# Further clarifications from ELC & CELMA regarding the ongoing amendment of Commission Regulation (EC) No 245/2009

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**This paper provides further clarifications from the European Lighting Industry (represented by ELC and CELMA) regarding the ongoing amendments to the Commission Regulation (EC) No 245/2009.**

Note: the references to particular points in Regulation 245/2009 use the numbering resulting from the proposed amendments.

## 1. Exemption proposed on blended high-intensity discharge lamps (Annex I.1.d)

**Commission question:**
It would be more precise to refer to a % of total radiation as done in point c (and not to peak of radiation; this issue is raised both by France and Germany). **Please provide an appropriate percentage value.**

**ELC answer:**
ELC sees their proposal as the most feasible one and we have not been able to physically define the exemption based on % of total radiation as requested. ELC had already pointed out during the Consultation Forum that this would be extremely difficult.

## 2. Efficacy requirements for single-capped fluorescent lamps (Annex III.1.1.A)

**Commission question:**
The Table 3 heading may have to be amended, as comments CELMA in the CF meeting show that lamps that are able to operate also on electromagnetic ballast are present in the table, whereas the table title says "working only on electronic ballast". This furthermore raises the question whether there is a need at all to have two separate tables 2 and 3. **Please advise how to deal with these two tables in terms of merging/renaming.**

**ELC answer:**
We agree that it would be preferable to restructure these tables. This would require the following changes:
Table 2: transfer triple tubed lamps with 32W to 70W nominal wattage to table 3
Table 3: transfer long single parallel tube lamps with 18W to 36W to table 2
Table 3: transfer all lamps 4 legs in one plane to table 2

## 3. Deductions on the efficacy of certain fluorescent lamps (Annex III.1.1.A Table 6)

**Commission question:**
The Italian delegation raised the issue of Table 6 in the CF meeting, which provides cumulative deduction percentages to fluorescent lamps with certain parameters. Since the deductions are cumulative, the total deduction can go as far as 50%, in case of a lamp with Tc >5000K, Ra>95 and second lamp envelope. **Is such a large deduction intended? Should we not associate also a maximum deduction value (such as "cumulative up to a total deduction of 30%")?**

**ELC answer:**
Yes, all such deductions need to be cumulative as there are no counter-effects when combining different technological parameters which influence efficacy. Thus no, we cannot accept for this reason a maximum total deduction. A combination of all factors is highly unlikely in reality but can happen in niche applications.

## 4. Lamp performance requirements (Annex III.1.2)

**Commission question:**
The German delegation does not agree with some of the changed values proposed by ELC/CELMA in Table 11 (LLMF requirements on fluorescent lamps). They base themselves on a ZVEI publication from 2005, also recognised as valid by ELC:
http://www.elcfed.org/2_health_climate.html
Moreover, they ask for evidence why line 2 of Table 11 (double-capped fluorescent lamps on high frequency ballast with warm start) should be split into different diameters.
**Could you comment on the German proposal for this table? Their position is contained in a separate document.**

**ELC answer:**
The ZVEI table unfortunately shows idealized curves which cannot be taken as a basis for a scientific discussion as detailed as the one for EuP. We will ask ZVEI to change this document to reflect also the EuP LLMF and LSF values to avoid such misunderstandings in the future. Thus we cannot use the data provided in the ZVEI brochure but need the data as submitted by ELC. In consequence we cannot accept the table proposed by the German delegation.

Regarding the split of T8 (26 mm) and T5 (16 mm) lamps, ELC proposed the most strict values possible for each lamp type – to ensure highest standards. If the lines would be combined this would of course need to be on the lower values to ensure compliance of the products. ELC proposes to stay with the separation of the lamp types.

Different efficiencies for lamps with different diameters – as lamps with lower diameter are more stressed and as (some of) the T5 lamps are optimized for a higher efficiency – these lamps have a slightly stronger initial lumen depreciation.

**Related Commission question**:
Circular T9 lamps are covered by the requirements of Annex III.1.1.A, and as such the first stage requirements on lamp performance apply to them according to Annex III.1.2.A. These provide that Ra needs to be at least 80. **Do all T9 circular lamps fulfil this requirement or will they be improved to fulfil it before 13 April 2010?**

**ELC answer:**
T9 Circular lamps with triphosphor coating will fulfil the requirements listed here – those with halophosphate coating cannot meet the requirements. Thus in future only the triphosphor types will be available on the EU27 markets. In addition ELC submitted separate LLMF and LSF tables for circular lamps – these also need to be adapted to ensure circular lamps can continue to be sold in EU27.

U-Shaped lamps are not defined separately in the TIM EuP Regulation. ELC proposes to use the requirements as set forth in Annex III 1.1.1A and 1.2.A for T8 linear for U-Shaped lamps. Regarding

LSF and LLMF the limit values set forth for T9 Circular lamps should be the basis for U-Shaped lamps. In a future revision of this document it needs to be discussed if U-Shaped lamps need an own set of criteria.

## 5. Lifetime and lumen maintenance requirements on high-pressure sodium lamps (Annex III.1.2.B Table 13)

**Commission question:**
ELC was asked to contribute alternatively deduction percentages that could be applied to the problematic lamps (HPS lamps with Ra > 60 and retrofit HPS lamps) for both amendments related to this table, rather than giving them a full exemption. **Could you come up with these correction factors?**

**ELC answer:**
ELC suggests that as such lamps will be phased out in the near future and as the Implementing Measure already is very complex and long a general exemption would be most suitable. However, if the Commission and the member states insist on using a table with deduction percentages, the following table can be used. For the plug-ins this table should only be valid for a time-frame of 6 years after coming into force – as by then there will be more efficient lamp types!
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High pressure sodium lamps shall have at least the lamp lumen maintenance factors and lamp survival factors in Table 13 (exemption for retrofit HPS lamps only valid until 6 years after coming into force of the amendment):

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

| 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 |
| | all HPS retrofit lamps designed to operate on high pressure mercury vapour lamp ballast | > 0.75 | > 0.80 |
| P > 75 W LLMF/LSF measured at 16000 burning hours | Ra ≤ 60 | > 0.85 | > 0.90 |
| | Ra > 60 | > 0.70 | > 0.65 |
| | all HPS retrofit lamps designed to operate on high pressure mercury vapour lamp ballast | > 0.75 | > 0.55 |

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## 6. Energy efficiency index for ballasts for fluorescent lamps (Annex III.2.2.A Table 17)

**Commission question:**
CELMA mentioned that some ILCOS codes are still wrong in the table. **Could you indicate how to correct the table?**

**ELC answer:**
The following ILCOS codes are still not correct, even in the modified document, need to be corrected as follows

| | | |
|---|---|---|
| TC-DD/DDE | 16W | FSS-16-E-GR10q |
| | | FSS-16-I-GR8 |
| | | FSS-16-L/P/H-GR10q |
| TC-DD/DDE | 21W | FSS-21-E-GR10q |
| | | FSS-21-L/P/H-GR10q |

| | | |
|---|---|---|
| TC-DD/DDE | 28W | FSS-28-E-GR10q<br>FSS-28-I-GR8<br>FSS-28-L/P/H-GR10q |

**CELMA answer:**

In addition to the above ELC corrections to the ILCOS codes, CELMA would like to make the following correction to table 17:

In table 17 there is a column showing the rated high frequency wattage of the lamps. The values used in this column are based on the rated/typical wattages, which are taken from the IEC/EN lamp standards 60081 or 60901, the working documents of the IEC TC34A lamp committee or in case these are not available, a manufacturers data sheet values were used. Due to lacking standardized figures, a manufacture's data sheet values were used for three lamps. For these three lamps IEC has afterwards published a proposal (document IEC TC34A/1323/DC) containing high frequency wattage values, which are slightly deviating from those values now in the regulation. The proposal was submitted for comments to the national bodies of IEC. These values were not opposed in the comments of the national bodies.

Therefore CELMA proposes to change the high frequency wattage values to be in line with the international standardization. These changes have a slight effect on the ballast efficiency figures which need to be changed accordingly. These slight changes keep the ballast losses (including extra lamp cathode heating losses) equal to previous values.

The table 17 is after the corrections of the ILCOS codes and these three lamp values as follows (changed figures in red):

| LAMP DATA | | | | | BALLAST EFFICIENCY (Plamp / Pinput) | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Non-dimmable | | | | |
| 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<br>FSQ-10-I-G24d=1 | 10 | 9.5 | 89.4 % | 86.4 % | 73.1 % | 67.9 % | 59.4 % |
| TC-D / DE | 13 | FSQ-13-E-G24q=1<br>FSQ-13-I-G24d=1 | 13 | 12.5 | 91.7 % | 89.3 % | 78.1 % | 72.6 % | 65.0 % |
| TC-D / DE | 18 | FSQ-18-E-G24q=2<br>FSQ-18-I-G24d=2 | 18 | 16.5 | 89.8 % | 86.8 % | 78.6 % | 71.3 % | 65.8 % |
| TC-D / DE | 26 | FSQ-26-E-G24q=3<br>FSQ-26-I-G24d=3 | 26 | 24 | 91.4 % | 88.9 % | 82.8 % | 77.2 % | 72.6 % |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| TC-T / TE | 13 | FSM-13-E-GX24q=1<br>FSM-13-I-GX24d=1 | 13 | 12.5 | 91.7 % | 89.3 % | 78.1 % | 72.6 % | 65.0 % |
| TC-T / TE | 18 | FSM-18-E-GX24q=2<br>FSM-18-I-GX24d=2 | 18 | 16.5 | 89.8 % | 86.8 % | 78.6 % | 71.3 % | 65.8 % |
| TC-T / TC-TE | 26 | FSM-26-E-GX24q=3<br>FSM-26-I-GX24d=3 | 26.5 | 24 | 91.4 % | 88.9 % | 82.8 % | 77.5 % | 73.0 % |
| TC-DD / DDE | 10 | FSS-10-E-GR10q<br>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<br>FSS-16-I-GR8<br>FSS-16-L/P/H-GR10q | 16 | 15 | 87.0 % | 83.3 % | 75.0 % | 72.4 % | 66.1 % |
| TC-DD / DDE | 21 | FSS-21-E-GR10q<br>FSS-21-L/P/H-GR10q | 21 | 19.5 | 89.7 % | 86.7 % | 78.0 % | 73.9 % | 68.8 % |
| TC-DD / DDE | 28 | FSS-28-E-GR10q<br>FSS-28-I-GR8<br>FSS-28-L/P/H-GR10q | 28 | 24.5 | 89.1 % | 86.0 % | 80.3 % | 78.2 % | 73.9 % |
| TC-DD / DDE | 38 | FSS-38-E-GR10q<br>FSS-38-L/P/H-GR10q | 38.5 | 34.5 | 92.0 % | 89,6. % | 85.2 % | 84.1 % | 80.4 % |
| TC | 5 | FSD-5-I-G23<br>FSD-5-E-2G7 | 5.4 | 5 | 72.7 % | 66.7 % | 58.8 % | 49.3 % | 41.4 % |
| TC | 7 | FSD-7-I-G23<br>FSD-7-E-2G7 | 7.1 | 6.5 | 77.6 % | 72.2 % | 65.0 % | 55.7 % | 47.8 % |
| TC | 9 | FSD-9-I-G23<br>FSD-9-E-2G7 | 8.7 | 8 | 78.0 % | 72.7 % | 66.7 % | 60.3 % | 52.6 % |
| TC | 11 | FSD-11-I-G23<br>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 % | | |
| 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<br>FSM8H-57-L/P-2GX24q=5 | | **56** | **91.4 %** | **88.9 %** | **83.6 %** | | |
| **TC-TE** | **70** | FSM6H-70-L/P-2GX24q=6<br>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<br>FSM8H-120-L/P-2G8=1 | | **122** | **92.6 %** | **90.4 %** | **84.7 %** | | |
| **TC-DD** | **55** | FSSH-55-L/P-GRY10q3 | | **55** | **92.4 %** | **90.2 %** | **84.6 %** | | |

## 7. Exemption of ballasts for emergency lighting luminaires (Annex 1.2.d,)

**CELMA comments:**

It was raised in the CF that the ballasts which are designed for the non-emergency lighting luminaires but are used in the emergency lighting luminaires to operate the lamps in normal (non-emergency) conditions, shall not be exempted.

CELMA proposes to add the following sentence to cover this request: “Ballasts designed for non-emergency lighting luminaires and used in emergency lighting luminaires to operate the lamps in normal (non-emergency) conditions, shall not be exempted when they operate the lamp in normal conditions.”

## 8. Impact of not amending the regulation

**Commission question:**
In the CF meeting (and also beforehand) industry was asked to support the arguments in favour of amending the regulation with more concrete figures on the impact of the current version of the Regulation. We would have to know the yearly sales figures of problematic products (can be also provided in the percentage of total sales of lamps covered by the Regulation), the installed base of luminaires using the problem products, and the cost to the users (can be expressed per luminaire). **We would appreciate if you could provide us with such estimates with respect to each of the problematic amendments considered, where they have an impact on the availability of products.**

**ELC answer:**

**Early Phase out of CFLpin CCG lamps (single tube 5W and 11W, triple tube 13W), phase out of CFLpin ECG lamp (triple tube 42W):**
Estimated loss of sales to Lamp Manufacturers: 30 Mio. € p.a.
Estimated cost for luminaire replacement (short term!) for EU 27 consumers: 100 Mio. luminaires at 150 € each => 15 billion € in cost over max. 3 years

VERY high risk that capacity (manufacturing of luminaires, installation) is not sufficient in the short time-frame – in consequence customers will not be able to buy spare lamps for their existing luminaires. There are no alternative replacement lamps.

NB: phase-out of (all) CFLpin CCG lamps for this reason was set by the commission only in stage 3 (8 years after coming into force) to ensure EU 27 consumers can beforehand exchange such luminaires.

**Phase-out of long-life lamps:**
Estimated loss of sales to Lamp Manufacturers: 15 Mio. € p.a.
Estimated additional cost to End-Users (more frequent maintenance cycles in tunnels, on oil-drilling rigs, in high-ceiling warehouses): 150 Mio. € p.a. (5 Mio. Lamps at 30 € / exchange)

**Phase-out of Circular Lamps:**
Estimated loss of sales to Lamp Manufacturers: 20 Mio. € p.a.
Estimated cost for EU consumers to buy new luminaires (most luminaires are used in domestic applications in the South of Europe): 600 Mio. € (20 Mio. Luminaires at 30 € each)

**NO Phase out of Halophosphate Lamps:**
No cost to Lamp Manufacturers
No cost to EU 27 consumers

But main target of EuP TIM legislation was to reduce CO2 emissions by facilitating change to more efficient products – and halo phosphate lamps are the single biggest group of less-efficient lamps!

**Early phase-out of HPS Retrofit:**
No cost to Lamp Manufacturers
No refurbishment cost to EU27 consumers, but we estimate at least 50 Billion € in yearly missed energy reduction cost potential if such retrofits are phased out early.
(Estimation 10 M lighting pints to be changed, reducing about 10 to 15W therefore consuming 600TW less energy …. About 50 B € or 315 M Tons of Co2)

And of course one of the main targets of EuP TIM legislation was to reduce CO2 emissions by facilitating change to more efficient products – and to phase out more efficient retrofits before the inefficient lamp is phased out is a missed opportunity to reduce significantly CO2.

**Phase-Out of T8 36W-1m lamps:**
Estimated loss of sales to Lamp Manufacturers: 4 Mio. €
Estimated cost to EU27 industry, consumers and public transportation systems: 1 Billion € (highest cost for refurbishing of trains, airplanes, streetcars etc. as this lamp is widely used in public transport)
(4 Mio. Lamps, estimated exchange & refurbishment cost in these technical installations estimated at 250 € each)

**Phase-Out of T12 X-Proof Lamps:**
Estimated loss of sales to Lamp Manufacturers: 20 Mio. €
Estimated cost to EU27 industry: difficult to measure, as this lamp is used in critical explosion-proof installations (e.g. Chemical, petrochemical) – ELC would not know how to illuminate such installations in the future and thus cannot estimate cost.

## 9. ELC comments to other issues

**New definition of long-life lamps** – ELC already agreed to this definition.

**New headings for table 7 and table 8** – ELC agrees to this wording

**Wording "Fluorescent lamps without integrated ballast** shall be able to operate at least on ballasts of efficiency class A2 or more efficient ballasts according to Annex III.2.2," was already agreed by ELC during the Consultation Forum.

**Table 11b:** Lamps with higher colour rendering and/or high colour temperature for physical reasons have a slightly lower lamp lumen maintenance. The higher the colour temperature the higher the amount of blue phosphor required. The blue phosphor is the reason for higher lumen loss in comparison to lower colour temperature. State of art is that there are only few high efficient blue phosphors available, which have all the same lumen loss problem. The blue Emission is made by Europium- Ions with oxidation state 2, Eu2+, which is incorporated in a host lattice. During lamp operation, the Eu2+, gets oxidized to Eu3+ in correlation to a damage of the host lattice. Lot of research by lamp manufacturers and universities was spent on that issue in the past, without

significant improvements. The red and green phosphors have a more stable environment, thus the lumen maintenance for higher colour temperatures is worse. For high CRI lamps, that same argumentation can be used for phosphors which have additionally to be used to increase the CRI.

**Table 12:** please refer to our explanation in general regarding the lack of validity of the ZVEI table on life behaviour of discharge lamps

## 10. Additional point on the comment of the French Delegate:

**Comment from France**: "*too low lamp lumen maintenance factor (LLMF) values are allowed, lamps should be considered dead when having lost more than 20% of their light*."

**ELC comment:**
As a matter of fact during the planning of light installations as well as in relevant norms the replacement of lamps is suggested once they reach 80% of initial light output (which is combined from lamp failures and lumen depreciation in a lighting installation).

However, of course the lamp can still be used – and if the lighting designer appropriately planned the installation even with sufficient light to meet norms and standards.

In any case industry was asked by the commission to supply data on LLMF behaviour of lamps until their physical end of life which we have done. To measure the overall quality of a lamp and thus whether it performs to the efficacy criteria set forth in this amendment providing such data is essential.

Whether the EU commission wants to suggest or even enforce a regular exchange of lamps inside lighting installations once certain lighting levels are no longer achieved can in our opinion not be an issue to be dealt with in the frame of the EuP legislation.

## 11. Contact persons

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