TECHNICAL REPORT

ISO TR 14564

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Shipbuilding and marine structures — Marking of escape routes

Construction navale et structures maritimes — Marquage des voies d'évacuation

Reference number
ISO/TR 14564:1995(E)

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 main task of technical committees is to prepare International Standards, but in exceptional circumstances a technical committee may propose the publication of a Technical Report of one of the following types:

— type 1, when the required support cannot be obtained for the publication of an International Standard, despite repeated efforts;

— type 2, when the subject is still under technical development or where for any other reason there is the future but not immediate possibility of an agreement on an International Standard;

— type 3, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example).

Technical Reports of types 1 and 2 are subject to review within three years of publication, to decide whether they can be transformed into International Standards. Technical Reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

ISO/TR 14564, which is a Technical Report of type 3, was prepared by Technical Committee ISO/TC 8, *Ships and marine technology,* Subcommittee SC 1, *Lifesaving and fire protection.*

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Introduction

In the former ISO/TC 8/SC 9 (Lifesaving equipment) meeting held in Tokyo in 1990, an item "Escape route and marking standards" *) was proposed by Japan as a new work item.

This new work item was put to a vote for decision in accordance with a formal procedure. The result revealed no support for the proposal of the new work item. At this stage, IMO offered the opinion that in view of the IMO's on-going work on the same subject and to avoid possible duplication of effort. ISO should defer the consideration until IMO finished the work.

Considering that the item "Marking of escape route" is directly related to the safety of human life and that the tendency of becoming multi-national in passengers and crew members of ships is growing recently, the item is thought to be an important issue.

Therefore, the Secretariat of former SC 9 (Japan), taking note of the IMO's work process and considering that investigation on the possibility of standardization of "Marking of escape route" should be done, carried out this investigation within the framework of a domestic committee in Japan after having approval of the ISO/TC 8/AG meeting held in 1991.

The result of the investigation revealed as mentioned in this report that if standards for escape routes were prepared respectively by fields of land, sea and air traffic, confusion may be created unwillingly and that there is no necessity of having the standardization work taken up as a work item of ISO/TC 8. A way to use the currently existing standards should be put to consideration. This was our conclusion obtained from the investigation.

This investigation result was reported to the ISO/TC 8/ AG meeting, held in 1992, for consideration. Then it was concluded that this report should be published as a Technical Report. Under the above circumstances, this investigation result is published as a Technical Report (Type 3).

This report consists of the following items.

a) Kind of shipboard marking
b) Posted symbols which are necessary to represent escape routes
c) Regulations and standards regarding escape route symbols
d) Actual cases of posted symbols (investigation result)
e) Trend of IMO
f) The standardization of symbols
g) Symbols for escape route on board ships

*) The title "Escape route and marking standards" was amended as "Marking of escape route" after the voting on the draft of escape route and marking standards to be issued as a "Technical Report of Type 3".

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Shipbuilding and marine structures — Marking of escape routes

1. Kind of shipboard marking

Signs and posters which are used as marking on board ferries, passenger ships, cargo ships, etc. are varied. They may be classified into the following categories in terms of purpose.

a) Route guide (escape route marking, lighting equipment for escape route, emergency exit, escape route illustration, etc.)
b) Location of devices (lifejacket, fire alarm button, fire-extinguisher, fire hydrant, telephone, etc.)
c) Disseminating information (how to put on and wear a lifejacket, emergency signal, instruction for emergency, marking of no-entry, etc.)
d) How to operate (lifeboat davit handling, evacuation slide, etc.)
e) Information board : informative of the location and direction (water closet, lift, shop, entrance, public space, information desk, etc.)
f) Space title plate (machinery space, galley, store room, passenger's cabin numbering, etc.)
g) General information (advertisement, information of events, poster of sight seeing places, calendar, etc.)

Note: Out of these, the signs which are intended for the information of escape routes are the ones for the purpose of guidance in a) above. They are 1) symbols of escape route, lighting equipment for escape route, and symbols of emergency exit, etc. and 2) escape-route illustrations posted at passenger's cabins and in corridors.

2. Posted symbols which are necessary to represent escape routes

The informative signs of escape routes to give access to people (passengers, crew members, etc.) from where they are to the muster and/or embarkation stations should be at least as follows:

a) Symbols to guide to muster stations
b) Symbols to guide to embarkation stations
c) Symbols to show emergency exits or escape exits
d) Arrows to show escape directions

3. Regulations and standards regarding escape route symbols

The following are internationally recognized as the regulations or standards regarding symbols of escape routes.

a) IMO Resolution A.603(15): Symbols related to life-saving appliances and arrangements
b) ISO 6309: Fire protection - Safety signs (TC21)
c) ISO 3864: Safety colours and safety signs (TC80)

Each country has its own laws regarding fire-fighting, building construction, etc., and these laws may include provisions for safety symbols. Sometimes there may be established domestic standards for symbols with regard to these laws.

4. Actual cases of posted symbols (investigation result)

a) Showing location (station)

1) Fundamental symbols

- The symbols for the muster stations and embarkation stations as contained in IMO resolution A.603(15) are generally used.(see figure 1)

Examples:

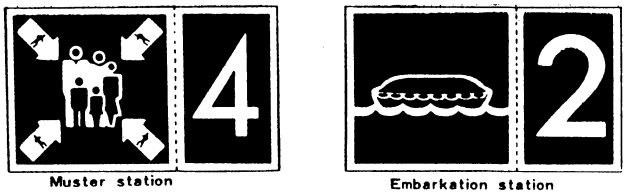

Fig.1

- The symbol of ISO 6309 No.4 is used for emergency exit. (see figure 2)

Example:

Fig.2

- The symbol color of these is generally white on a green background.

2) Letters (only)

English or two languages are used. (see figure 3)

Examples:

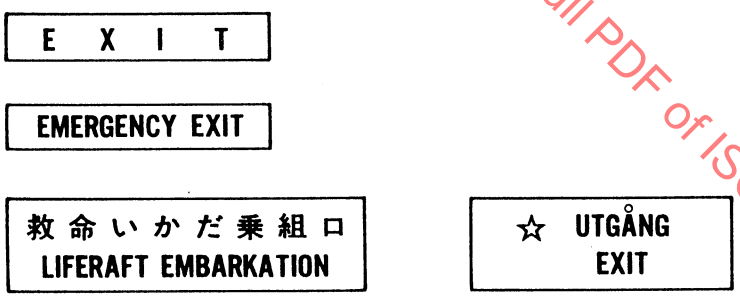

Fig.3

The color of these is generally white on a green background, but sometimes red on a white background.

b) Arrows

1) Fundamental arrows

Basic arrows as contained in IMO resolution A.603(15) or ISO 6039 are generally used. (see figure 4)

Examples:

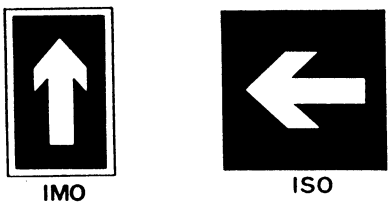

Fig.4

2) Modified arrows
Modified arrows as shown in the following examples are used. (see figure 5)
Examples:

Fig.5

The color of these is generally white on a green background, but sometimes red on a white background.

c) Combination of an arrow and other symbol
1) Simple combination of a symbol showing location and an arrow (see figure 6)
Examples:

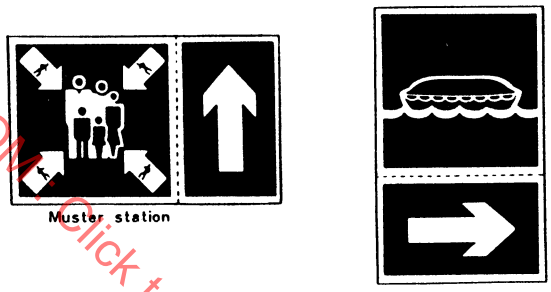

Fig.6

2) Combination of a modified symbol showing location and an arrow (see figure 7)
Examples: A symbol of an emergency exit, an arrow and letters

Fig.7

Example: A modified IMO symbol and an arrow (irregular combination, see figure 8)

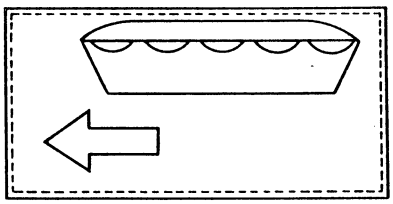

Fig.8

d) Other symbols
The following symbols are frequently seen as variations of ISO 6309 NO.4.
The symbol color is white on a green background. (see figure 9)
Examples:

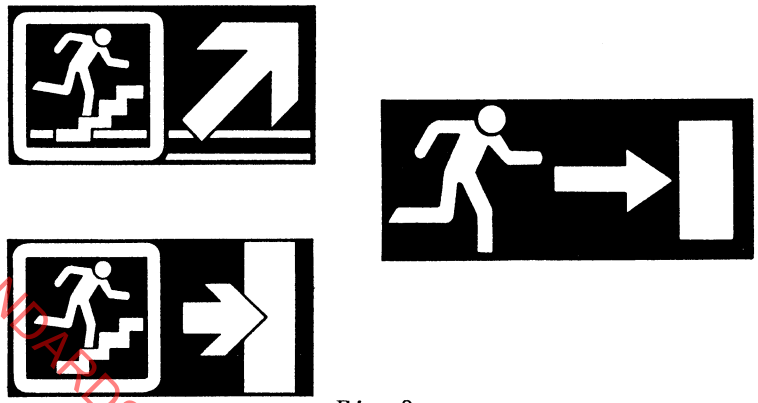

Fig.9

e) Posting position
The symbols are posted as follows.
1) Floor surface
2) Low level: 0.3 m, 0.45 m
3) High level: 1.5 m, 1.7 m, 1.8 m, 2.0 m, 2.5 m
4) Ceiling surface

Note : The safety symbols of IMO resolution A.603(15), ISO 6309,etc. are marketed.

The investigation result tells us that there are many variations of symbols. The reasons for this trend appear to be the following or so.

a) Supplementary letters or symbols are added to the fundamental symbols and arrows in order to make their meaning more clear (e.g. not only an arrow mark, but also the destination).
b) More detailed shapes in symbols are used. They are needed from the specific features of escape routes (e.g. diagram of stairs, double-direction arrow).
c) Symbols copied from those used on land in each country are used.
d) Symbols especially designed are posted on board passenger ships, because the symbols standardized or marketed do not match the interior.

In other words, for the appropriate and considerate posting of symbols, it is necessary to use or add remarks of words, supplementary letters, supplementary symbols, etc. in addition to the basic symbols.

5. Trend of IMO

IMO's 18th Assembly, held in November 1993, adopted on November 4, 1993 Resolution A.752(18) "Guidelines for evaluation, testing and application of low-location lighting on passenger ships" as a guideline which satisfies the provisions to easily indicate the escape route on board ships in an emergency concerning ships carrying 36 passengers and over, required by the provisions of Reg. II-2/28.1.10 and Reg. II-2/41-2.4.7 of SOLAS 1974 as amended.
In this guideline, the construction, definition, requirements, method and location of indication of escape routes, etc. are laid down in detail.
Here, of the contents of the guideline, only items related to this report, i.e. "3. definition" and "6. signs and marking" are chosen appended as follows.
Reference is made to IMO Resolution A.752(18) for detailed contents of other items.

3. Definitions

3.1 Low-location lighting (LLL) - Electrically powered lighting or photoluminescent indicators placed at points of the escape route to readily identify all routes of escape.

3.2 Photoluminescent (PL) system - An LLL system which uses PL material. PL material contains a chemical (example: zinc sulfide) that has the quality of storing energy when illuminated by visible light. The PL material emits light which becomes visible when the ambient light source is less effective. Without the light source to re-energize it, the PL material gives off the stored energy for a period of time with diminishing luminance.

3.3 Electrically powered (EP) system - An LLL system which requires electrical power for its operation, such as systems using incandescent bulbs, light emitting diodes, electroluminescent strips or lamps, electrofluorescent lamps, etc.

6. Signs and markings

6.1 All escape route signs and fire equipment location marking should be of photoluminescent material or marked by lighting and fitted in the lower 300 mm of the bulkhead. The dimensions of such signs and markings are to be commensurate with the rest of the LLL system.

6.2 LLL exist signs should be provided at all exits. The signs should be located within the lower 300 mm on the side of exit doors where the handle is located.

6.3 All signs should contrast in colour to the background (bulkhead or deck) on which they are installed.