directional light sources as defined in Annex II,
- e) ~~lamps intended for use in other applications than general lighting and lamps incorporated into other products not providing a general lighting function,~~

Rationale: point shifted to part 2 of this Annex, for the reasons explained there.

d) ~~blended high intensity discharge~~ lamps having:

- 6% or more of total radiation of the range 250-780 nm in the range of 250-400 nm ~~and,~~
- 11% or more of total radiation of the range 250-780 nm in the range of 630-780 nm ~~and,~~
- ~~5% or more of total radiation of the range 250-780 nm in the range of 640-700 nm, and~~

~~d) blended high intensity discharge lamps having:~~

- ~~the peak of the radiation between 315 - 400 nm (UVA) or 280 - 315 nm (UVB),~~

Rationale for c) and d): ELC/CELMA claim that the current provisions under c) (former point d) exempt many halophosphate lamps and thus leave the most inefficient fluorescent lamps on the market, which is clearly not the intention of the regulation as witnessed by the explanatory memorandum and by the efficiency and colour rendering requirements in Annex III. On the other hand, the exemption can remain valid for specialised mercury-mixed light HID lamps e.g. for pet care use.

e) double capped fluorescent lamps having:

- a diameter of 7 mm (T2) and less,
- a diameter of 16 mm (T5) and lamp power $P \leq 13W$ or $P > 80W$,
- a diameter of 38 mm (T12), lamp cap G-13 Medium BiPin base, +/-5m (+magenta,- green) color compensating filter value limit (cc). CIE coordinates $x=0.330$ $y=0.335$ and $x=0.415$ $y=0.377$, and
- a diameter of 38 mm (T12) and equipped with an external ignition strip,

f) single capped fluorescent lamps having:

- a diameter of 16 mm (T5) 2G11 4 pin base, $T_c = 3200K$ with chromaticity coordinates $x=0.415$ $y=0.377$ and $T_c = 5500K$ with chromaticity coordinates $x=0.330$ $y=0.335$,

g) high intensity discharge lamps with $T_c > 7000K$,

h) high intensity discharge lamps having a specific effective UV output $> 2mW/klm$, and

i) high intensity discharge lamps not having lamp cap E27, E40, PGZ12

2. The following ~~luminaires products~~ shall be exempted from the provisions of Annex III, provided that in all forms of product information it is stated that ~~they~~ are not

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intended for general lighting use within the meaning of this Regulation, or that they are intended for use in applications falling under the Directives listed in paragraphs (b) to (e) below. The intended purpose shall be stated for each product in the product information, and the technical documentation file drawn up for the purposes of conformity assessment pursuant to Article 8 of Directive 2005/32/EC shall list the technical parameters (if any) that make the product design specific for the stated intended purpose.:

a) products intended for use in applications other than general lighting and products incorporated into products which do not provide a general lighting function,

Rationale for the introduction to part 2 and for a): The full exemptions based on technical parameters are in Part 1 of this Annex (with some recommendations to change the individual details). Part 2 introduces a product information requirement as a condition for the exemption of products not defined by technical parameters in the Regulation itself. This reorganisation increases consistency with the provisions of Regulation 244/2009, where some lamps defined by technical parameters in Article 1 on scope are completely exempted from the requirements of the Regulation, whereas special purpose lamps are exempted on the condition that they provide information on their purpose in their product information and technical documentation. Such an approach also facilitates market surveillance of products exempted in part 2 of this Annex.

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b) lamps covered by the requirements of Directives 94/9/EC of the European Parliament and of the Council¹ or Directive 1999/92/EC of the European Parliament and of the Council²;

Rationale for b): special T12 lamps which are suitable for use in explosion proof surroundings and thus essential for lighting in many critical applications in e.g. the chemical industry are not covered by any existing exemption. For such lamps, an additional exemption needs to be created, as ELC/CELMA claim there is no alternative to this lamp type for applications areas with a risk of explosions.

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c) emergency lighting luminaires and emergency sign luminaires within the meaning of Council Directive 2006/95/EC³;

d) ballasts intended for use in luminaires defined in paragraph c) and designed to operate lamps in emergency conditions;

Rationale for d): ballasts for emergency lighting luminaires are currently not exempted, whereas in order to be ready to switch on in case of power failure, ELC/CELMA claim they need to have a standby power exceeding the

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¹ Directive 94/9/EC of the European Parliament and of the Council of 23 March 1994 on the approximation of the laws of the Member States concerning equipment and protective systems intended for use in potentially explosive atmospheres, OJ L 100, 19.4.1994, p. 1

² Directive 1999/92/EC of the European Parliament and of the Council of 16 December 1999 on minimum requirements for improving the safety and health protection of workers potentially at risk from explosive atmospheres, OJ L 23, 28.1.2000, p. 57

³ Directive 2006/95/EC of the European Parliament and of the Council of 12 December 2006 on the harmonisation of the laws of Member States relating to electrical equipment designed for use within certain voltage limits (codified version), OJ L 374, 27.12.2006, p. 10

requirements of the Regulation in Annex III.2.1. In practice, this means that emergency lighting ballasts will be banned from the EU market from April 2010, which means in turn that no new emergency lighting system can be set up any more in the EU and no repairs can be done to the existing ones due to the lack of ballasts. This was clearly not the intention, as it is visible from the luminaires exemption. The exemption for emergency lighting needs to be extended to ballasts for emergency lighting, otherwise important security problems would occur. The suggestion from the Consultation Forum that the exemption should be restricted to the standby requirements for ballasts that do not have a battery charging function is not picked up here, as introducing partial exemptions on emergency lighting products would be contrary to the principles set out in the introduction to Part 2 Annex I, and would entail the need to revise the other emergency product categories (lamps, luminaires) one by one to determine whether those exemptions can also be restricted in scope to some requirements only.

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- eb) luminaires covered by the requirements of Directives 94/9/EC of the European Parliament and of the Council ⁴, Directive 1999/92/EC of the European Parliament and of the Council ⁵, Directive 2006/42/EC of the European Parliament and of the Council ⁶, Council Directive 93/42/EEC ⁷, Council Directive 88/378/EEC ⁸ and luminaires integrated into equipment covered by these requirements.

ANNEX II

Technical parameters covered and definitions for the purposes of Annexes I and III to VII

1. Technical parameters for ecodesign requirements

~~For the purposes of compliance and verification of compliance with the requirements of this Regulation, the parameters below shall be established by reliable, accurate and reproducible measurement procedures, which take into account the generally recognised state of the art measurement methods.~~

Rationale: in line with the most recent Ecodesign implementing measures, the text on the measurement procedures is updated and moved to Annex IV Verification procedure.

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⁴ Directive 94/9/EC of the European Parliament and of the Council of 23 March 1994 on the approximation of the laws of the Member States concerning equipment and protective systems intended for use in potentially explosive atmospheres, OJ L 100, 19.4.1994, p. 1

⁵ Directive 1999/92/EC of the European Parliament and of the Council of 16 December 1999 on minimum requirements for improving the safety and health protection of workers potentially at risk from explosive atmospheres, OJ L 23, 28.1.2000, p. 57

⁶ Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC (recast), OJ L 157, 09/06/2006 P. 0024 - 0086

⁷ Council Directive 93/42/EEC of 14 June 1993 concerning medical devices, OJ L 169, 12/07/1993 P. 0001 - 0043

⁸ Council Directive 88/378/EEC of 3 May 1988 on the approximation of the laws of the Member States concerning the safety of toys, Official Journal L 187, 16/07/1988 P. 0001 - 0013

3. Definitions

(...)

(o) "Blended lamp" means a lamp containing a mercury vapour lamp and an incandescent lamp filament connected in series in the same bulb.

Rationale: the term "blended high intensity discharge lamp" is introduced in Annex I, therefore it has to be defined in Annex II.

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ANNEX III

Ecodesign requirements for fluorescent and high intensity discharge lamps and ballasts and luminaires able to operate such lamps

For each ecodesign requirement, the moment from which it applies is specified below. Unless a requirement is superseded or this is otherwise specified, it shall continue to apply together with the requirements introduced at later stages.

1. REQUIREMENTS FOR FLUORESCENT LAMPS WITHOUT INTEGRATED BALLAST AND FOR HIGH INTENSITY DISCHARGE LAMPS

1.1. Lamp efficacy requirements

A. First stage requirements

One year after the entry into force of this Regulation:

Double capped fluorescent lamps of 16 mm and 26 mm diameter (T5 and T8 lamps) shall have at least the rated luminous efficacies as specified in Table 1 at 25°C.

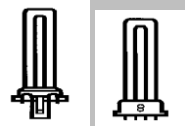
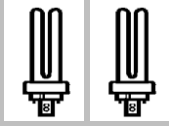
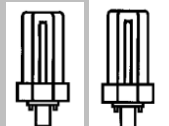
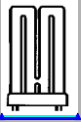
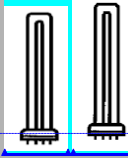
In case the nominal wattages are different from those listed in Table 1, lamps must reach the luminous efficacy of the nearest equivalent in terms of wattage, except T8 lamps above 50W, which must reach a luminous efficacy of 83 lm/W. If the nominal wattage is at equal distance from the two nearest wattages in the table, it shall conform to the higher efficacy of the two. If the nominal wattage is higher than the highest wattage in the table, it shall conform to the efficacy of that highest wattage.

Table 1 - Rated minimum efficacy values for T8 and T5 lamps

T8 (26 mm Ø)		T5 (16 mm Ø) High Efficiency		T5 (16 mm Ø) High Output	
Nominal wattage (W)	Rated luminous efficacy (lm/W), 100 h initial value	Nominal wattage (W)	Rated luminous efficacy (lm/W), 100 h initial value	Nominal wattage (W)	Rated luminous efficacy (lm/W), 100 h initial value
15	63	14	86	24	73
18	75	21	90	39	79
25	76	28	93	49	88
30	80	35	94	54	82
36	93			80	77
38	87				
58	90				
70	89				

Single capped fluorescent lamps shall have the following rated luminous efficacies at 25°C. In case the nominal wattages or lamp shapes are different from those listed in tables 2 to 5: lamps must reach the luminous efficacy of the nearest equivalent in terms of wattage and shape. If the nominal wattage is at equal distance from two wattages in the table, it shall conform to the higher efficacy of the two. If the nominal wattage is higher than the highest wattage in the table, it shall conform to the efficacy of that highest wattage.

Table 2 - Rated minimum efficacy values for single capped fluorescent lamps working on electromagnetic and electronic ballast

Small single parallel tube, lamp cap G23 (2 pin) or 2G7 (4 pin)		Double parallel tubes, lamp cap G24d (2 pin) or G24q (4 pin)		Triple parallel tubes, lamp cap GX24d (2 pin) or GX24q (4 pin)	
					
Nominal wattage (W)	Rated luminous efficacy (lm/W), 100 h initial value	Nominal wattage (W)	Rated luminous efficacy (lm/W), 100 h initial value	Nominal wattage (W)	Rated luminous efficacy (lm/W), 100 h initial value
5	5048	10	60	13	6962
7	57	13	6962	18	67
9	67	18	67	26	66
11	8276	26	66	32	75
4 legs in one plane, lamp cap 2G10 (4 pin) 		Long single parallel tube, lamp cap 2G11 (4 pin) 		42	76
Nominal wattage (W)	Rated luminous efficacy (lm/W), 100 h initial value	Nominal wattage (W)	Rated luminous efficacy (lm/W), 100 h initial value	57	75
18	61	18	67	70	74
24	71	24	75		
36	78	34	82		
		36	81		

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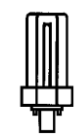
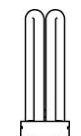
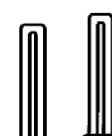
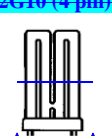
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Table 3 - Rated minimum efficacy values for single capped fluorescent lamps, working only on electronic ballast

Triple parallel tubes, lamp cap GX24q (4 pin)		Four parallel tubes, lamp cap GX24q (4 pin)		Long single parallel tube, lamp cap 2G11 (4 pin)		4 legs in one plane, lamp cap 2G10 (4 pin)	
							
Nominal wattage (W)	Rated luminous efficacy (lm/W), 100 h initial value	Nominal wattage (W)	Rated luminous efficacy (lm/W), 100 h initial value	Nominal wattage (W)	Rated luminous efficacy (lm/W), 100 h initial value	Nominal wattage (W)	Rated luminous efficacy (lm/W), 100 h initial value
32	75	57	75	18	67	18	61
42	74	70	74	24	75	24	71
57	75			34	82	36	78
70	74			36	81		
				40	83		
				55	82		
				80	75		

Rationale for Tables 2 and 3: Even though ELC/CELMA noted during the preparatory process of the regulation that using rated rather than nominal values for efficacy could have consequences on the appropriate levels for the requirements, they did not voice concrete concerns related to specific values in these tables before the very end of the decision making process. They claim now there are some lamps in Table 2 that are operated on electromagnetic ballast and cannot fulfil the efficacy requirements. Although they would have been phased out anyway by the third stage requirements in 8 years, their phase-out is thus advanced by 7 years. This is an unintended and arbitrary consequence compared to the phase-out planning for the other lamps in the table. It would mean that many consumers would have to change at high cost their luminaires and ballasts already 1 year after the entry into force of the regulation, while others who happen to use lamps with similar efficacy but different wattage/shape could keep their luminaires for 8 years. Therefore it is necessary to lower the efficacy requirement for the 5, 11 and 13W lamps.

In addition, certain lamp types should be moved from Table 2 to Table 3 and vice versa, because their current distribution does not match the table headings (lamps working on both electromagnetic and electronic ballasts for Table 2, only on electronic ballasts for Table 3).

Table 4 - Rated minimum efficacy values for single capped fluorescent lamps with square shape or (very) high output


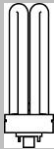

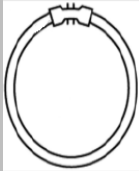
Single flat plane tube, lamp cap GR8 (2 pin), GR10q (4 pin) or GRY10q3 (4 pin)		Four or three parallel T5 tubes, lamp cap 2G8 (4 pin)	
			
Nominal wattage (W)	Rated luminous efficacy (lm/W), 100 h initial value	Nominal wattage (W)	Rated luminous efficacy (lm/W), 100 h initial value
10	65	60	67
16	66	82	75
21	64	85	71
28	73	120	75
38	71		
55	71		

Table 5 - Rated minimum efficacy values for T9 and T5 Circular lamps

T9 Circular, tube diameter 29 mm with base G10q		T5 Circular, tube diameter 16 mm with base 2GX13	
			
Nominal wattage (W)	Rated luminous efficacy (lm/W), 100 h initial value	Nominal wattage (W)	Rated luminous efficacy (lm/W), 100 h initial value
22	52	22	77
32	64	40	78
40	70	55	75
60	60	60	80

Corrections applicable to both single and double capped fluorescent lamps

The required luminous efficacy at 25°C may be lower than required in the tables above in the following cases:

Table 6 - Deduction percentages for rated minimum efficacy values for fluorescent lamps with high colour temperature, high colour rendering ~~and/or~~ second lamp envelope ~~or long life~~

Lamp parameter	Deduction from luminous efficacy at 25°C
Tc ≥ 5000K	- 10%
95 >> Ra > 90	- 20%
Ra > 95	- 30%
Second lamp envelope	- 10%
Lamp Survival Factor ≥ 0.50 after 40000 burning hours	- 5%

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Rationale for Table 6: Long-life fluorescent lamps (more than 40000 operating hours) allow owners of installations with difficultly accessible luminaires that are switched on constantly (or for long periods) to reduce their maintenance costs through a lower frequency of lamp replacements. These lamps are 5% less efficient than their counterparts with normal lifetime, however the increased energy costs are counterbalanced by the lower maintenance costs. In order to avoid an overall increase in life cycle costs to the users, an appropriate deduction should be introduced on efficacy requirements for such lamps that will avoid their phase-out.

The indicated deductions are cumulative.

Single and double capped fluorescent lamps that do not have their optimum temperature at 25°C must still comply at their optimum temperature with the luminous efficacy requirements as set out in the tables above.

B. Second stage requirements

Three years after the entry into force of this Regulation, the following efficacy requirements shall apply to fluorescent lamps without integrated ballast and high-intensity discharge lamps.

Double capped fluorescent lamps

The requirements applicable to double capped fluorescent lamps 26 mm in diameter (T8) during the first stage shall apply to all double capped fluorescent lamps of other diameters than those covered in the first stage.

These lamps must conform to the minimum efficacy of the T8 lamp which is their nearest equivalent with regards to wattage. If the nominal wattage is higher than the highest wattage in the table, it shall conform to the efficacy of that highest wattage.

The corrections defined for the first stage (Table 6) shall continue to apply.

High-intensity discharge lamps

Lamps with $T_c \geq 5000K$ or equipped with a second lamp envelope shall fulfil at least 90% of the applicable lamp efficacy requirements in tables 7, 8 and 9.

High Pressure Sodium lamps with $R_a \leq 60$ shall have at least the rated luminous efficacies in Table 7:

Table 7 - Rated minimum efficacy values for high pressure sodium lamps *with Ra ≤ 60*

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Rationale: Minor correction in the table header increasing consistency with the paragraph preceding the table.

Nominal Lamp wattage [W]	Rated Lamp Efficacy [lm/W] – Clear lamps	Rated Lamp Efficacy [lm/W] – Not clear lamps
$W \leq 45$	≥ 60	≥ 60
$45 < W \leq 55$	≥ 80	≥ 70
$55 < W \leq 75$	≥ 90	≥ 80
$75 < W \leq 105$	≥ 100	≥ 95
$105 < W \leq 155$	≥ 110	≥ 105
$155 < W \leq 255$	≥ 125	≥ 115
$255 < W \leq 605$	≥ 135	≥ 130

The requirements in Table 7 shall apply to high pressure sodium retrofit lamps designed to operate on high pressure mercury vapour lamp control gear only 6 years after the entry into force of this Regulation.

Metal halide lamps with $Ra \leq 80$ and high pressure sodium lamps with $Ra > 60$ shall have at least the rated luminous efficacies in Table 8:

Table 8 - Rated minimum efficacy values for Metal Halide Lamps *with Ra ≤ 80* and for high pressure sodium lamps with $Ra > 60$

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Rationale: Minor correction in the table header increasing consistency with the paragraph preceding the table.

Nominal Lamp Wattage [W]	Rated Lamp Efficacy [lm/W] – Clear lamps	Rated Lamp Efficacy [lm/W] – Not clear lamps
$W \leq 55$	≥ 60	≥ 60
$55 < W \leq 75$	≥ 75	≥ 70
$75 < W \leq 105$	≥ 80	≥ 75
$105 < W \leq 155$	≥ 80	≥ 75
$155 < W \leq 255$	≥ 80	≥ 75
$255 < W \leq 405$	≥ 85	≥ 75

Six years after the entry into force of this Regulation, other high intensity discharge lamps shall have at least the rated luminous efficacies in Table 9:

Table 9 - Rated minimum efficacy values for other high intensity discharge lamps

Nominal Lamp wattage [W]	Rated Lamp Efficacy [lm/W]
$W \leq 40$	50
$40 < W \leq 50$	55
$50 < W \leq 70$	65
$70 < W \leq 125$	70
$125 < W$	75

C. Third stage requirements

Eight years after the entry into force of this Regulation:

Fluorescent lamps without integrated ballast shall be ~~designed able to operate also with ballasts of energy efficiency class at least A2 or more efficient ballasts according to Annex III.2.2.~~

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Rationale: The original wording of the requirement for fluorescent lamps without integrated ballast is ambiguous, as it is unclear whether it allows fluorescent lamps that can operate both on ballasts of energy efficiency index A2 and on ballasts less efficient than A2. If only lamps incompatible with ballasts worse than A2 were allowed, all fluorescent lamp luminaires for T8 lamps and even some T5 luminaires would have to be changed by the users, due to a lack of replacement lamps. Such a large-scale luminaire replacement triggered by lamp requirements was not the intention of the Regulation. The sentence should be reformulated to clarify that the lamps are allowed even if they can operate both on A2 ballasts and on ballasts less efficient than A2.

Metal halide lamps shall have at least the rated luminous efficacies in Table 10:

Table 10 - Rated minimum efficacy values for metal halide lamps (3rd stage)

Nominal Lamp wattage (W)	Rated Lamp Efficacy (lm/W) – Clear lamps	Rated Lamp Efficacy (lm/W) – Not clear lamps
$W \leq 55$	≥ 70	≥ 65
$55 < W \leq 75$	≥ 80	≥ 75
$75 < W \leq 105$	≥ 85	≥ 80
$105 < W \leq 155$	≥ 85	≥ 80
$155 < W \leq 255$	≥ 85	≥ 80
$255 < W \leq 405$	≥ 90	≥ 85

Lamps equipped with $T_c \geq 5000K$ or with a second lamp envelope shall fulfil at least 90% of the applicable lamp efficacy requirements.

1.2. Lamp performance requirements

A. First stage requirements

One year after the entry into force of this Regulation:

Fluorescent lamps without integrated ballast covered by the requirements of Annex III.1.1.A shall have a colour rendering index (Ra) of at least 80.

B. Second stage requirements

Three years after the entry into force of this Regulation:

Fluorescent lamps without integrated ballast shall have a colour rendering index (Ra) of at least 80. They shall have at least the lamp lumen maintenance factors in Table 11:

Table 11 - Lamp lumen maintenance factors for single and double capped fluorescent lamps - Stage 2

Lamp lumen maintenance factor	Burning hours			
	2000	4000	8000	16000
Lamp types				
Double-Capped Fluorescent lamps operating on non-high frequency ballasts	0.95	0.92	0.90	-
<u>T8 Double-Capped Fluorescent lamps on high frequency ballast with warmstart</u>	<u>0.976</u>	<u>0.952</u>	<u>0.921</u>	0.90
<u>Other Double-Capped Fluorescent lamps on high frequency ballast with warmstart</u>	<u>0.95</u>	<u>0.92</u>	<u>0.90</u>	<u>0.90</u>
<u>Circular Single-Capped Fluorescent lamps operating on non-high frequency ballasts</u>	<u>0.80</u>	<u>0.74</u>	=	=
	<u>0.72 at 5000 burning hours</u>			
<u>Circular Single-Capped Fluorescent lamps operating on high frequency ballasts</u>	<u>0.85</u>	<u>0.83</u>	<u>0.80</u>	=
	<u>0.75 at 12000 burning hours</u>			
<u>Other Single-Capped Fluorescent lamps operating on non-high frequency ballasts</u>	<u>0.985</u>	<u>0.9078</u>	<u>0.8075</u>	-
<u>Other Single-Capped Fluorescent lamps on high frequency ballast with warmstart</u>	<u>0.970</u>	<u>0.9084</u>	<u>0.8081</u>	<u>-0.78</u>

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The following cumulative deductions shall be applied to the values in Table 11:

Table 11bis – Deduction percentages for fluorescent lamp lumen maintenance requirements

<u>Lamp parameter</u>	<u>Deduction from lamp lumen maintenance requirement</u>
<u>Lamps with $95 \geq Ra \geq 90$</u>	<u>At burning hours $\leq 8000h$: -5 %</u> <u>At burning hours $> 8000h$: -10 %</u>
<u>Lamps with $Ra > 95$</u>	<u>At burning hours $\leq 4000h$: -10 %</u> <u>At burning hours $> 4000h$: -15 %</u>
<u>Lamps with a colour temperature $\geq 5000K$</u>	<u>-10 %</u>

Fluorescent lamps without integrated ballast shall have at least the lamp survival factors in Table 12:

Table 12 - Lamp survival factors for single and double capped fluorescent lamps – Stage 2

Lamp survival factor	Burning hours			
	2000	4000	8000	16000
Lamp types				
Double-Capped Fluorescent lamps operating on non-high frequency ballasts	0.99	0.97	0.90	-
Double-Capped Fluorescent lamps on high frequency ballast with warmstart	0.99	0.97	0.92	0.90
<u>Circular Single-Capped Fluorescent lamps operating on non-high frequency ballasts</u>	<u>0.98</u>	<u>0.77</u>	<u>-</u>	<u>-</u>
	<u>0.50 at 5000 burning hours</u>			
<u>Circular Single-Capped Fluorescent lamps operating on high frequency ballasts</u>	<u>0.99</u>	<u>0.97</u>	<u>0.85</u>	<u>-</u>
	<u>0.50 at 12000 burning hours</u>			
<u>Other Single-Capped Fluorescent lamps operating on non-high frequency ballasts</u>	<u>0.958</u>	<u>0.920</u>	0.50	-
<u>Other Single-Capped Fluorescent lamps on high frequency ballast with warmstart</u>	<u>0.952</u>	<u>0.908</u>	<u>0.878</u>	-

Rationale for Tables 11, 11bis and 12: As a consequence of the current LLMF and LSF requirements, ELC/CELMA claim that several lamp families of double and single-capped fluorescent lamps would be phased out, including all circular lamps and lamps with high colour rendering and/or high colour temperature. This would cause considerable costs to EU27 users, as they would

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often have to replace the luminaire to accommodate conforming lamps, while the gain in lifetime compared to the currently feasible values would be negligible. Since best performance with regards to lamp lumen maintenance as well as lamp survival are of critical importance to customers, according to industry these values are already improved to the extent possible.

High pressure sodium lamps shall have at least the lamp lumen maintenance factors and lamp survival factors in Table 13:

Table 13 - Lamp lumen maintenance factors & lamp survival factors for high pressure sodium lamps - Stage 2

Burning hours	Lamp lumen maintenance factor	Lamp survival factor
12000 h (P < 75 W)	> 0.80	> 0.90
16000 h (P > 75 W)	> 0.85	> 0.90

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High pressure sodium lamp category and burning hours for measurement	Lamp lumen maintenance factor	Lamp survival factor	
P < 75 W LLMF/LSF measured at 12000 burning hours	Ra < 60	> 0.80	> 0.90
	Ra > 60	> 0.75	> 0.75
P > 75 W LLMF/LSF measured at 16000 burning hours	all retrofit lamps designed to operate on high pressure mercury vapour lamp ballast	> 0.75	> 0.80
	Ra < 60	> 0.85	> 0.90
	Ra > 60	> 0.70	> 0.65
	all retrofit lamps designed to operate on high pressure mercury vapour lamp ballast	> 0.75	> 0.55

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The requirements in Table 13 for retrofit lamps designed to operate on high pressure mercury vapour lamp ballast shall be applicable until 6 years after the entry into force of this Regulation.

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Rationale: As a consequence of the current lamp lumen maintenance factor and lamp survival factor requirements, high pressure sodium lamps with high colour rendering and those designed to operate on high pressure mercury vapour lamp control gear would be phased out. Annex III.1.1. contains dedicated energy efficiency requirements for these lamp types, therefore the provisions of Table 13 should be modified to allow them to exist as foreseen by Annex III.1.1.

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C. Third stage requirements

Eight years after the entry into force of this Regulation:

Metal halide lamps shall have at least the lamp lumen maintenance factors and lamp survival factors in Table 14:

Table 14 - Lamp lumen maintenance factors & lamp survival factors for metal halide lamps - Stage 3

Burning Hours	Lamp lumen maintenance factor	Lamp survival factor
12000	> 0.80	> 0.80

1.3. Product information requirements on lamps

One year after the entry into force of this Regulation, manufacturers shall provide at least the following information on free-access websites and in other forms they deem appropriate for each of their fluorescent lamps without integrated ballast and each of their high intensity discharge lamps. That information shall also be contained in the technical documentation file drawn up for the purposes of conformity assessment pursuant to Article 8 of Directive 2005/32/EC.

- a) Nominal and rated lamp wattage;
- b) Nominal and rated lamp luminous flux;
- c) Rated lamp efficacy at 100 h in standard conditions (25°C, for T5 lamps at 35°C). For fluorescent lamps both at 50 Hz (mains frequency) operation (where applicable) and at High Frequency (> 50 Hz) operation (where applicable) for the same rated luminous flux in all cases, indicating for High Frequency operation the calibration current of the test conditions and/or the rated voltage of the HF generator with the resistance. It shall be stated in a conspicuous manner that the power dissipated by auxiliary equipment such as ballasts is not included in the power consumed by the source;
- d) Rated lamp Lumen Maintenance Factor at 2000h, 4000 h, 6000 h, 8000h, 12000 h, 16000 h and 20000 h (up to 8000h only for new lamps on the market where no data is yet available), indicating which operation mode of the lamp was used for the test if both 50 Hz and High Frequency operation are possible;
- e) Rated lamp Survival Factor at 2000h, 4000 h, 6000h, 8000h, 12000 h, 16000 h and 20000 h (up to 8000h only for new lamps on the market where no data is yet available), indicating which operation mode of the lamp was used for the test if both 50 Hz and High Frequency operation are possible;
- f) lamp mercury content as X.X mg;
- g) Colour Rendering Index (Ra) of the lamp;
- h) Colour temperature of the lamp;

i) Ambient temperature inside the luminaire at which the lamp was designed to maximize its luminous flux. If this temperature is equal to or lower than 0°C or equal to or higher than 50°C, if the lamp does not fulfill at least 90% of the respective luminous efficacy requirement in Annex III.1.1 at an ambient temperature of 25°C (100% for T5 lamps), it shall be stated that the lamp is not suitable for indoor use at standard room temperatures.

Rationale: Some fluorescent lamps provide their maximum luminous flux at the temperatures prevailing in their luminaires that are higher than room temperature, and they do not achieve 90% of their maximum luminous flux at 25°C. According to the original paragraph, they would therefore have to

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display on the packaging that they are "not suitable for indoor use at standard room temperatures", even though they are actually destined for use in room illumination. The contradiction should be resolved by adapting the paragraph so that it does not cover these lamps, only lamps that are clearly designed for very cold or very hot temperatures (0°C or lower, 50°C or higher).

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2. REQUIREMENTS ON BALLASTS FOR FLUORESCENT LAMPS WITHOUT INTEGRATED BALLAST AND BALLASTS FOR HIGH INTENSITY DISCHARGE LAMPS

2.1. Ballast energy performance requirements

Multiwattage ballasts shall comply with the requirements below according to each wattage on which they operate.

A. First stage requirements

One year after this Regulation comes into force:

The minimum energy efficiency index class shall be B2 for ballasts covered by table 17 in Annex III.2.2, A3 for the ballasts covered by table 18, and A1 for dimmable ballasts covered by table 19.

At the dimming position corresponding to 25% of the lumen output of the operated lamp, the input power (P_{in}) of the lamp-ballast circuit shall not exceed:

$$P_{in} < 50\% * P_{Lrated} / \eta_{ballast}$$

Where P_{Lrated} is the rated lamp power and $\eta_{ballast}$ is the minimum energy efficiency limit of the respective EEI class.

The power consumption of the fluorescent lamp ballasts shall not exceed 1.0 W when operated lamps do not emit any light in normal operating conditions and when other possible connected components (network connections, sensors etc.) are disconnected. If they cannot be disconnected, their power shall be measured and deducted from the result.

B. Second stage requirements

Three years after the implementing measure comes into force:

Ballasts for high intensity discharge lamps shall have the efficiency described in Table 15.

Table 15 - Minimum efficiency for ballasts for high intensity discharge lamps - Stage 2

Nominal lamp wattage (P) W	Minimum ballast efficiency ($\eta_{ballast}$) %
$P \leq 30$	65
$30 < P \leq 75$	75
$75 < P \leq 105$	80
$105 < P \leq 405$	85

P > 405	90
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The power consumption of ballasts used with fluorescent lamps without integrated ballast shall not exceed 0.5 W when operated lamps do not emit any light in normal operating conditions. This requirement shall apply to ballasts when other possible connected components (network connections, sensors etc.) are disconnected. If they cannot be disconnected, their power shall be measured and deducted from the result.

C. Third stage requirements

Eight years after this Regulation comes into force:

Ballasts for fluorescent lamps without integrated ballast shall have the efficiency:

$$\eta_{\text{ballast}} \geq \text{EBbFL}$$

where EBbFL is defined in Annex II.3.g

Ballasts for high intensity discharge lamps shall have the efficiency described in Table 16.

Table 16 – Minimum efficiency for ballasts for high intensity discharge lamps – Stage 3

Nominal lamp wattage (P) W	Minimum ballast efficiency (η_{ballast}) %
P ≤ 30	78
30 < P ≤ 75	85
75 < P ≤ 105	87
105 < P ≤ 405	90
P > 405	92

2.2. Product information requirements on ballasts

Manufacturers of ballasts shall provide at least the following information on free-access websites and in other forms they deem appropriate for each of their ballast models. That information shall also be affixed in a distinct and durable form to the ballast. It shall also be contained in the technical documentation file drawn up for the purposes of conformity assessment pursuant to Article 8 of Directive 2005/32/EC.

A. First stage requirements

One year after the entry into force of this Regulation:

For ballasts for fluorescents lamps, an energy efficiency index (EEI) class shall be provided as defined below.

“Energy efficiency index” (EEI) means a classification system of ballasts for fluorescent lamps without integrated ballasts in classes according to efficiency limit values. The classes for non-dimmable ballasts are (in descending order of efficiency) A2 BAT, A2, A3, B1, B2 and for dimmable ballasts A1 BAT and A1.

Table 17 contains the EEI classes for ballasts which are designed to operate the lamps mentioned in the table or other lamps which are designed to be operated by the same ballasts as the lamps mentioned in the table (meaning that the data of the reference ballast is equal).

Table 17 – Energy efficiency index requirements for non-dimmable ballasts for fluorescent lamps

LAMP DATA					BALLAST EFFICIENCY (Plamp / Pinput)					
Lamp type	Nominal Wattage	ILCOS CODE	Rated/typical wattage		A2 BAT	A2	A3	B1	B2	
			50Hz	HF						
	W		W	W						
T8	15	FD-15-E-G13-26/450	15	13.5	87.8 %	84.4 %	75.0 %	67.9 %	62.0 %	
T8	18	FD-18-E-G13-26/600	18	16	87.7 %	84.2 %	76.2 %	71.3 %	65.8 %	
T8	30	FD-30-E-G13-26/900	30	24	82.1 %	77.4 %	72.7 %	79.2 %	75.0 %	
T8	36	FD-36-E-G13-26/1200	36	32	91.4 %	88.9 %	84.2 %	83.4 %	79.5 %	
T8	38	FD-38-E-G13-26/1050	38.5	32	87.7 %	84.2 %	80.0 %	84.1 %	80.4 %	
T8	58	FD-58-E-G13-26/1500	58	50	93.0 %	90.9 %	84.7 %	86.1 %	82.2 %	
T8	70	FD-70-E-G13-26/1800	69.5	60	90.9 %	88.2 %	83.3 %	86.3 %	83.1 %	
TC-L	18	FSD-18-E-2G11	18	16	87.7 %	84.2 %	76.2 %	71.3 %	65.8 %	
TC-L	24	FSD-24-E-2G11	24	22	90.7 %	88.0 %	81.5 %	76.0 %	71.3 %	
TC-L	36	FSD-36-E-2G11	36	32	91.4 %	88.9 %	84.2 %	83.4 %	79.5 %	
TCF	18	FSS-18-E-2G10	18	16	87.7 %	84.2 %	76.2 %	71.3 %	65.8 %	
TCF	24	FSS-24-E-2G10	24	22	90.7 %	88.0 %	81.5 %	76.0 %	71.3 %	
TCF	36	FSS-36-E-2G10	36	32	91.4 %	88.9 %	84.2 %	83.4 %	79.5 %	
TC-D / DE	10	FSQ-10-E-G24q=1 G24d=1	FSQ-10-I-	10	9.5	89.4 %	86.4 %	73.1 %	67.9 %	59.4 %
TC-D / DE	13	FSQ-13-E-G24q=1 G24d=1	FSQ-13-I-	13	12.5	91.7 %	89.3 %	78.1 %	72.6 %	65.0 %
TC-D / DE	18	FSQ-18-E-G24q=2 G24d=2	FSQ-18-I-	18	16.5	89.8 %	86.8 %	78.6 %	71.3 %	65.8 %
TC-D / DE	26	FSQ-26-E-G24q=3 FSQ-26-I-G24d=3 FSQ-26-E-G24q=1 FSQ-26-I-G24d=1		26	24	91.4 %	88.9 %	82.8 %	77.2 %	72.6 %
TC-T / TE	13	FSM-13-E-GX24q=1 GX24d=1	FSM-13-I-	13	12.5	91.7 %	89.3 %	78.1 %	72.6 %	65.0 %
TC-T / TE	18	FSM-18-E-GX24q=2 GX24d=2	FSM-18-I-	18	16.5	89.8 %	86.8 %	78.6 %	71.3 %	65.8 %

TC-T / TC-TE	26	FSM-26-E-GX24q=3 GX24d=3	FSM-26-I-	26.5	24	91.4 %	88.9 %	82.8 %	77.5 %	73.0 %
TC-DD / DDE	10	FSS-10-E-GR10q	FSS-10-L/P/H-GR10q	10.5	9.5	86.4 %	82.6 %	70.4 %	68.8 %	60.5 %
TC-DD / DDE	16	FSS-16-E-GR10q FSS-16-I-GR8 FSS-16-L/P/H-GR10q	FSS-16-E-GR10q FSS-16-L-GR10q FSS-10-L/P/H-GR10q	16	15	87.0 %	83.3 %	75.0 %	72.4 %	66.1 %
TC-DD / DDE	21	FSS-21-E-GR10q FSS-21-L/P/H-GR10q	FSS-21-E-GR10q FSS-21-L-GR10q FSS-21-L/P/H-GR10q	21	19.519	89.7 % 89.4 %	86.7 % 86.4 %	78.0 % 79.2 %	73.9 %	68.8 %
TC-DD / DDE	28	FSS-28-E-GR10q FSS-28-L-GR8+10q FSS-28-L/P/H-GR10q		28	24.526	89.1 % 89.7 %	86.0 % 86.7 %	80.3 % 81.3 %	78.2 %	73.9 %
TC-DD / DDE	38	FSS-38-E-GR10q	FSS-38-L/P/H-GR10q	38.5	34.536	92.0 % 92.3 %	89.6 % 90.0 %	85.2 % 85.7 %	84.1 %	80.4 %
TC	5	FSD-5-I-G23	FSD-5-E-2G7	5.4	5	72.7 %	66.7 %	58.8 %	49.3 %	41.4 %
TC	7	FSD-7-I-G23	FSD-7-E-2G7	7.1	6.5	77.6 %	72.2 %	65.0 %	55.7 %	47.8 %
TC	9	FSD-9-I-G23	FSD-9-E-2G7	8.7	8	78.0 %	72.7 %	66.7 %	60.3 %	52.6 %
TC	11	FSD-11-I-G23	FSD-11-E-2G7	11.8	11	83.0 %	78.6 %	73.3 %	66.7 %	59.6 %
T5	4	FD-4-E-G5-16/150		4.5	3.6	64.9 %	58.1 %	50.0 %	45.0 %	37.2 %
T5	6	FD-6-E-G5-16/225		6	5.4	71.3 %	65.1 %	58.1 %	51.8 %	43.8 %
T5	8	FD-8-E-G5-16/300		7.1	7.5	69.9 %	63.6 %	58.6 %	48.9 %	42.7 %
T5	13	FD-13-E-G5-16/525		13	12.8	84.2 %	80.0 %	75.3 %	72.6 %	65.0 %
T9-C	22	FSC-22-E-G10q-29/200		22	19	89.4 %	86.4 %	79.2 %	74.6 %	69.7 %
T9-C	32	FSC-32-E-G10q-29/300		32	30	88.9 %	85.7 %	81.1 %	80.0 %	76.0 %
T9-C	40	FSC-40-E-G10q-29/400		40	32	89.5 %	86.5 %	82.1 %	82.6 %	79.2 %
T2	6	FDH-6-L/P-W4.3x8.5d-7/220			5	72.7 %	66.7 %	58.8 %		
T2	8	FDH-8-L/P-W4.3x8.5d-7/320			7.8	76.5 %	70.9 %	65.0 %		
T2	11	FDH-11-L/P-W4.3x8.5d-7/420			10.8	81.8 %	77.1 %	72.0 %		
T2	13	FDH-13-L/P-W4.3x8.5d-7/520			13.3	84.7 %	80.6 %	76.0 %		
T2	21	FDH-21-L/P-W4.3x8.5d-7/			21	88.9 %	85.7 %	79.2 %		
T2	23	FDH-23-L/P-W4.3x8.5d-7/			23	89.8 %	86.8 %	80.7 %		

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T5-E	14	FDH-14-G5-L/P-16/550		13.7	84.7 %	80.6 %	72.1 %		
T5-E	21	FDH-21-G5-L/P-16/850		20.7	89.3 %	86.3 %	79.6 %		
T5-E	24	FDH-24-G5-L/P-16/550		22.5	89.6 %	86.5 %	80.4 %		
T5-E	28	FDH-28-G5-L/P-16/1150		27.8	89.8 %	86.9 %	81.8 %		
T5-E	35	FDH-35-G5-L/P-16/1450		34.7	91.5 %	89.0 %	82.6 %		
T5-E	39	FDH-39-G5-L/P-16/850		38	91.0 %	88.4 %	82.6 %		
T5-E	49	FDH-49-G5-L/P-16/1450		49.3	91.6 %	89.2 %	84.6 %		
T5-E	54	FDH-54-G5-L/P-16/1150		53.8	92.0 %	89.7 %	85.4 %		
T5-E	80	FDH-80-G5-L/P-16/1150		80	93.0 %	90.9 %	87.0 %		
T5-E	95	FDH-95-G5-L/P-16/1150		95	92.7 %	90.5 %	84.1 %		
T5-E	120	FDH-120-G5-L/P-16/1450		120	92.5 %	90.2 %	84.5 %		
T5-C	22	FSCH-22-L/P-2GX13-16/225		22.3	88.1 %	84.8 %	78.8 %		
T5-C	40	FSCH-40-L/P-2GX13-16/300		39.9	91.4 %	88.9 %	83.3 %		
T5-C	55	FSCH-55-L/P-2GX13-16/300		55	92.4 %	90.2 %	84.6 %		
T5-C	60	FSCH-60-L/P-2GX13-16/375		60	93.0 %	90.9 %	85.7 %		
TC-LE	40	FSDH-40-L/P-2G11		40	91.4 %	88.9 %	83.3 %		
TC-LE	55	FSDH-55-L/P-2G11		55	92.4 %	90.2 %	84.6 %		
TC-LE	80	FSDH-80-L/P-2G11		80	93.0 %	90.9 %	87.0 %		
TC-TE	32	FSMH-32-L/P-2GX24q=3		32	91.4 %	88.9 %	82.1 %		
TC-TE	42	FSMH-42-L/P-2GX24q=4		43	93.5 %	91.5 %	86.0 %		
TC-TE	57	FSM6H-57-L/P-2GX24q=5 FSM8H-57-L/P-2GX24q=5		56	91.4 %	88.9 %	83.6 %		
TC-TE	70	FSM6H-70-L/P-2GX24q=6 FSM8H-70-L/P-2GX24q=6		70	93.0 %	90.9 %	85.4 %		
TC-TE	60	FSM6H-60-L/P-2G8=1		63	92.3 %	90.0 %	84.0 %		
TC-TE	62	FSM8H-62-L/P-2G8=2		62	92.2 %	89.9 %	83.8 %		
TC-TE	82	FSM8H-82-L/P-2G8=2		82	92.4 %	90.1 %	83.7 %		
TC-TE	85	FSM6H-85-L/P-2G8=1		87	92.8 %	90.6 %	84.5 %		
TC-TE	120	FSM6H-120-L/P-2G8=1 FSM8H-120-L/P-2G8=1		122	92.6 %	90.4 %	84.7 %		
TC-DD	55	FSSH-55-L/P-		55	92.4 %	90.2 %	84.6 %		

			GRY10q3 _{FSSH-55-L/P-GR10q}						
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Rationale: ELC/CELMA suggested to change these ILCOS codes as the current ones are incorrect. The high frequency typical wattage values of three lamps are also changed to align them to the latest development in lamp standardization (IEC TC34A/1323/DC). This affects slightly the efficiency values, which are amended respectively. The calculation was made by keeping the ballast losses (containing lamp preheating losses) unchanged. This modification is needed as the measurement should be made at the standardized typical lamp power.

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In addition, non-dimmable ballasts not included in table 17 shall be assigned an EEI depending on their efficiency as described in Table 18:

Table 18 – Energy efficiency index requirements for non-dimmable ballasts for fluorescent lamps not included in Table 17

η_{ballast}	Energy Efficiency Index
$\geq 0.94 * \text{EBb}_{\text{FL}}$	A3
$\geq \text{EBb}_{\text{FL}}$	A2
$\geq 1-0.75*(1-\text{EBb}_{\text{FL}})$	A2 BAT

Where EBb_{FL} is defined in Annex II.3.g.

Futhermore, dimmable fluorescent lamp ballasts receive EEI classes according to the class into which the ballast would fall when it is operated at the 100% lumen output, as described in Table 19.

Table 19 - Energy efficiency index requirements for dimmable ballasts for fluorescent lamps

Complied class at 100% lumen output	Energy Efficiency Index of dimmable ballast
A3	A1
A2	A1 BAT

Multi-wattage ballasts shall either be classified according to their efficiency under the lowest (worst) efficiency, or a relevant class shall be indicated for each operated lamp.

B. Second stage requirements

Three years after the entry into force of this Regulation:

For ballasts for high intensity discharge lamps, the efficiency of the ballast as defined in Annex II.1.d shall be indicated.

3. REQUIREMENTS FOR LUMINAIRES FOR FLUORESCENT LAMPS WITHOUT INTEGRATED BALLAST AND FOR LUMINAIRES FOR HIGH INTENSITY DISCHARGE LAMPS

3.1. Luminaire energy performance requirements

A. First stage requirements

One year after this Regulation comes into force:

The power consumption of luminaires for fluorescent lamps without integrated ballast shall not exceed the sum of the power consumption of the incorporated ballasts when the lamps they are normally operating do not emit any light when other possible connected components (network connections, sensors etc.) are disconnected. If they cannot be disconnected, their power shall be measured and deducted from the result.

B. Second stage requirements

Three years after this Regulation comes into force:

Luminaires for fluorescent lamps without integrated ballast and for high intensity discharge lamps shall be compatible with ballasts complying with the third stage requirements, except luminaires with ingress protection grade at least IP4X.

The power consumption of luminaires for high intensity discharge lamps shall not exceed the sum of the power consumption of the incorporated ballasts when the lamps they are normally operating do not emit any light when other possible connected components (network connections, sensors etc.) are disconnected. If they cannot be disconnected, their power shall be measured and deducted from the result.

C. Third stage requirements

Eight years after this Regulation comes into force:

All luminaires for fluorescent lamps without integrated ballast and for high intensity discharge lamps shall be compatible with ballasts complying with the third stage requirements.

3.2. Product information requirements on luminaires

A. First stage requirements

18 months after this Regulation comes into force:

Manufacturers of luminaires for fluorescent lamps without integrated ballast with total lamp lumen above 2000 lumen shall provide at least the following information on free-access websites and in other forms they deem appropriate for each of their luminaire models. That information shall also be contained in the technical documentation file drawn up for the purposes of conformity assessment pursuant to Article 8 of Directive 2005/32/EC.

- a) If the luminaire is placed on the market together with the ballast, information on the efficiency of the ballast according to Annex III.2.2, in accordance with the ballast manufacturer's data;
- b) If the luminaire is placed on the market together with the lamp, lamp efficacy (lm/W) of the lamp, in accordance with the lamp manufacturer's data;
- c) If the ballast or the lamp are not placed on the market together with the luminaire, references used in manufacturers' catalogues must be provided on the types of lamps or ballasts compatible with the luminaire (e.g. ILCOS code for the lamps);
- d) Maintenance instructions to ensure that the luminaire maintains, as far as possible, its original quality throughout its lifetime;
- e) Disassembly instructions.

B. Second stage requirements

Three years after this Regulation comes into force:

The information provision requirements of the first stage shall also apply to luminaires for high intensity discharge lamps with total lamp lumen above 2000 lumen. In addition, all luminaires for high intensity discharge lamps shall indicate that they are designed for either clear and/or coated lamps within the meaning of Annex II.

ANNEX IV
Verification procedure for market surveillance purposes

When performing the market surveillance checks referred to in Article 3 (2) of Directive 2005/32/EC, the authorities of the Member States shall apply the following verification procedure for the requirements set out in Annex III.

[Member States authorities shall use reliable, accurate and reproducible measurement procedures, which take into account the generally recognised state of the art measurement methods, including methods set out in documents the reference numbers of which have been published for that purpose in the Official Journal of the European Union.](#)

Rationale: in line with the most recent Ecodesign implementing measures, the text on the measurement procedures is updated and moved into this Annex from Annex II (Definitions). A list of the reference numbers of the documents setting out the methods will be published in the Official Journal.

For lamps:

Member State authorities shall test a sample batch of minimum twenty lamps of the same model from the same manufacturer, randomly selected.

The batch shall be considered to comply with the provisions set out in Annex III Part 1 as applicable, of this Regulation if the average results of the batch do not vary from the limit, threshold or declared values by more than 10%.

Otherwise, the model shall be considered not to comply.

For ballasts and luminaires:

Member State authorities shall test one single unit.

The model shall be considered to comply with the provisions set out in Annex III Parts 2 and 3, as applicable, of this Regulation if the results do not exceed the limit values.

Otherwise, three more units shall be tested. The model shall be considered to comply with this Regulation if the average of the results of the latter three tests does not exceed the limit values.

Otherwise, the model shall be considered not to comply.

(...)