SLOVENSKI STANDARD
oSIST prEN 1838:2022

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Razsvetljava - Zasilna razsvetljava

Lighting applications - Emergency lighting

Angewandte Lichttechnik - Notbeleuchtung

Éclairagisme - Éclairage de secours

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ICS:

91.160.10	Notranja razsvetljava	Interior lighting

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Éclairagisme - Éclairage de secours

Angewandte Lichttechnik - Notbeleuchtung

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (prEN 1838:2022) 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 1838:2013.

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. It may provide lighting for both safety and operational tasks.

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

Table 1 — Specific forms of emergency lighting

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Emergency lighting can also be provided by maintained luminaires and maintained escape route safety signs when the normal lighting is available. Maintained luminaires and maintained exit and escape route safety signs shall operate when the normal lighting is required and when the normal lighting fails. (Refer to EN 50172 for further details on normal lighting failures.)

Forms of emergency lighting and their applications.

Emergency escape lighting is provided to enable safe exit from a location in the event of failure of the normal supply. The objective of each form within this category is as follows.

The objective of **escape route lighting** is to assist 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 emergency lighting escape routes is to be readily located and used. A multi-purpose luminaire that provides direction finding and escape route lighting may be 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.

Safety Lighting provides illumination for the safety of people involved in a potentially hazardous process or situation.

The objective of **local area safety lighting** is to protect occupants who are allowed to remain in a premise in the event of a supply failure. It is based on a safety risk assessment dependent upon the activities likely to be performed. Additional areas of coverage and levels of illumination higher than the provision for emergency escape lighting may be required.

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 assist proper shut down procedures to be carried out for the safety of other people in the location.

Standby Lighting is based on operational requirements. This standard gives the definition of the term and describes the principles and requirements to be complied with in context with the emergency escape lighting.

There are techniques such as adaptive emergency escape lighting (AEELS) that can be used as a supplement to emergency escape lighting and, when applied to escape routes in addition to emergency escape lighting, can enhance their effectiveness in an emergency. These techniques are not included in this standard.

Much anxiety and confusion can be alleviated by strategically placed escape route safety 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 document specifies the luminous requirements for emergency lighting systems, including static and non-static, high- and low-mounted electric emergency lighting systems, installed in premises or locations where such systems are required or needed and which are principally applicable to locations where the public or workers have access.

This document does not apply to road tunnel emergency lighting.

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

EN 50172, *Emergency escape lighting systems*

EN 60598-2-22, *Luminaires - Part 2-22: Particular requirements - Luminaires for emergency lighting*

EN ISO 7010, *Graphical symbols - Safety colours and safety signs - Registered safety signs (ISO 7010:2019, Corrected version 2020-06)*

ISO 3864-1, *Graphical symbols — Safety colours and safety signs — Part 1: Design principles for safety signs and safety markings*

ISO 3864-3, *Graphical symbols — Safety colours and safety signs — Part 3: Design principles for graphical symbols for use in safety signs*

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

ISO 9186-2, *Graphical symbols — Test methods — Part 2: Method for testing perceptual quality*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12665:2018 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 http://www.iso.org/obp

3.1
emergency lighting
lighting provided for use when the power supply to the normal electric lighting fails

[SOURCE: CIE ILV:2020 17-29-010]

3.2
emergency escape lighting
part of emergency lighting that provides illumination for visibility and escape route safety signage for the guidance and safety of people leaving a location to a place of safety or attempting to terminate a potentially hazardous process or situation before doing so

[SOURCE: EN 12665:2018 modified]

3.3
escape route lighting
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

3.4
escape route
designated route, used to evacuate in case of an emergency, to a place of safety normally outside the building or area after evacuating a building

Note 1 to entry: Balconies, courtyards and roof areas are not places of safety.

3.5
open area (anti-panic) lighting
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
local area lighting
part of emergency escape lighting that provides illumination for people allowed to remain temporarily in a premise during a mains supply failure if it is risk assessed for the activities that are allowed to be performed

3.7
high risk task area lighting
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 building

3.8
standby lighting
part of emergency lighting provided to enable normal activities to continue substantially unchanged

[SOURCE: IEC 60050-845-29-013:2020, modified]

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

3.10
internally illuminated escape route safety sign
escape route safety sign that is illuminated, when it is required, by an internal source

[SOURCE: EN 12665:2018]

3.11
externally illuminated escape route safety sign
escape route safety sign that is illuminated, when it is required, by an external emergency luminaire

[SOURCE: EN 12665:2018, modified: “source” was replaced by “emergency luminaire”]

3.12
emergency exit
marked way out that is intended to be used during an emergency leading to a defined place of safety

3.13
place of safety
designated place outside the building where escaping people can assemble safely and are not at risk of the emergency status

Note 1 to entry: Balconies, courtyards and roof areas are not places of safety.

3.14
final emergency exit
termination of an escape route from a building or premises giving direct access to a street, passageway, walkway or open space, and sited to ensure the rapid dispersal of persons from the vicinity of a building or premises

3.15
adaptive emergency escape lighting systems (AEELS)
electrically operated escape lighting system which provides directional guidance and adequate illuminance by means of a set of emergency lighting luminaires and directional indication indicating together that can manually or automatically change the escape route direction and improve the conspicuity of the emergency signage and optionally adapt the lighting level on escape routes

3.16
rated duration (of an emergency escape lighting system)
declared period of time that the luminous requirements of the emergency lighting system are met

3.17
activation time (of an emergency escape lighting system)
time between failure of the supply to the normal lighting and emergency lighting reaching the required level of illuminance

3.18
identifiability
property of a graphical symbol which enables its elements to be perceived as the objects or shapes depicted

[SOURCE: ISO 9186-2, 3.1]

4 Emergency escape lighting

4.1 General

To ensure that emergency escape lighting operates when it is required to meet legal requirements, it shall be installed, tested and maintained in accordance EN 50172.

The requirements given in this document shall be maintained for the full rated duration to the end of the design life of the equipment.

The emergency escape lighting scheme design should be based on worst conditions (e.g. minimum light output, maximum glare limits and including an appropriate maintenance factor) of the luminaires during operating life and should be based only on direct light from luminaires. Lighting calculations shall be based on the rated emergency intensities data related to the Practical Emergency light source flux according to EN 60598-2-22.

The contributions by room surface inter-reflections should not be considered. However, in lighting systems such as indirect luminaires or up lights (used as an emergency luminaire in maintained mode) where the luminaire works in conjunction with a reflecting surface, when using indirect lighting for emergency escape lighting, the following three points shall be taken into account.

- The first reflection may be included in the calculation of the emergency escape lighting.
- The reflective surface shall be considered in the maintenance of the emergency escape lighting as if it was part of the emergency light.
- The distance between the light source and the reflecting surface shall not be obstructed by any object.

Luminaires shall be mounted at least 2 m above the floor level unless a mounting height of luminaires for lighting of 2 m is not suitable for special reasons (e.g. in outdoor areas, assembly points, places of safety, stairways, historic buildings etc.), in which case luminaires for lighting may be mounted lower than 2 m above the floor, provided that the protective objective is met.

The designed illuminance levels for emergency luminaires and the required luminance values of safety signs shall be multiplied by a maintenance factor specific to the installation. Explanations of the maintenance factor can be found in CIE 97 and EN 13032-2.

To provide visibility for evacuation purposes lighting is required in the volume of the space of the escape routes. Signs that are provided at all exits intended to be used in an emergency and along escape routes shall be externally or internally illuminated to indicate unambiguously the route of escape to a place of safety. Sign requirements are detailed in Clause 5.

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

An emergency luminaire conforming to EN 60598-2-22 shall be sited to provide appropriate illuminance near each emergency exit and at positions where it is necessary to emphasize potential danger or safety equipment. The positions to be emphasized shall include those given in Clause 4.2.

If the premises operator needs to be able to redirect occupants away from specific emergency escape routes an adaptive emergency escape lighting system (AEELS) should be used.