

ECOGLO INTERNATIONAL LIMITED

Designers' Handbook for

# High Smoke Risk Areas

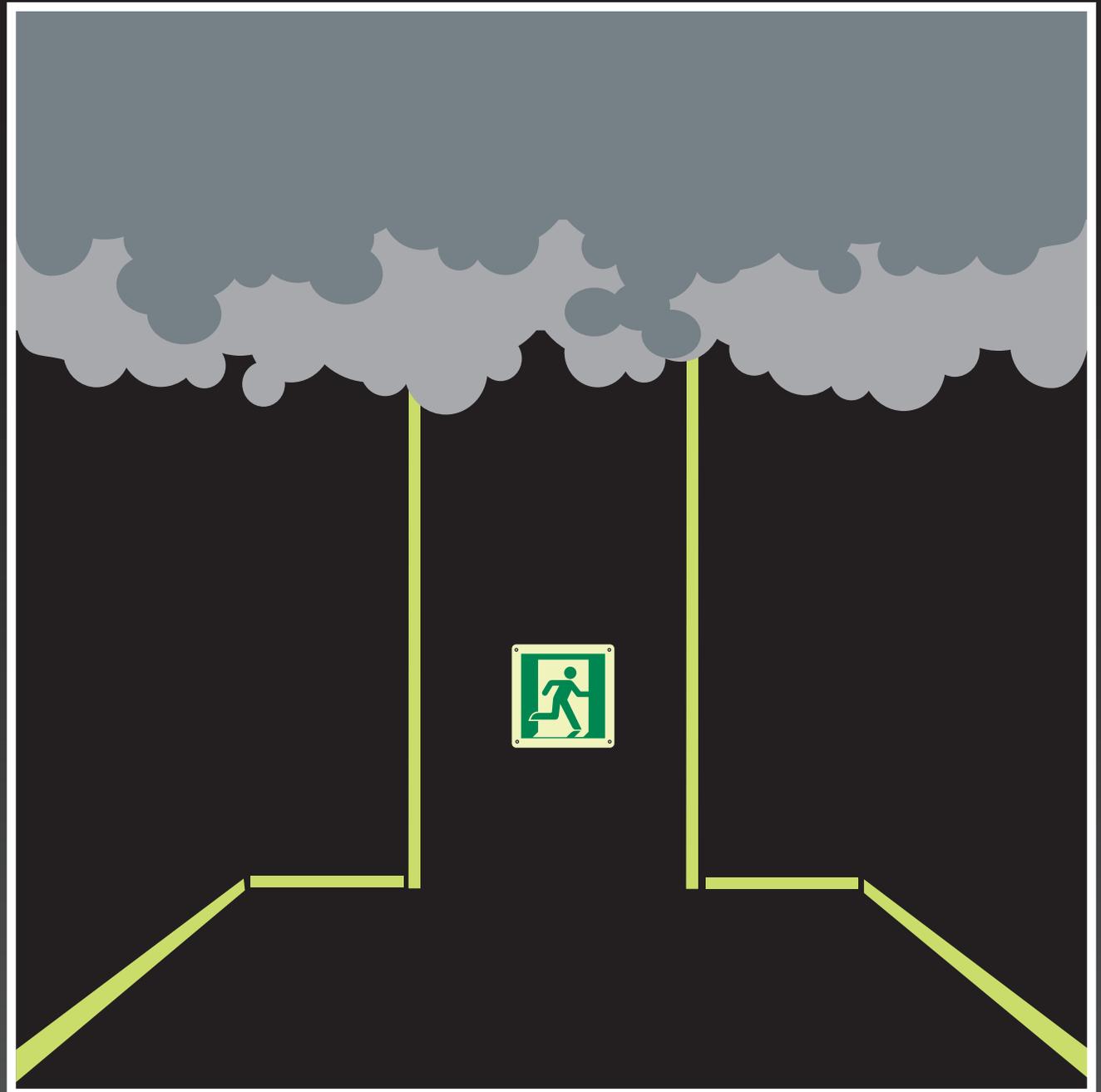
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This handbook provides guidance for designing systems using Ecoglo photoluminescent markings based upon the requirements of international building codes and standards pertaining to high smoke risk areas.

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V17.1



# Introduction

Ecoglo photoluminescent escape route signs and markers are designed to be clearly visible in all conditions, including during failure of the main lighting to meet NZBC Clauses F8 and F6, in order to quickly direct occupants of a building to exits. However, visibility can be abruptly and severely impaired if there is the added hazard of smoke which can result in a prolonged evacuation time endangering occupants.

When there is a risk of smoke designers must take into consideration how this can affect evacuation and how occupants react under these conditions.

## Basic Principles for the Design of a Photoluminescent Escape Route in High Smoke Risk Areas

Ecoglo photoluminescent systems are NZBC compliant and designed to facilitate quick and safe evacuation of occupants from a building.

When there is a risk of smoke, the design of the escape route should also take the following principles into account.

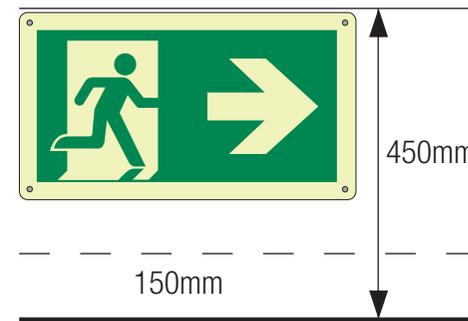
### Visual Reinforcement

To avoid the deadly effects of smoke and to maintain a level of visibility, occupants fleeing a building may find they have to crawl along the floor in order to escape.

In addition to exit signs located as per the requirements of F8, and specified features made reasonably visible as per the requirements of F6, photoluminescent *floor proximity exit signs* should also be placed low down to ensure that the direction of travel to the exit will be obvious to any occupant crawling along the escape path.

If an electrical emergency system is in place, a comprehensive floor-based Ecoglo photoluminescent path marking system should also be installed to enable rapid identification of the path to be followed to the nearest exit.

The purpose of this guide is to illustrate the optimum photoluminescent escape route system for high smoke risk areas.



*Floor proximity exit sign* - An exit sign mounted with the **bottom edge** no lower than 150mm and the top edge no higher than 450mm from the floor

### Location

The designer should decide the most suitable locations for, and frequency of, floor proximity exit signs based on the building layout.

### Destination

Signs and markings should clearly and unambiguously indicate direction of travel to the nearest exit.

### Dead Ends

Signs and markings should direct evacuees away from dead ends and towards exits.

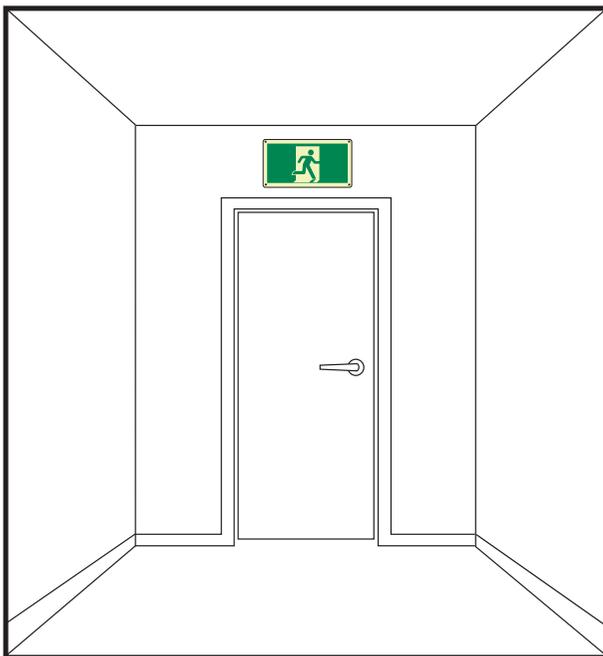
# International Codes and Standards

As smoke rises towards the ceiling it can quickly obscure any lighting or exit signage which is placed high on a ceiling, wall or door, regardless of how bright it is.

While the NZBC does not specifically address the issue of visibility in smoke conditions, ISO30061:2007 Clause 11 recommends that, where there is a high risk of smoke, emergency lighting should be fitted no higher than 500mm below the ceiling.

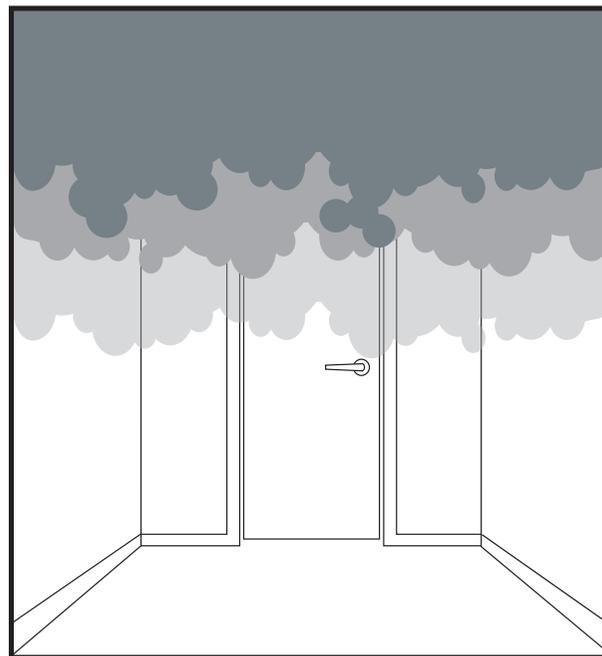
While this may minimise the risk, it is impractical in most situations and therefore not a practice which is widely supported. Furthermore, there is no guarantee it will be effective in all circumstances.

Different materials combust at different rates and create different volumes and densities of smoke. As a result it is almost impossible to determine a height at which lighting and signage will not be obscured by smoke.



Standard sign only  
No smoke

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Standard sign only  
Smoke



Standard sign only  
Smoke and failure of lighting

# Signage

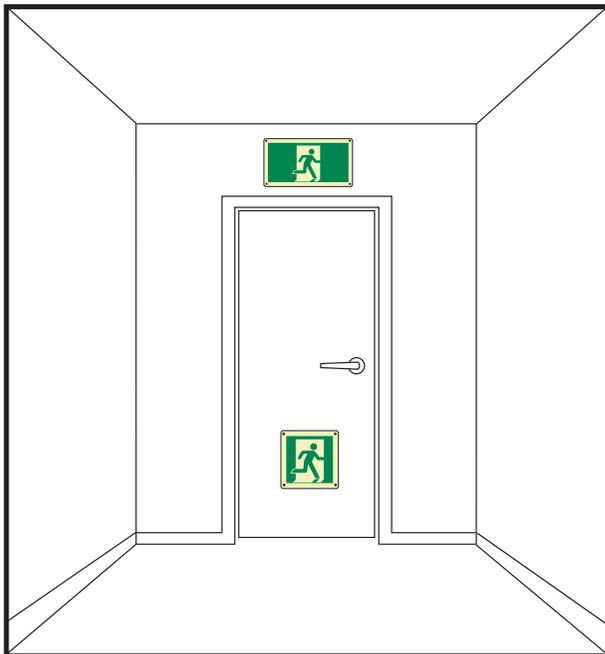
The lower the placement of lighting and signage, the greater the likelihood of it being seen in smoke conditions, resulting in quicker and safer evacuation.

The IBC and IFC (para. 1025.2.6.1) require that the top of exit signs, placed on doors through which occupants must pass to complete the exit path, are placed no higher than 18" (457 mm) from the floor.

AS2293.1 requires that signs be mounted not less than 2 metres above floor level to ensure they are within the field of view of a person looking along the exit path. However, where there is a risk of smoke, it would seem prudent to position an additional sign lower down.

## Benefits of Ecoglo PL Signs

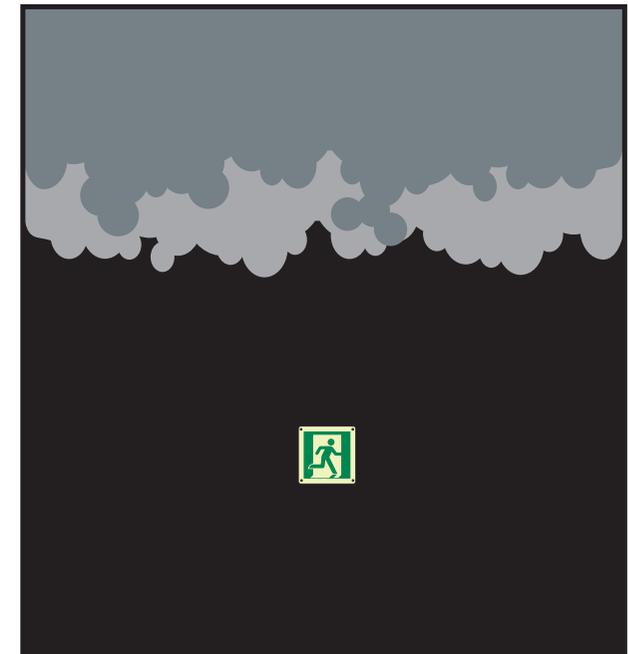
Ecoglo photoluminescent signs provide a simple solution to enhance visibility, and therefore safety in high smoke risk areas. The pictures illustrate an Ecoglo photoluminescent floor proximity exit sign placed low down on a door in an escape route. With no wiring, lamps or batteries, Ecoglo signs are extremely versatile and unobtrusive and can be readily positioned low down on most surfaces where they are least likely to be obscured by smoke.



Standard sign and floor proximity exit sign  
No smoke



Standard sign and floor proximity exit sign  
Smoke



Standard sign and floor proximity exit sign  
Smoke and failure of lighting

Ecoglo offers a variety of exit signs including directional indicators which can be used to clearly indicate the direction of travel to the nearest exit.  
(See table at the end of this guide for more Ecoglo signs.)

## Near Floor Components

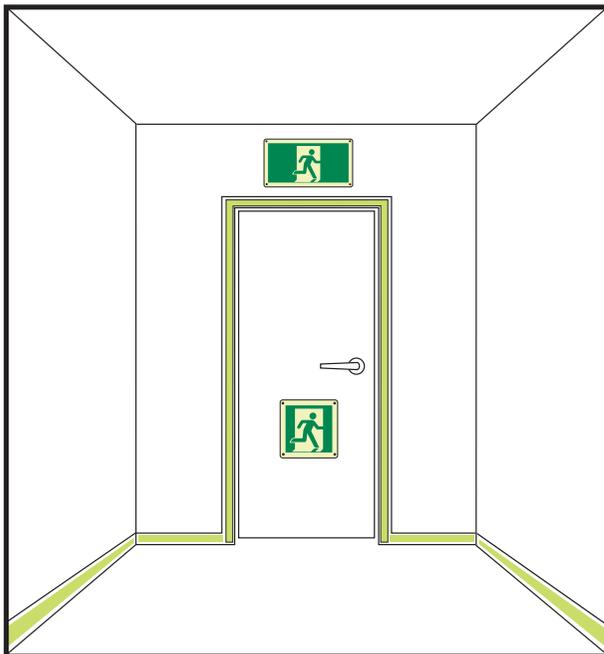
ISO 30061:2007 further recommends the use of near floor components of a safety way guidance system (ISO 16069) for high smoke risk areas.

## Benefits of Ecoglo PL Markers

The addition of Ecoglo photoluminescent Guidance Strips and Path Markers, as illustrated, ensures visibility of the escape route and will be the most effective aid to escape in smoke conditions.

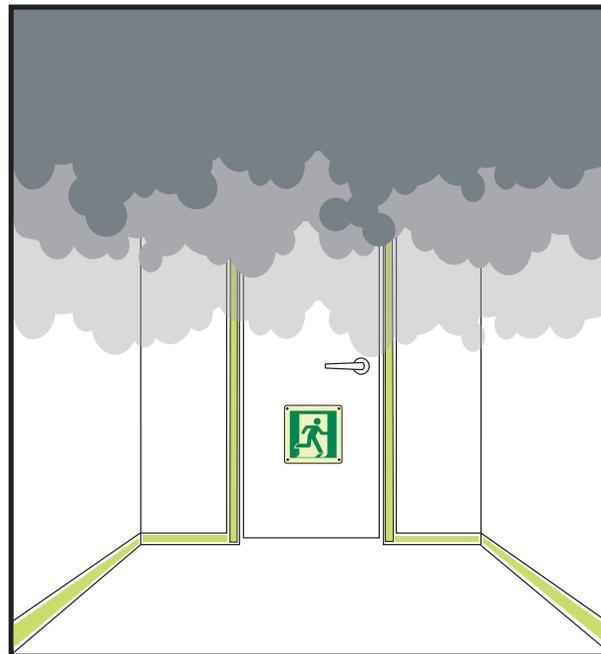
Ecoglo markings are easy to install and are failsafe.  
(See table at the end of this guide for suitable Ecoglo products.)

Ecoglo designs and manufactures a range of signs and escape route products which are effective in high smoke risk areas. To view the full range visit our website, [www.ecoglo.co.nz](http://www.ecoglo.co.nz), or email [info@ecoglo.com](mailto:info@ecoglo.com) for a brochure. Ecoglo can also offer design advice.



Standard sign, floor proximity exit sign and path marking  
No smoke

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Standard sign, floor proximity exit sign and path marking  
Smoke



Standard sign, floor proximity exit sign and path marking  
Smoke and failure of lighting

# Ecoglo Photoluminescent Signs



PRODUCT CODE	PRODUCT NAME	SIGN DEFINITION	SIGN SIZE	MAXIMUM VIEWING DISTANCE
S20-RM1616-16m	Pictogram Uni	Exit straight on from here	162mm x 162mm	16 metres
S20-RM2323-24m	Pictogram Uni	Exit straight on from here	230mm x 230mm	24 metres
S20-RM2916-16m	Pictogram	Exit straight on from here	290mm x 162mm	16 metres
S20-RM4223-24m	Pictogram	Exit straight on from here	420mm x 230mm	24 metres
S20-RM2916HV-16m	Pictogram Hi Vis	Exit straight on from here	290mm x 162mm	16 metres
S20-RM4223HV-24m	Pictogram Hi Vis	Exit straight on from here	420mm x 230mm	24 metres
S20-RML2916-16m	Pictogram Left	Exit left from here	290mm x 162mm	16 metres
S20-RML4223-24m	Pictogram Left	Exit left from here	420mm x 230mm	24 metres
S20-RMR2916-16m	Pictogram Right	Exit right from here	290mm x 162mm	16 metres
S20-RMR4223-24m	Pictogram Right	Exit right from here	420mm x 230mm	24 metres
S20-RMRL2916-16m	Double Arrow	Exit right or left from here	290mm x 162mm	16 metres
S20-RMRL4223-24m	Double Arrow	Exit right or left from here	420mm x 230mm	24 metres
S20-RMRL2916HV-16m	Double Arrow Hi Vis	Exit right or left from here	290mm x 162mm	16 metres
S20-RMRL4223HV-24m	Double Arrow Hi Vis	Exit right or left from here	420mm x 230mm	24 metres
S20-AR1313	Arrow	Travel in this direction	133mm x 133mm	-
S20-AR1616	Arrow	Travel in this direction	162mm x 162mm	-
S20-AR2323	Arrow	Travel in this direction	230mm x 230mm	-
S20-EX2313-16m	Exit	Exit straight on from here	230mm x 133mm	16 metres
S20-EX2916-24m	Exit	Exit straight on from here	290mm x 162mm	24 metres
S20-EE6128-16m	Emergency Exit	Use this door only to exit in an emergency	610mm x 280mm	16 metres
S20-EE7835-24m	Emergency Exit	Use this door only to exit in an emergency	785mm x 350mm	24 metres
S20-NE4113-16m	No Exit	Do not use this door to exit in an emergency	410mm x 133mm	16 metres

## Ecoglo Photoluminescent Guidance Strips and Path Markers



PRODUCT CODE	PRODUCT NAME	WIDTH	DEPTH	LENGTH
G3-001	Guidance Strip	15.5mm	1.8mm	1 and 1.5 metres
G4-001	Guidance Strip	12.5mm	1.8mm	1 metre
T5-101	Path Marker	51mm	3.4mm	1 metre
T6-101	Path Marker	37mm	3.4mm	1 metre
G7-100 Solaris	Path Marker	50mm	3.0mm	100mm (10 pieces per pack)

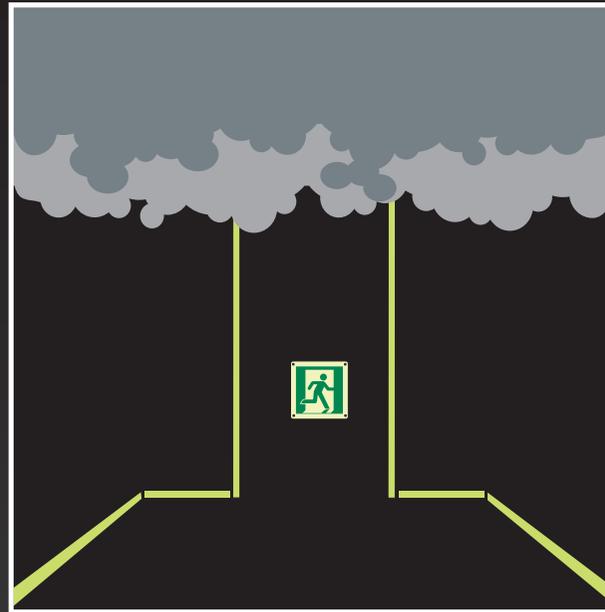
## Ecoglo Photoluminescent Handrail Markers

PRODUCT CODE	PRODUCT NAME	WIDTH	DEPTH	LENGTH
H3-001	Handrail Marker	15.5mm	2.0mm	1 and 1.5 metres
MS-26	Handrail Wall Strip	27mm	2.2mm	1 metre

## Ecoglo Photoluminescent Step Edge Products

PRODUCT CODE	PRODUCT NAME	WIDTH	DEPTH	LENGTH
E14-075	Step Edge Contrast	63.6mm	2.2mm	600mm - 1500mm
E2-071	Step Edge Contrast	37.3mm	1.8mm	600mm - 1500mm
F14-175	Step Nosing	74.8mm	9.7mm	600mm - 1500mm
F4-171	Step Nosing	68mm	33.3mm	600mm - 1500mm

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**Phone:** 03 348 3781

**Email:** [info@ecoglo.com](mailto:info@ecoglo.com)

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