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Ships and marine technology — Low-location lighting (LLL) on passenger ships — Arrangement

Navires et technologie maritime — Éclairage situé en bas sur les navires à passagers — Disposition

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 8, *Ships and marine technology*, Subcommittee SC 1, *Maritime safety*.

This third edition cancels and replaces the second edition (ISO 15370:2010), which has been technically revised.

The main changes compared to the previous edition are as follows:

— the Introduction has been clarified to better explain the purpose of the system;

— in Clause 2, the normative references have been updated;

— in Clause 3, definitions have been added, and some of the existing ones have been clarified;

— in Clause 4, performance requirements for LLL system components have been reviewed and updated;

— in Clause 6, clarification on how and where escape routes shall be marked by the LLL system has been made;

— in 6.5, further details have been provided for the LLL signage system for both arrangement and characteristics;

— in Clause 8 and in Annexes A, B, and E, maintenance and testing procedures have been clarified;

— in Annexes F and G, the examples of installation have been reviewed; and

— in the Bibliography, the informative references have been updated.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

This document is intended to supplement International Maritime Organization (IMO) requirements for low-location lighting used on passenger ships complying with the 1974 *Safety of Life at Sea Convention* (SOLAS 74), as amended.

The LLL system was made mandatory on passenger ships by IMO Resolution MSC.24(60), adopted on 10 April 1992, and by Resolution MSC.27(61), adopted on 11 December 1992, following the fire that occurred on the passenger ship Scandinavian Star, in 1990. Both resolutions require that the means of escape relevant to passenger and crew accommodation areas – including stairways and exits – be marked by lighting or phosphorescent strip indicators placed not more than 0,3 m above the deck. Following IMO Res. A.752(18), adopted on 4 November 1993, provided for relevant guidelines for its application.

The purpose of such a system is given by IMO resolutions A.752(18) and SOLAS regulation II-2/13.3.2.5: i.e. it shall enable passengers and crew to clearly identify the routes of escape and the relevant exits when the normal emergency lighting is less effective due to smoke.

This extensive revision of the standard has been prepared in order to provide more details and clarifications on the arrangement and performance of the LLL system so to better assist designers and manufacturers, as well as the representatives of the competent authority who are requested to verify the compliance of the on board system with this document.

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Ships and marine technology — Low-location lighting (LLL) on passenger ships — Arrangement

1 Scope

This document specifies the requirements for the approval, installation and maintenance of low-location lighting systems as defined in Chapter II-2, Regulation 13.3.2.5.1 of the *International Convention for the Safety of Life at Sea,* 1974 (SOLAS 74), as amended in 2000, and detailed in Chapter 11 of the *International Code for Fire Safety Systems* (FSS Code).

2 Normative references

The following referenced 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.

ISO 2919:2012, *Radiological protection — Sealed radioactive sources — General requirements and classification*

ISO 3795, *Road vehicles, and tractors and machinery for agriculture and forestry — Determination of burning behaviour of interior materials*

ISO 16069:2017, *Graphical symbols — Safety signs — Safety way guidance systems (SWGS)*

ISO 24409-1, *Ships and marine technology — Design, location and use of shipboard safety signs, fire control plan signs, safety notices and safety markings — Part 1: Design principles*

ISO 24409-2, *Ships and marine technology — Design, location, and use of shipboard safety signs, fire control plan signs, safety notices and safety markings — Part 2: Catalogue of shipboard safety signs and fire control plan signs*

IEC 60529, *Degrees of protection provided by enclosures (IP Code)*

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

IEC 60945, *Marine navigation and radiocommunication equipment and systems — General requirements — Methods of testing and required test results*

IMO, *International Convention for the Safety of Life at Sea*, 1974 (SOLAS 74), as amended

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

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

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

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3.1
accommodation spaces
passenger and crew spaces used for public spaces, cabins, offices, hospitals, cinemas, lounges, barber shop, pantries containing no cooking appliances, corridors, toilets and similar spaces

Note 1 to entry: This definition is consistent with the one given by IMO SOLAS II-2/3.1.

3.2
approval
formal acceptance of the product and arrangement issued by the *competent authority* (3.4)

3.3
assembly station
distinct and designated internal or external space for mustering and marshalling passengers and crew arranged in the vicinity of, and permitting ready access for the passengers and crew to, the embarkation stations

Note 1 to entry: The assembly station can also be the embarkation station.

3.4
competent authority
administration whose flag the ship is entitled to fly, or an organization authorized by that administration to perform functions required by this document

3.5
dead-end corridor
corridor, or part of a corridor, whose depth is greater than its width, and from which there is only one *escape route* (3.7)

3.6
EP system
electrically powered system
LLL system (3.12) that requires electrical power for its operation, such as systems using incandescent bulbs, light-emitting diodes, electroluminescent strips or lamps, electrofluorescent lamps, or other electrically powered light-emitting material

3.7
escape route
designated route, principally along corridors, stairways and through exits, by which people can be directed to an *assembly station* (3.3) and/or to a lifesaving appliances embarkation station

Note 1 to entry: The escape routes are shown on the approved escape plan.

3.8
excitation
effect of UV and visible light in the absorption spectrum that allows the materials to be activated and store energy

3.9
exit
egress along the *escape route* (3.7) that can lead into a safe space, or to another escape route, not affected by smoke

3.10
fire-fighting equipment
fixed or portable manually operated equipment that can be used to suppress fire

Note 1 to entry: Smoke detectors and fire-fighters' outfit are not part of the fire-fighting equipment for the purposes of this document.

EXAMPLE Fire hydrants and hoses, portable fire extinguishers.

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3.11
installation plan
plan consisting of a ship's general arrangement showing the layout of the *LLL system* (3.12) using different kinds of lines, colours, and various symbols

3.12
LLL system
low-location lighting system
electrically powered lighting or phosphorescent guidance lines or indicators and relevant *signs* (3.17) placed as continuous as practicable along the *escape routes* (3.7) relevant to passenger and crew *accommodation spaces* (3.1) to readily identify such routes when the normal or the emergency light is less effective due to smoke

3.13
luminance
luminous intensity per unit area of phosphorescent materials

Note 1 to entry: The luminance is measured in millicandelas per square metre.

3.14
maintenance
measures for the preservation and/or restoration of the original conditions of the technical elements of a system as well as all measures for the determination and evaluation of the actual conditions

3.15
PL system
phosphorescent lighting system
LLL system (3.12) based on material incorporating phosphors that, if excited by UV or visible radiation, store energy that is emitted as light over a period of time

3.16
phosphorescent
PL
photoluminescent delayed by storage of energy in an intermediate energy level

Note 1 to entry: SOLAS 74 (as amended), Chapter II-2, Regulation 13.3.2.5.1, uses the word "photoluminescent". In this document, the word phosphorescent is used in place of photoluminescent and should be considered synonymous for the purpose of applying this standard to SOLAS 74, as amended.

3.17
sign
safety sign used in conjunction with *LLL systems* (3.12), indicating the *escape routes* (3.7) to the *assembly stations* (3.3) and/or to embarkation stations, and the location of the *fire-fighting equipment* (3.10)

Note 1 to entry: These safety signs are defined in ISO 24409-1 and ISO 24409-2.

3.18
visible delineation
identification of the boundaries of the *escape route* (3.7) by a series of conspicuous, continuous lighting lines

4 Performance requirements

4.1 General

4.1.1 The competent authority shall ensure that LLL systems and their components meet the requirements set out in this document, as verified through the presentation of relevant documents issued by laboratories recognized by the competent authority.

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