SLOVENSKI STANDARD
SIST EN 13032-3:2022

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Nadomešča:
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Svetloba in razsvetljava - Merjenje in podajanje fotometričnih 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

Ta slovenski standard je istoveten z: **EN 13032-3:2021**

ICS:

17.180.20	Barve in merjenje svetlobe	Colours and measurement of light
91.160.10	Notranja razsvetljava	Interior lighting

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EUROPEAN STANDARD

NORME EUROPÉENNE

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EN 13032-3

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ICS 17.180.20; 91.160.10

Supersedes EN 13032-3:2007

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

This European Standard was approved by CEN on 27 September 2021.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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

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European foreword

This document (EN 13032-3:2021) has been prepared by Technical Committee CEN/TC 169 “Light and lighting”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2022, and conflicting national standards shall be withdrawn at the latest by May 2022.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 13032-3:2007.

EN 13032-3:2021 includes the following significant technical changes with respect to EN 13032-3:2007:

— updated normative references and bibliography;

— consideration of LED technology and the change in luminaire design from lamps to light sources;

— consideration of data requirements for luminaires with replaceable and non-replaceable light sources. This includes information on normalised and absolute photometric measurement data and expanded maintenance factor data.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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 to check the conformity of the emergency lighting luminaires to 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.

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 13032-2, *Light and lighting - Measurement and presentation of photometric data of lamps and luminaires - Part 2: Presentation of data for indoor and outdoor work places*

EN 13032-4, *Light and lighting - 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 https://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

Note 1 to entry: This usually would not apply to Light Emitting Diodes

3.5
nominal lamp wattage
W_{lamp}
approximate wattage used to designate or identify the lamp

3.6
useful data
lamp and luminaire data beneficial to the designers and users in the planning and operation of lighting installations

3.7
emergency output factor (of a LED light source)
f_{EOx}
ratio of the electrical output parameter when the LED control gear under test is operated in emergency mode to the electrical output parameter when the control gear is operated under normal lighting conditions

3.8
practical emergency light source flux for discharge lamps
ϕ_{PEL}
lowest luminous flux of the light source observed during the rated duration of the emergency mode

Note 1 to entry: For discharge lamps $\phi_{\text{PEL}} = \Phi \times f_{\text{EBL}}$
where Φ is the rated luminous flux of fluorescent or discharge lamp and f_{EBL} the ballast emergency lumen factor

Note 2 to entry: For LED light sources:
a) if f_{EOx} is given $\phi_{\text{PEL}} = \Phi \times f_{\text{EOx}}$
b) if $I_{\text{emergency}}$ from constant current controlgear is defined: $\phi_{\text{PEL}} = \Phi \times (I_{\text{emergency}} / I_{\text{normal mode}})$
where Φ is the luminous flux of the LED module under the condition corresponding to the operation in the luminaire (identical tp) operated at the same current ($I_{\text{normal mode}}$), $I_{\text{emergency}}$ is the current operating in emergency mode and $I_{\text{normal mode}}$ is the current operating in mains healthy mode.

4 Light source data

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.

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

a) light source code;

b) light source dimensions;

c) luminous flux (ϕ_{LD});

d) light source lumen maintenance factor (F_{LM});

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) light source survival factor (F_{LS});

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

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

f) general colour rendering index (R_a);

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

5 Luminaire data

5.1 Essential luminaire data

5.1.1 General

For luminaires the following data shall be provided for verification:

5.1.2 Luminaire type reference

Enables the luminaire data to be specifically identified.

5.1.3 Relevant data

The main focus is practical emergency luminous flux or other information such as f_{EBL} the ballast emergency lumen factor for the ballast and the f_{EOx} for LED control gear.

5.1.4 Luminous intensity table

In the luminous intensity table shall be given either absolute or normalized luminous intensities.

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 changes in output caused by 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 × klm^{-1}) permit calculation of the Light Output Ratio (R_{Lo}) 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°

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).

5.1.5 Luminaire maintenance factor (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 (F_{LM}) in a tabular form.

NOTE 1 The data for the luminaire maintenance factor (F_{LM}) 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 data in a table.

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

5.1.6 Luminaire survival factors (F_{LS})

Shall be specified as defined in EN 13032-2 as it defines the lifetime of luminaires with non-replaceable light sources

5.1.7 Luminaire service correction factor (F_{LSC})

5.1.7.1 All data shall be declared.

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

5.1.7.3 Cable voltage correction factor (central systems) for luminaires operating at voltages other than rated voltage.

5.1.7.4 Practical emergency light source flux can be used to calculate the illuminance level derived from intensity tables in particular if the table is expressed in relative values for different drivers of ballasts.