

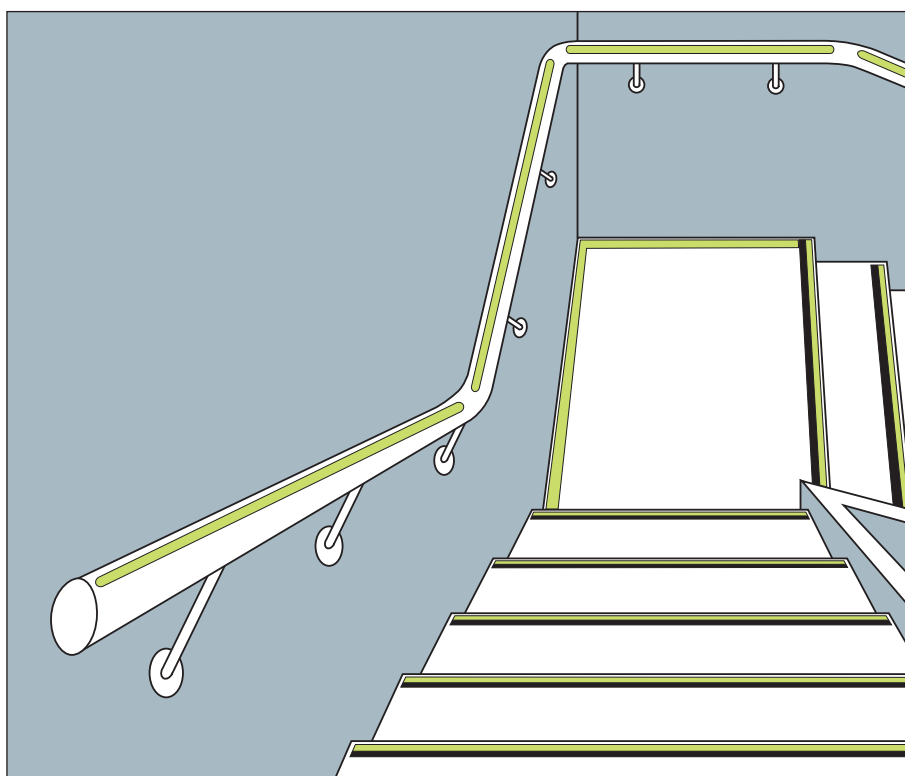
ECOGLO INTERNATIONAL LIMITED

Compliance Guide

for Ecoglo Photoluminescent Markings to meet the requirements of

2021 NFPA 101 LIFE SAFETY CODE 7.2.2.5.5 EXIT STAIR PATH MARKINGS

N.B. For Performance Solutions to meet primary lighting and exit signage requirements, please consult Ecoglo.



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Introduction

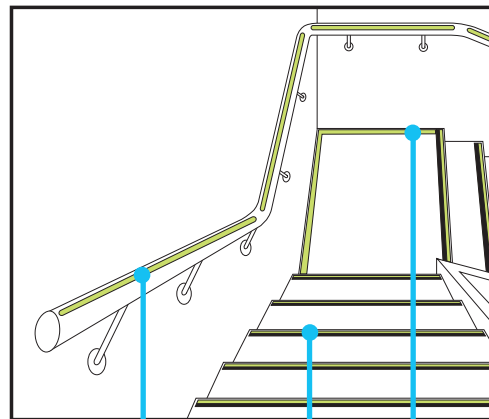
This document is aimed at those wishing to design an NFPA 101 compliant photoluminescent path marking system and outlines:

- Where Ecoglo exit stair path marking systems are required;
- Which Ecoglo markings should be used and where they should be installed;
- What ongoing inspections should be carried out.

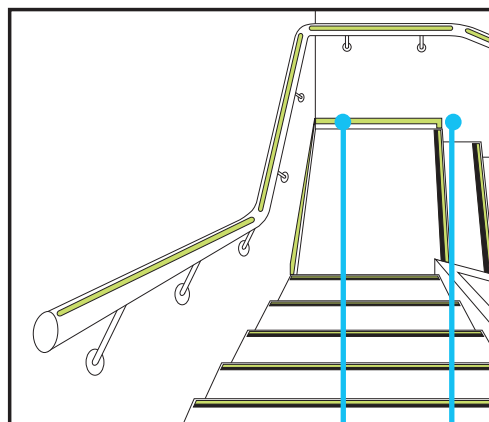
Ecoglo photoluminescent products are aluminium based and manufactured to a very high standard. To ensure suitable durability Ecoglo’s proprietary manufacturing process involves integrally bonding the active ingredients onto aluminium using Heat Curing Temperature (HTC) technology. Ecoglo’s product range includes step edge contrast, guidance strips, handrail markers and door markers, as well as exit signage. Please note that for Ecoglo markings to be appropriate there needs to be sufficient charging light on the markings as specified in 7.2.2.5.5.11 (see p5).

7.2.2.5.5 Exit Stair Path Markings

Where exit stair path markings are required in Chapters 11 through 43, this guide details how Ecoglo photoluminescent markings shall be installed in accordance with 7.2.2.5.5.1 through 7.2.2.5.5.11.



HANDRAIL MARKING STEP MARKINGS
FLOOR MOUNTED PERIMETER DEMARCATION LINE



WALL MOUNTED PERIMETER DEMARCATION LINE
DROPS TO LEADING EDGE OF LANDING

7.2.2.5.5.1 Exit Stair Treads

Exit stair treads shall incorporate a marking stripe that is integral with the nosing of each step. The marking stripe shall be installed along the horizontal leading edge of the step and shall extend the full width of the step. The marking stripe shall also meet all of the following requirements:

- (1) The marking stripe shall be not more than ½ in. (13 mm) from the leading edge of each step and shall not overlap the leading edge of the step by more than ½ in. (13 mm) down the vertical face of the step.
- (2) The marking stripe shall have a minimum horizontal width of 1 in. (25 mm) and a maximum width of 2 in. (51 mm).
- (3) The dimensions and placement of the marking stripe shall be uniform and consistent on each step throughout the exit enclosure.
- (4) Surface-applied marking stripes using adhesive-backed tapes shall not be used.

7.2.2.5.5.1 Exit Stair Treads

Recommended Ecoglo Products

- E15-073 Step Edge Contrast
- F2-003 Step Nosing
- F14-173 Step Nosing
- G6-003 Guidance Strip

7.2.2.5.5.2 Exit Stair Landings

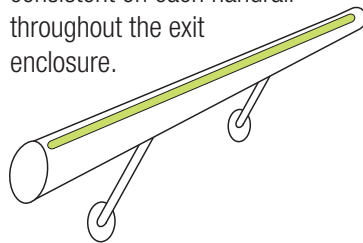
The leading edge of exit stair landings shall be marked with a solid and continuous marking stripe consistent with the dimensional requirements for stair treads and shall be the same lengths, and consistent with, the stripes on the steps.

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| 7.2.2.5.5.2 Exit Stair Landings |
| Recommended Ecoglo products |
| E15-073 Step Edge Contrast |
| F2-003 Step Nosing |
| F14-173 Step Nosing |
| G6-003 Guidance Strip |

7.2.2.5.5.3 Exit Stair Handrails

All handrails and handrail extensions shall be marked with a solid and continuous marking stripe and meet all of the following requirements:

- (1) The marking stripe shall be applied to the upper surface of the handrail for the entire length of the handrail, including extensions.
- (2) Where handrails or handrail extensions bend or turn corners, the marking stripe shall be permitted to have a gap of not more than 4 in. (100 mm).
- (3) The marking stripe shall have a minimum horizontal width of 1 in. (25 mm), which shall not apply to outlining stripes listed in accordance with UL 1994, *Luminous Egress Path Marking Systems*.
- (4) The dimensions and placement of the marking stripe shall be uniform and consistent on each handrail throughout the exit enclosure.



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| 7.2.2.5.5.3 Exit Stair Handrails |
| Recommended Ecoglo Products |
| H3-001 Handrail Marker |
| H5-001 Handrail Marker |
| G3-001 Guidance Strip |
| G6-003 Guidance Strip |

7.2.2.5.5.4 Perimeter Demarcation Marking

Stair landings, exit passageways, and other parts of the floor areas within the exit enclosure shall be provided with a solid and continuous perimeter demarcation marking stripe on the floor or on the walls or a combination of both. The marking stripe shall also meet all of the following requirements:

- (1) The marking stripe shall have a minimum horizontal width of 1 in. (25 mm) and a maximum width of 2 in. (51 mm), with interruptions not exceeding 4 in. (100 mm).
- (2) The minimum marking stripe width of 1 in. (25mm) shall not apply to outlining stripes listed in accordance with UL 1994, *Luminous Egress Path Marking Systems*.
- (3) The dimensions and placement of the perimeter demarcation marking stripe shall be uniform and consistent throughout the exit enclosure.
- (4) Surface-applied marking stripes using adhesive-backed tapes shall not be used.

Floor Demarcation

Perimeter floor demarcation lines shall comply with all of the following:

- (1) They shall be placed within 4 in. (100 mm) of the wall and extend to within 2 in. (51 mm) of the markings on the leading edge of landings.
- (2) They shall continue across the floor in front of all doors.
- (3) They shall not extend in front of exit doors leading out of an exit enclosure and through which occupants must travel to complete the egress path.

Wall Demarcation

Perimeter wall demarcation lines shall comply with all of the following:

- (1) They shall be placed on the wall with the bottom edge of the stripe not more than 4 in. (100 mm) above the finished floor.
- (2) At the top or bottom of the stairs, they shall drop vertically to the floor within 2 in. (51 mm) of the step or landing edge.
- (3) They shall transition vertically to the floor and then extend across the floor where a line on the floor is the only practical method of outlining the path.
- (4) Where the wall line is broken by a door, they shall continue across the face of the door or transition to the floor and extend across the floor in front of such door.
- (5) They shall not extend in front of doors leading out of an exit enclosure and through which occupants must travel to complete the egress path.
- (6) Where a wall-mounted demarcation line transitions to a floor-mounted demarcation line, or vice versa, the wall-mounted demarcation line shall drop vertically to the floor to meet a complementary extension of the floor-mounted demarcation line, thus forming a continuous marking.

7.2.2.5.5.4 Perimeter Demarcation Marking

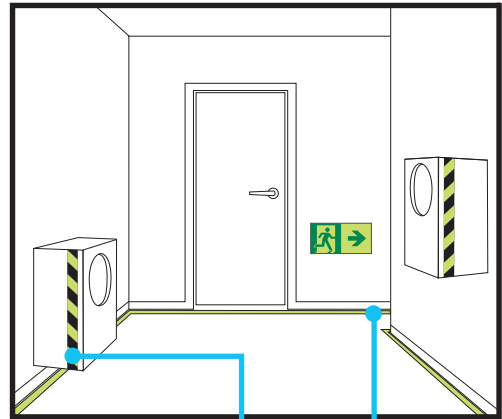
Recommended Ecoglo Products

G3-001 Guidance Strip
G6-003 Guidance Strip

7.2.2.5.5.5 Obstacles

Obstacles that are in the exit enclosure at or below 6 ft. 6 in. (1980 mm) in height, and that project more than 4 in. (100mm) into the egress path, shall be identified with markings not less than 1 in. (25 mm) in horizontal width

comprised of a pattern of alternating equal bands of luminescent material and black; and with the alternating bands not more than 2 in. (51 mm) in horizontal width and angled at 45 degrees.



MARKING OF OBSTACLES
FLOOR OR WALL MOUNTED DEMARICATION LINES

7.2.2.5.5.5 Obstacles

Recommended Product

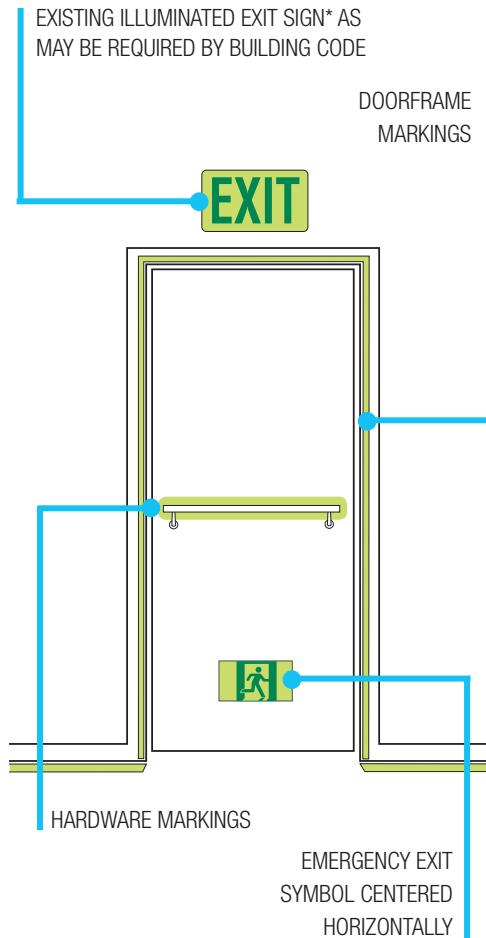
UL-HZ2518 Photoluminescent Hazard Tape
N.B. The above product is not heat cured or aluminium based.

7.2.2.5.5.6 Doors Serving Exit Enclosure

All doors serving the exit enclosure that swing out from the enclosure in the direction of egress travel shall be provided with a marking stripe on the top and sides of the door(s) frame(s). The marking stripe shall also meet all of the following requirements:

- (1) The marking stripe shall have a minimum horizontal width of 1 in. (25mm) and a maximum width of 2 in. (51mm).
- (2) Gaps shall be permitted in the continuity of door frame markings where a line is fitted into a corner or bend, but shall be as small as practicable, and in no case shall gaps be greater than 1 in. (25mm).
- (3) Where the door molding does not provide enough flat surface on which to locate the marking stripe, the marking stripe shall be located on the wall surrounding the frame.

- (4) The dimensions and placement of the marking stripe shall be uniform and consistent on all doors in the exit enclosure.



7.2.2.5.5.6 Doors Serving Exit Enclosure

Recommended Ecoglo Products
G6-003 Guidance Strip

7.2.2.5.5.7 Door Hardware Marking

The door hardware for the doors serving the exit enclosure that swing out from the enclosure in the direction of egress travel shall be provided with a marking stripe. The marking stripe shall also meet the following requirements:

- (1) The door hardware necessary to release the latch shall be outlined with an approved marking stripe having a minimum width of 1 in. (25 mm).

- (2) Where panic hardware is installed, both of the following criteria shall be met:
- (a) The marking stripe shall have a minimum width of 1 in. (25 mm) and be applied to the entire length of the actuating bar or touch pad.
 - (b) The placement of the marking stripe shall not interfere with viewing of any instructions on the actuating bar or touch pad.

7.2.2.5.5.7 Door Hardware Marking

Recommended Ecoglo Products

G6-003 Guidance Strip
DHM1010 Door Handle Marker

Recommended Product

UL-DHM3840 Door Push Bar Marker
N.B. The above product is not heat cured or aluminium based.

7.2.2.5.5.8 Emergency Exit Symbol

An emergency exit symbol with a luminescent background shall be applied on all doors serving the exit enclosure that swing out from the enclosure in the direction of egress travel. The emergency exit symbol shall also meet both of the following requirements:

- (1) The emergency exit symbol shall meet the requirements of NFPA 170, *Standard for Fire Safety and Emergency Symbols*.
- (2) The emergency exit symbol applied on the door shall be a minimum of 4 in. (100 mm) in height and shall be applied on the door, centered horizontally, with the top of the symbol not higher than 18 in. (455 mm) above the finished floor.



7.2.2.5.5.8 Emergency Exit Symbol

Recommended Ecoglo Products

S5-RM2010 Pictogram
S5-RML2010 Pictogram Left
S5-RMR2010 Pictogram Right
S5-RMUA2010 Pictogram Up Arrow
S5-RMDA2010 Pictogram Down Arrow
S5-RMUL2010 Pictogram Up Left Arrow
S5-RMDL2010 Pictogram Down Left Arrow
S5-RMUR2010 Pictogram Up Right Arrow
S5-RMDR2010 Pictogram Down Right Arrow

* While EXIT signs are not specified in this section of the code, Ecoglo make exit signs that are UL924 listed (and therefore comply with NFPA 101 section 7.10.1.2 Exits). Ecoglo can also make exit signs to meet regional/international text or graphics requirements.

7.2.2.5.5.9 Uniformity

Placement and dimensions of the marking stripes shall be consistent and uniform throughout the same exit enclosure.

7.2.2.5.5.10 Materials

Photoluminescent material is suitable for exit stair path markings but it shall also comply with either of the following:

- (1) ASTM E2072, *Standard Specification for Photoluminescent (Phosphorescent) Safety Markings and ASTM E2073, Standard Test Method for Photopic Luminance of Photoluminescent (Phosphorescent Markings)*
- (2) UL 1994 *Luminous Egress Path Marking Systems*

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| 7.2.2.5.5.10 Materials |
| Recommended Ecoglo Products All components UL 1994 listed |

7.2.2.5.5.11 Exit Stair Illumination

Exit enclosures where photoluminescent materials are installed shall comply with all of the following:

- (1) The exit enclosure shall be continuously illuminated for at least 60 minutes prior to periods when the building is occupied.
- (2) The illumination shall remain on when the building is occupied.
- (3) Lighting control devices provided for illumination within the exit enclosure shall meet all of the following requirements:
 - (a) Lighting control devices that automatically turn exit enclosure lighting on and off, based on occupancy, shall be permitted, provided that they turn on illumination for charging photoluminescent materials for at least 60 minutes prior to periods when the building is occupied.
 - (b) Lighting used to charge photoluminescent materials shall not be controlled by motion sensors.
 - (c) Lighting control devices that dim the lighting levels within the exit enclosure shall not be installed unless they provide a minimum of 1 ft-candle (10.8 lux) of illumination within the exit enclosure measured at the walking surface.

To ensure suitable durability specify products which are heat cured and aluminium based. All recommended Ecoglo products (which includes Step Edge Contrast, Guidance Strips, Handrail Markers, Door Markers and Exit Signage) are heat cured and aluminium based.

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| Specification Note |
| Recommended Ecoglo Products Heat cured Aluminium based |

Ongoing Inspections

The following inspections are recommended to ensure ongoing compliance with 2021 NFPA 101 Life Safety Code 7.2.2.5.5 Exit Stair Path Markings.

| Action | Complete |
|---|----------|
| There has been no change in the configuration of the building which renders the marked escape routes unusable. | |
| All products are still configured as at installation and there is no material damage to any of these products. | |
| All products are clean from general dust build up and any other specific obscuring deposits. | |
| All products are clearly visible and have not been covered up by carpet or other materials. | |
| All products mark a clear path and have not been obstructed by physical hazards such as trolleys, machinery, partitions, etc. | |
| All lights checked that the positions have not altered from design. | |
| All lights are in working order and clean. | |
| All automated lighting control systems are operational as per design. | |

The above checks should be carried out regularly and at least once every 12 months to ensure reliability of the system in the case of fire or other emergency.

Any repairs or replacements required should be carried out immediately. A log of all inspections including results and any corrective measures taken should be recorded and kept on the premises for inspection by the building management and fire department. The log should contain the inspection dates and printed name and signature of the person performing the inspection.

In situations where signs and markings are likely to become dirty, it is recommended that frequent checks and cleaning are done.

Compliance Quick Reference

2021 NFPA 101 Life Safety Code 7.2.2.5.5 Exit Stair Path Markings

7.2.2.5.5.1 Exit Stair Treads

- E15-073 Step Edge Contrast
- F2-003 Step Nosing
- F14-173 Step Nosing
- G6-003 Guidance Strip

7.2.2.5.5.2 Exit Stair Landings

- E15-073 Step Edge Contrast
- F2-003 Step Nosing
- F14-173 Step Nosing
- G6-003 Guidance Strip

7.2.2.5.5.3 Exit Stair Handrails

- H3-001 Handrail Marker
- H5-001 Handrail Marker
- G3-001 Guidance Strip
- G6-003 Guidance Strip

7.2.2.5.5.4 Perimeter Demarcation Marking

- G3-001 Guidance Strip
- G6-003 Guidance Strip

7.2.2.5.5.5 Obstacles

- UL-HZ2518 Photoluminescent Hazard Tape

7.2.2.5.5.6 Doors Serving Exit Enclosure

- G6-003 Guidance Strip

7.2.2.5.5.7 Door Hardware Marking

- G6-003 Guidance Strip
- DHM1010 Door Handle Marker
- UL-DHM3840 Door Push Bar Marker

7.2.2.5.5.8 Emergency Exit Symbol

- S5-RM2010 Pictogram
- S5-RML2010 Pictogram Left
- S5-RMR2010 Pictogram Right
- S5-RMUA2010 Pictogram Up Arrow
- S5-RMDA2010 Pictogram Down Arrow
- S5-RMUL2010 Pictogram Up Left Arrow
- S5-RMDL2010 Pictogram Down Left Arrow
- S5-RMUR2010 Pictogram Up Right Arrow
- S5-RMDR2010 Pictogram Down Right Arrow

7.2.2.5.5.10 Materials

- All components UL 1994 listed