Low Location Lighting system

The spreading of smoke is one of the most dangerous consequences of a fire rendering evacuation difficult and in some cases impossible. Under these conditions, visibility is reduced causing panic and increasing the evacuation time which is a critical factor in avoiding intoxication which can lead to death.

The ® Everlux® Low Location Lighting (LLL) system is a unique system that allows all evacuation routes to stay illuminated, thereby communicating a clear, continuous and unambiguous “means of escape” message which leads to a safe place. The locations of fire fighting equipment are also clearly marked as part of the system along the escape routes.

This LLL system is unique in providing consistent and regular information throughout the complete escape route. This reduces possible confusion and panic, factors that hamper the safe egress from occupied areas.

According to IMO Resolution A. 752 (18) all means of egress must be marked with Low Location Lighting system at all points of the evacuation route. The LLL system is also recommended by ISO Standards, namely ISO 15370.

The illustration below depicts a complete safety signage system installed on board:

- Photoluminescent signs installed at a high location level (above 2m) are to be visible and identified from further distances.
- Photoluminescent signs installed at an intermediate location level. Per ISO 24409 fire-fighting equipment signs shall be installed either directly on the fire-fighting equipment or as close as practicable.
- Photoluminescent signs at a low location level (within 30cm from deck according to SOLAS 2004 Chapter II Regulation 13.3.3.5 and ISO 15370): a sign system that illuminates the entire escape route and identifies the location of fire fighting equipment at floor level.

The components of the ® Everlux® Low Location Lighting system are:
- Photoluminescent rigid plastic strips and signs to be applied on walls.
- Floor marking strips: 0.3mm thick non-slip photoluminescent self-adhesive marking strips and signs to be applied directly to the floor.
Low Location Lighting

Example

Escape doors must be signed as illustrated.

Stairs and corridors which are 2m wide or more should be fitted with LLL photoluminescent strips on both sides.

Photoluminescent directional signs must be placed at each change of level.

Non-escape doors must be signed as illustrated.

According to Solas 2004 Chapter II Regulation 13.3.3.5 and IMO Resolution A.752 (18) photoluminescent marking strips must be placed not more than 30cm above the deck at all points of the escape route.

Directional escape route signs complement the continuous photoluminescent strip installed in aluminium rail.
Normative and legal framework, technical performances and properties

Guidance systems at floor level [Low Location Lighting] began with legislation covering the areas of greatest risk. Firstly in aviation with FAA in 1984 and then in the maritime industry with IMO Regulations in 1989.

Since 1999, following the development of new photoluminescent technologies, other authorities have begun the process of standardising these systems.

| Important Standards | | |
|---------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| IMO Resolution A.752 (18) | Guidelines for the evaluation, testing and application of low-location lighting on passenger ships |
| SOLAS Convention 2004 | Means of escape - Marking of escape routes |
| ISO 15370 | Low Location Lighting (LLL) on passenger ships |
| ISO 16069 | SWGS - Safety Way Guidance Systems |
| ISO 3864 | Graphical symbols - safety colours and safety signs |

Everlux® Low Location Lighting Strip and Sign System:

The strip and sign system can be mounted directly to walls using the Everlux® adhesive or with the aluminium frames. According to IMO A.752 (18) his system shall be positioned in the following way, throughout the escape routes:
- Where a corridor has a width of 2m or more the guidance line shall be applied continuously on both sides of the corridor.
- Where the width is less than 2m, one guidance line may be sufficient and should be as continuous as possible on the side where the fire fighting equipment is located. If there is no fire fighting equipment the strips should be applied continuously on the side that leads to the door handle.
- The strips should not be installed more than 30cm above deck.

Everlux® LLL Strip and Sign System for Floors and Stairs:

The strip and sign system can be placed directly onto floors and stairs using the integral high adherence adhesive. Simply remove the backing material and position accurately.

<table>
<thead>
<tr>
<th>Applicable Resolutions and Standards/ Product</th>
<th>Luminance Intensity (mcd/m²) [After removing the exciting light]</th>
<th>Period of Light Decay</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMO Resolution A.752 (18) a)</td>
<td>15 mcd/m²</td>
<td>2.0 mcd/m²</td>
</tr>
<tr>
<td>ISO 15370 a)</td>
<td>15 mcd/m²</td>
<td>2.0 mcd/m²</td>
</tr>
<tr>
<td>Everlux® a)</td>
<td>40 mcd/m²</td>
<td>8 mcd/m²</td>
</tr>
<tr>
<td>Everlux® LLL b)</td>
<td>80 mcd/m²</td>
<td>10 mcd/m²</td>
</tr>
</tbody>
</table>

Luminance Properties

a) Values obtained with a stimulation of only 25 lux, during 24 hours with a fluorescent lamp with colour temperature of 6000K, according to ISO 15370 measurement protocol.

b) Values obtained with a stimulation of only 25 lux, during 15 minutes with a fluorescent lamp with colour temperature of 6500K, according to ISO 16069 measurement protocol.

All signs have a high photoluminescent intensity which is achieved with as little as a 25 lux charge from an ambient light source.

Base Materials:

- Signs and strips for wall mounting: Photoluminescent rigid plastic 1.2mm thick; photoluminescent self-adhesive vinyl; Photoluminescent non-slip self-adhesive polycarbonate 0.3mm thick; Transparent vinyl signs are also available to complement the Everlux® Low Location Lighting system.

Printing: Serigraphy, high gloss paint with a high UV resistance.

Chemical Characteristics: Non-phosphorous, non-radioactive, lead-free and non-poisonous.
Low Location Lighting

Turnkey safety signage projects

Everlux® adopts an integrative approach to every safety signage project the company is involved with from project development through to installation and project delivery. When hiring Everlux® for a turnkey safety signage project, customers benefit from a high quality on time service which includes on-board and remote surveys, life-safety and fire control plan and Low Location Lighting project development using the Everlux® Project maritime tool, supply, installation, on-board luminance measurements, project management, documentation and delivery.

The Everlux® turnkey safety signage project service is the ideal solution for owners, shipyards or marine outfitters who are involved with new-build or major refurbishment on vessels or oil rigs.

Photoluminescent low location lighting system inspections and measurement service

Everlux® has the Approval as Service Supplier by DNV for photoluminescent Low Location Lighting measurements. Our technicians are available worldwide to help you meet the classification bodies’ requirements in a fast and cost-effective way. The inspection and measurement reports on photoluminescent LLL systems are mandatory according to IMO Resolution A.752 (18), adopted on 4 November 1993. These guidelines cover the approval, installation and maintenance of low location lighting (LLL) required by regulations II-2/28, paragraph 1.10 and II-2/41-2, paragraph 4.7 of the 1974 SOLAS Convention, as amended, on all passenger ships carrying more than 36 passengers, to readily identify the passengers’ route of escape when the normal emergency lighting is less effective due to smoke.

According to IMO Resolution A.752 (18), chapter 9, a maintenance of LLL systems should be visually examined and checked once a week and a record kept. All missing, damaged or inoperable LLL components should be replaced.

All LLL systems should have their luminance tested at least once every five years. Readings should be taken on site. If the luminance for a particular reading does not meet the requirement of these guidelines, readings should be taken in at least ten locations equally spaced apart in the space. If more than 30% of the readings do not meet the requirements of these guidelines, the entire LLL system should be replaced.

If between 20% and 30% of the readings do not meet the requirements of these guidelines, the LLL system should be checked again in one year or may be replaced.

For detailed information on the Everlux® turnkey safety signage project service or on the mandatory requirements, inspection and measurement reports of photoluminescent LLL systems, please contact us at commercial@everluxmaritime.com.
Everlux® project maritime is a software support tool for the development of safety signage and Low Location Lighting (LLL) projects and respective bill of quantities. This tool facilitates the most adequate selection of safety signs and provides installation companies with the right technical documentation to assure that the safety signs that are projected will be installed onboard simultaneously reducing the installation time.

Everlux® project maritime is available in two different versions: version 2.5 and version 2.5i. In terms of hardware both versions can be used with 64 bit processors. The 2.5 version works on AutoCAD (post 2008 versions except AutoCAD LT) and after its installation will automatically generate a tool bar with the Everlux® project maritime menu.

The 2.5i version is an independent application that allows the use of image files (type *.dxf; *.jpg; *.bmp; *.png) as the basis for the safety signage project.

Everlux® project maritime is available for free download at: www.everluxmaritime.com/en/downloads

Quick life-safety and fire control plan development

Quick Low Location Lighting project development and automated BOQ creation
The signs featured in this page can be supplied in photoluminescent rigid plastic, self-adhesive photoluminescent vinyl and transparent self-adhesive vinyl signs. The transparent self-adhesive vinyl signs are a quick solution to complement Low Location Lighting systems by applying them directly on to the photoluminescent strips.
Strips for wall marking at floor level

- **S 21 01** 1000x35
- **S 21 02** 1000x57
- **S 21 03** 1000x83

Marking strips for walls and stair risers

- **S 21 11** 800x57
- **S 21 12** 800x83
- **S 21 13** 800x35
- **S 21 14** 800x57
- **S 21 15** 800x83

Strips to identify doorways

- **S 21 21** 2000x35
- **S 21 22** 2000x57
- **S 21 23** 2000x83

Rolls for wall marking

The ® Everlux® photoluminescent vinyl rolls can be used in wall mounted LLL systems and are the ideal solution for applications in irregular or rounded walls. This product can also be used for emergency equipment marking and handrail identification.

- **S 21 31**
  - **S 21 32**

- **length (m)** 10
- **width (mm)** 35, 57, 83
**Low Location Lighting**

System for floor and stair marking

### Non-slip self-adhesive marking strips

<table>
<thead>
<tr>
<th>mm</th>
<th>1200x37</th>
<th>1200x57</th>
<th>1200x83</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 21 51</td>
<td>S 21 52</td>
<td>S 21 53</td>
<td>S 21 54</td>
</tr>
</tbody>
</table>

### Discs for mesh metal floors

- S 21 75
- S 21 76
- S 21 77
- S 21 78

### Non-slip self-adhesive discs for floors (1 box of 12 units)

- S 21 79
- S 21 80

### Everlux™ Footprint silhouettes

Photoluminescent footprint silhouettes are ideal for indicating the direction and outline of evacuation routes. Available in left and right silhouettes to be used alternately. **Everlux™ Footprint Silhouettes** are made from self-adhesive, anti-slip polycarbonate which is only 0.03mm thick.

- S 21 84
Non-slip self-adhesive “L” for stairs

Stairnosing - protection for steps

Aluminium framework developed for stair nosing protection. This product has anti-slip properties, even in situations where oil has been spilt, due to the grooves featured over the whole surface.

On the upper and front parts there are ® Everlux™ photoluminescent polycarbonate strips which also have anti-slip properties. These allow the perfect identification of the edge of the steps during a descending or ascending evacuation.

Properties
Materials: Aluminium and ® Everlux™ in 0.3mm thick polycarbonate.
Sizes: Please refer to the technical drawings.

The ® Everlux™ protection for steps is supplied with double-sided high adherence adhesive which allows an easy application.

Join the frame at two points, as in scheme 1, then rotate towards the riser until it is firmly adhered (scheme 2).