SLOVENSKI STANDARD
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Svetloba in razsvetljava - Merjenje in podajanje fotometrijskih podatkov svetlobnih virov in svetilk - 3. del: Podajanje podatkov za zasilno razsvetljavo delovnega mesta

Light and lighting - Measurement and presentation of photometric data of lamps and luminaires - Part 3: Presentation of data for emergency lighting of workplaces

Licht und Beleuchtung - Messung und Darstellung photometrischer Daten von Lampen und Leuchten - Teil 3: Darstellung von Daten für die Notbeleuchtung von Arbeitsstätten

Lumière et éclairage - Mesure et présentation des données photométriques des lampes et des luminaires - Partie 3 : Présentation des données relatives à l'éclairage de sécurité des lieux de travail

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91.160.10	Notranja razsvetljava	Interior lighting

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English Version

Light and lighting - Measurement and presentation of photometric data of lamps and luminaires - Part 3: Presentation of data for emergency lighting of workplaces

Lumière et éclairage - Mesure et présentation des données photométriques des lampes et des luminaires - Partie 3 : Présentation des données relatives à l'éclairage de sécurité des lieux de travail

Licht und Beleuchtung - Messung und Darstellung photometrischer Daten von Lampen und Leuchten - Teil 3: Darstellung von Daten für die Notbeleuchtung von Arbeitsstätten

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (prEN 13032-3:2020) has been prepared by Technical Committee CEN/TC 169 “Light and Lighting”, the secretariat of which is held by DIN.

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This document will supersede EN 13032-2:2017.

Introduction

Emergency lighting for work and other places is required by National Regulations in a number of European countries and the lighting criteria is specified in EN 1838. To assist in the design of suitable emergency lighting solutions photometric and other characteristics data are required for the selected equipment. This document specifies the required data for emergency lighting as required by EN 1838.

1 Scope

This document specifies the required data for lamps and luminaires for the verification of conformity to the requirements of EN 1838. This document does not define the data requirements for signage, as these can be found in EN 1838.

This document is used in conjunction with EN 13032-1 and EN 13032-4.

This document specifies the requirements for emergency lighting with or without a replaceable light source. For luminaires with a non-replaceable light source data should always be given for the luminaire. For luminaires with a replaceable light source, light source data should be provided in addition to luminaire data.

NOTE Product, safety and performance data can be found in CENELEC documents (see Bibliography).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1838, *Lighting applications — Emergency lighting*

EN 12665, *Light and lighting — Basic terms and criteria for specifying lighting requirements*

EN 13032-1, *Light and lighting — Measurement and presentation of photometric data of lamps and luminaires — Part 1: Measurement and file format*

EN 13032-4, *Lighting applications — Measurement and presentation of photometric data of lamps and luminaires — Part 4: LED lamps, modules and luminaires*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12665 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp

3.1
correction factor
factor to modify the luminaire data as presented on a particular photometric data sheet to those of similar luminaires

EXAMPLE Ballast Lumen Factor, length, lumen corrections.

3.2
essential data
lamp and luminaire data required for the verification of conformity to the requirements of EN 1838

3.3
lamp code
any combination of letters and numbers by which the lamp type is identified

3.4
lamp dimensions
all dimensions of the lamp that are relevant for the luminaire

3.5
luminaire code
any combination of letters and numbers by which the luminaire type is identified

3.6
nominal lamp wattage
W_{lamp}
approximate wattage used to designate or identify the lamp

Note 1 to entry: The nominal lamp wattage is also (incorrectly) known as rated lamp wattage.

3.7
useful data
lamp and luminaire data beneficial to the designers and users in the planning and operation of lighting installations

3.8
emergency ballast lumen factor
F_{EBL}
ratio of the luminous flux of the lamp, operated with ballast under test, at the lowest voltage which may occur during emergency mode, after failure of the normal supply (for the appropriate start time for the application requirement) and continuously to the end of rated duration of operation, to the luminous flux of the same lamp operated with the appropriate reference ballast supplied at its rated voltage and frequency

$$F_{EBL} = F_{Ballast} \times F_{min}$$

3.9
minimum value emergency lighting
F_{min}
the lowest light output measured during the emergency operating time period

3.10
practical emergency lamp flux
F_{PEL}
lowest luminous flux of the lamp observed during the rated duration of the emergency mode

$$F_{PEL} = L_{LD} \times F_{EBL}$$

where

L_{LD} is the initial lighting design lumens at 100 hours

4 Lamp data

For Luminaires using replaceable lamps the following lamp data shall be provided for verification:

a) lamp code;

b) lamp dimensions;

c) luminous flux (L_{LD});

d) lamp lumen maintenance factor (F_{LLM});

To generate an optimal maintenance scheme, it is recommended to present the data for the lamp lumen maintenance in a tabular form.

NOTE 1 The data for the lamp lumen maintenance factor can be presented both as a graph or data in a table.

e) lamp survival factor (F_{LS});

To generate an optimal maintenance schedule it is recommended to give the data for the lamp survival factor in a table.

NOTE 2 The data for the lamp survival factor can be presented as a graph or in a table.

f) general colour rendering index (R_a);

g) nominal lamp wattage (W_{lamp}).

5 Luminaire data

5.1 Essential luminaire data

5.1.1 Luminaire code

5.1.2 Luminous intensity table

The luminous intensity table shall be given either in absolute or as normalized intensity values.

a) Absolute luminous intensity table: Absolute luminous intensity data (in cd) of a luminaire (using a lamp or lamps) shall be given as a table. (Usually this luminaire data are for luminaires using non-replaceable lamp or lamps)

b) Normalized luminous intensity table: The tabulated luminous intensity values normalized to a total bare lamp flux in the luminaire of 1000 lm shall be given in cd.klm^{-1}. Usually this luminaire data are for luminaires using replaceable lamp or lamps.

The luminous intensity shall be declared for an ambient temperature of 25 °C and nominal voltage of the emergency ballast and measured in accordance with EN 13032-1 or EN 13032-4. It shall take into account the thermal behaviour of the lamp in the luminaire due to the temperature generated by all the components inside the luminaire. An appropriate thermal correction factor shall be applied if the luminous intensity has been measured in other conditions e.g. with another ballast.

These values (cd/1000 lm) permit calculation of the Light Output Ratio (LOR) of the luminaire.

For luminaires with multiples lamps where light intensity distribution of the luminaire can be different when not all lamps are operated in the emergency mode, the distribution for emergency mode shall be reported.

The number of *C*-planes and *γ*-angles at which the *I*-values shall be specified, is given in Tables 1 and 2.

Table 1 — Number of *C*-planes for various intensity distributions

Luminous intensity distribution	*C*-planes	Escape routes only
Radially symmetric	One *C*-plane	0° and 90°
Symmetric about two planes	Every 15° from 0° to 90°	0° and 90°
Symmetric about one plane	Every 15° from 0° to 180° or every 15° from 90° to 270°	0° and 90°
Asymmetric	Every 15° from 0° to 360°	0° and 90°

Table 2 — Number of *γ*-angles for various types of luminaires

Type of luminaire	Downward Flux Fraction F_{DF}	*γ*-angles
Downlighting	> 0,9	Every 5° from 0° to 90°
Downlighting with upward component	0,1 to 0,9	Every 5° from 0° to 180°
Uplighting	< 0,1	Every 5° from 90° to 180°

For floodlights used in indoor and/or outdoor lighting installations, the measurement and presentation of the normalized *I*-table may be in *B*-*β* instead of *C*-*γ* notation.

NOTE Luminaires with a concentrated intensity distribution can require more angles at which the luminous intensity data are presented (e.g. every 1° in the area where 90 % of the luminous flux is emitted).

5.1.3 Luminaire maintenance factors (F_{LM})

All data shall be declared.

To generate an optimal maintenance scheme, it is recommended to present the data for the luminaire maintenance factor (LMF) in a tabular form.

NOTE 1 The data for the luminaire maintenance factor (LMF) can be presented both as a graph or data in a table.

The luminaire lumen maintenance factor is only applicable for luminaires with non-replaceable lamps. Otherwise the lamp lumen maintenance factor shall be used. To generate an optimal maintenance schedule it is recommended to give the data for the luminaire lumen maintenance factor in a table.

NOTE 2 The data for the luminaire lumen maintenance factor can be presented as a graph or in a table.

NOTE 3 The luminaire maintenance factor F_{LM} is not included in luminaire lumen maintenance factor.

5.1.4 Luminaire service correction factor (F_{LSC})

All data shall be declared.

5.1.4.1 Temperature correction if operated in an ambient other than 25 °C.