SLOVENSKI STANDARD
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Razsvetljava - Zasilna razsvetljava

Lighting applications - Emergency lighting

Angewandte Lichttechnik - Notbeleuchtung

Éclairagisme - Eclairage de secours

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Lighting applications - Emergency lighting

Éclairagisme - Eclairage de secours

Angewandte Lichttechnik - Notbeleuchtung

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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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Foreword

This document (prEN 1838:2011) has been prepared by Technical Committee CEN/TC 169 “Light and lighting”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 1838:1999.

It is intended to replace in part national standards relating to emergency lighting luminous requirements. It should be read in conjunction with the standards being produced by CEN/TC 169/WG 7, *Measurement and presentation of photometric data*, and in conjunction with EN 50172, *Emergency escape lighting systems.* Users of this European Standard, prepared in the field of application of Article 118 A of the EC Treaty, should be aware that standards have no formal legal relationship with Directives which may have been made under Article 118 A of the Treaty. In addition, national legislation in the Member states may contain more stringent requirements than the minimum requirements of a Directive based on Article 118 A Information on the relationship between the national legislation implementing Directives based on Article 118 A and this European Standard may be given in a national foreword of the national standard implementing this European Standard.

Introduction

Emergency lighting is provided for use when the supply to the normal lighting fails and is therefore powered from a source independent of that supplying the normal lighting.

For the purposes of this standard emergency lighting is regarded as a generic term of which there are a number of specific forms, as shown in Figure 1.

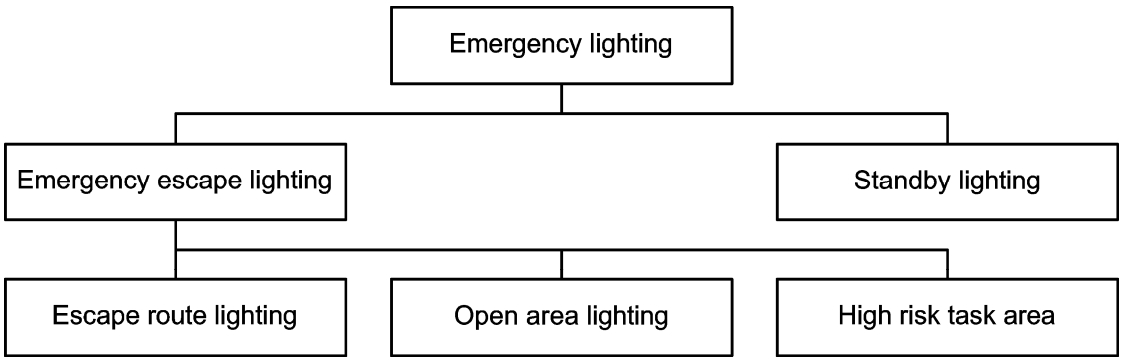


Figure 1 — Specific forms of emergency lighting

The overall objective of emergency escape lighting is to enable safe exit from a location in the event of failure of the normal supply.

The objective of escape route lighting is to enable the safe exit from a location for occupants by providing appropriate visual conditions and direction finding on escape routes and in special locations, and to ensure that fire fighting and safety equipment can be readily located and used.

The objective of open area (anti-panic) lighting is to reduce the likelihood of panic and to enable safe movement of occupants towards escape routes by providing appropriate visual conditions and direction finding. The flow of light for escape routes or open areas should be downward to the working plane but illumination should also be provided to any obstruction up to 2 m height above that plane.

The objective of high risk task area lighting is to contribute to the safety of people involved in a potentially dangerous process or situation and to enable proper shut down procedures to be carried out for the safety of other occupants of the location.

There are emerging techniques that when applied to escape routes in addition to conventional emergency lighting luminaires can enhance their effectiveness in an emergency. These techniques are not included in this standard.

Vision varies from person to person, both by the amount of light required to perceive an object clearly and in the time taken to adapt to changes in the illuminance. In general, older people need more light and take a longer time to adapt to low illuminance on a hazard or escape route.

Much anxiety and confusion can be alleviated by strategically placed signs indicating the way out of a location. It is very important that exits are clearly signposted and are visible, whenever the location is occupied.

1 Scope

This standard specifies the luminous requirements for emergency lighting systems installed in premises or locations where such systems are required. It is principally applicable to locations where the public or workers have access.

2 Normative references

The following referenced documents are indispensable for the application 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 12665, *Lighting applications — Basic terms and criteria for specifying lighting requirements*

EN 60598-2-22, *Luminaires — Part 2-22: Particular requirements — Luminaires for emergency lighting (IEC 60598-2-22:1997, modified)*

EN 62034, *Automated test systems for battery powered emergency escape lighting*

EN 50172, *Emergency escape lighting systems*

ISO 3864-1, *Graphical symbols — Safety colours and safety signs — Part 1: Design principles for safety signs in workplaces and public areas*

ISO 3864-4 *Graphical symbols — Safety colours and safety signs — Part 4: Colorimetric and photometric properties of safety sign materials*

IEC 50 – Chapter 845, *International Electrotechnical Vocabulary — Chapter 845: Lighting*

3 Terms and definitions

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

3.1
emergency lighting
lighting provided for use when the supply to the normal lighting fails
[IEC 50 – Chapter 845]

3.2
escape route
route designated for escape in the event of an emergency

3.3
emergency escape lighting
that part of emergency lighting that provides illumination for the safety of people leaving a location or attempting to terminate a potentially dangerous process before doing so

3.4
escape route lighting
that part of emergency escape lighting provided to ensure that the means of escape can be effectively identified and safely used when the location is occupied

3.5
open area lighting
(in some countries known as anti-panic lighting)
that part of emergency escape lighting provided to avoid panic and provide illumination allowing people to reach a place where an escape route can be identified

3.6
high risk task area lighting
that part of emergency escape lighting that provides illumination for the safety of people involved in a potentially dangerous process or situation and to enable proper shut down procedures for the safety of the operator and other occupants of the premises

3.7
standby lighting
that part of emergency lighting provided to enable normal activities to continue substantially unchanged

[IEC 50 – Chapter 845]

3.8
emergency exit
way out that is intended to be used during an emergency

3.9
safety sign
sign which gives a general safety message, obtained by a combination of colour and geometric shape and which, by the addition of a graphical symbol gives a particular safety message

[ISO 17724:2003]

3.10
externally illuminated safety sign
sign that is illuminated, when it is required, by an external source

3.11
internally illuminated safety sign
sign that is illuminated, when it is required, by an internal source

3.12
response time
time between failure of the general lighting and emergency lighting reaching the required "level"

4 Emergency escape lighting

4.1 General

The requirements given in this standard are maintained minimum values and are calculated for the full rated duration period at end of design life of the equipment and the inter reflected light contribution shall be ignored. The emergency lighting scheme design should be based on worst conditions (e.g. minimum light output, maximum glare limits) of the luminaires during operating life and should be based only on direct light from luminaires. The contributions by room surface inter-reflections should be ignored. However, in lighting systems such as indirect luminaires or uplights (used in maintained/combined mode) where the luminaire works in conjunction with a reflecting surface, the first reflection (based on the maintained reflectance) may be taken as direct light from the system and subsequent reflections shall be ignored.

To provide visibility for evacuation purposes lighting is required in the volume of the space. In this standard the recommendation is fulfilled by the mounting of luminaires at least 2 m above the floor. Signs which are provided at all exits intended to be used in an emergency and along escape routes shall be illuminated to indicate unambiguously the route of escape to a point of safety.

To ensure that emergency lighting operates when required it should be installed, tested and maintained in accordance with EN 50172 and EN 62034.

Where direct sight of an emergency exit is not possible, an illuminated directional sign (or series of signs) shall be provided to assist progression towards the emergency exit.

An escape lighting luminaire complying with EN 60598-2-22 shall be sited to provide appropriate illuminance near each exit door and at positions where it is necessary to emphasise potential danger or safety equipment. The positions to be emphasized shall include the following:

a) at each exit door intended to be used in an emergency;

b) near (see note) stairs so that each flight of stairs receives direct light;

c) near (see note) any other change in level;

d) mandatory emergency exits and safety signs;

e) at each change of direction;

f) at each intersection of corridors;

g) near to each final exit and outside the building to a place of safety;

h) near (see note) each first aid post;

i) near (see note) each piece of fire fighting equipment and call point.

Luminaires located at positions denoted as h) or i) if not on the escape route nor in an open area shall be illuminated to 5 lx minimum on the floor.

NOTE For the purpose of this clause 'near' is normally considered to be within 2 m measured horizontally.

4.2 Escape route lighting

4.2.1 For escape routes up to 2 m in width, the horizontally illuminances on the floor along the centre line of an escape route shall be not less than 1 lx and the central band consisting of not less than half of the width of the route shall be illuminated to a minimum of 50 % of that value.

NOTE 1 Wider escape routes may be treated as a number of 2 m wide strips or be provided with open area (anti-panic) lighting.

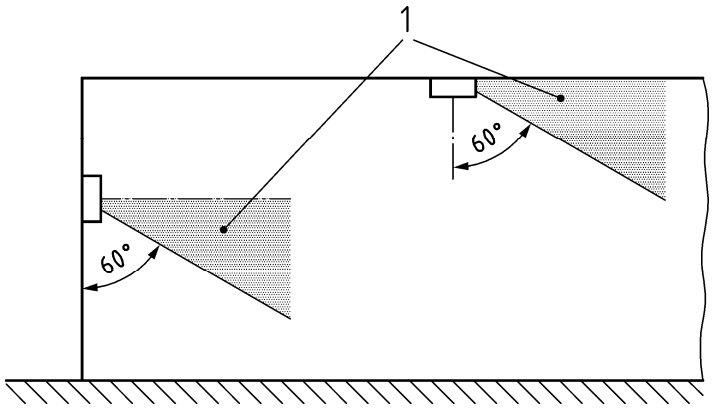
NOTE 2 Countries requiring different lighting levels are given in Annex B.

4.2.2 The ratio U_d of the minimum to the maximum illuminance according to EN 12665 shall not be less than 1:40 along the centre line of the escape route.

4.2.3 Disability glare shall be kept low by limiting the luminous intensity of the luminaires within the field of view.

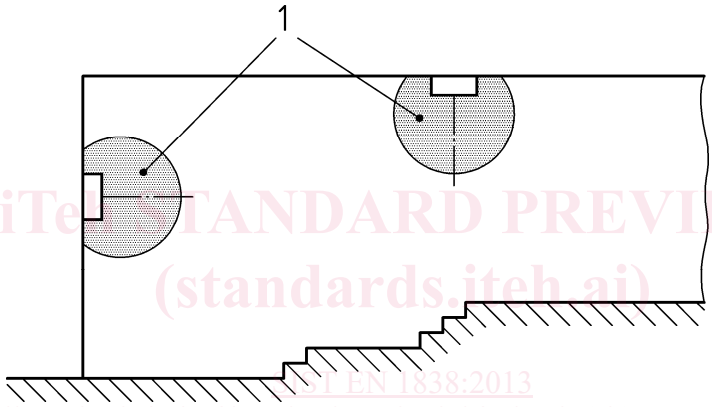
For level horizontal escape routes the luminous intensity of the luminaires shall not exceed the values in table 1 within the zone 60º to 90º from the downward vertical at all angles of azimuth (see figure 2).

For all other escape routes and areas, the limiting values shall not be exceeded at all angles (see figure 3).



Key
1 Area where the maximum luminous intensity shall not exceed the values of table 1

Figure 2 — Horizontal level escape routes



Key
1 Area where the maximum luminous intensity shall not exceed the values of table 1

Figure 3 — Other escape routes and areas

NOTE High contrast between a luminaire and its background can produce glare. In escape route lighting the main problem will be disability glare, in which the brightness of the luminaires can dazzle and prevent obstructions or signs being seen.