

# Best Practice Specification

## PHOTOLUMINESCENT EGRESS PATH MARKINGS

### Part 1 DESCRIPTION

#### 1.01 System Description

Approved photoluminescent egress path markings as per 1.02 below delineating the Means of Egress shall be provided in buildings as required by relevant building code.

#### 1.02 Markings within Exit Components

Photoluminescent egress path markings shall be provided in all interior and exterior exit stairways, exit ramps and exit passageways of the Means of Egress, in accordance with Sections 1.02a. through 1.02f.

##### a. Steps

A solid and continuous stripe shall be applied to the horizontal leading edge of each step and shall extend to within 50 mm of each end of the leading edge of the step. Stripes shall have a minimum horizontal width of 10 mm and a maximum width of 50 mm. The leading edge of the stripe shall be placed not more than 15 mm from the leading edge of the step and the stripe shall not overlap the leading edge of the step by more than 5 mm down the vertical face of the step.

##### b. Landings

The leading edge of landings shall be marked with a stripe consistent with the dimensional requirements for steps.

##### c. Handrails

Handrails and handrail extensions shall be marked with a solid and continuous stripe having a minimum width of 10 mm. The stripe shall be placed on the top surface of, or inside surface of, or on the wall immediately adjacent to and within 100 mm, of the handrail for the entire length of the handrail. Where handrails or handrail extensions bend or turn corners, the stripe shall not have a gap of more than 100 mm.

##### d. Perimeter Demarcation Lines

Stair landings and other floor areas within all interior and exterior exit stairways, interior and exterior exit ramps and exit passageways, with the exception of the sides of steps, shall be provided with solid and continuous demarcation lines on the floor or on the walls or a combination of both. The stripes shall be 10 mm to 50 mm wide with interruptions not exceeding 100 mm.

Demarcation lines shall not extend in front of or across doors that lead out of an exit through which occupants must travel to complete the Means of Egress.

##### e. Obstacles

Obstacles at or below 2000 mm in height and projecting more than 100 mm into the egress path shall be outlined with markings not less than 25 mm in width comprised of a pattern of alternating equal bands of photoluminescent material and black.

##### f. Doors within The Means of Egress

Doors through which occupants must pass in order to complete the Means of Egress shall be provided with markings complying with Sections f.(i) through f.(iii).

(i) Emergency Exit Symbol

The doors shall be identified by a low-location photoluminescent emergency exit symbol complying with NFPA 170. The exit symbol shall be a minimum of 100 mm in height and shall be mounted on the door, centred horizontally, with the top of the symbol no higher than 500 mm above the finished floor.

(ii) Door Hardware Markings

Door hardware shall be marked with no less than 100 mm x 100 mm or equivalent area of photoluminescent material. This marking shall be located behind, immediately adjacent to or on the door handle or escutcheon. Where a panic bar is installed, such material shall be not less than 15 mm wide for the entire length of the actuating bar or touchpad.

(iii) Door Frame Markings

The top and sides of the door frame shall be marked with a solid and continuous 10 mm to 50 mm wide stripe. Where the door molding does not provide sufficient flat surface on which to locate the stripe, the stripe shall be permitted to be located on the wall surrounding the frame.

### **1.03 Approved Photoluminescent Markings**

Approved photoluminescent egress path markings shall:

- a) Be tested to meet UL 1994 and all such products shall be listed with Underwriters Laboratory by the manufacturer; **AND**
- b) Be produced using a High Temperature Curing (HTC) manufacturing process and independently tested to support the criteria detailed in following clause 2.04j.; **AND**
- c) Be produced by a manufacturer with ISO 9001 Quality Assurance certification; **AND**
- d) Be warranted to last a minimum of 30 years indoors.

### **1.04 Illumination**

Where photoluminescent exit path markings are installed, they shall be provided with not less than 10 lux of illumination for not less than 60 minutes prior to periods when the building is occupied, and continuously during the building occupancy.

### **1.05 Submittals**

Documentation as detailed in 1.05a. through 1.05c. must be submitted.

#### **a. Manufacturer's Product Data Sheets**

Submit Product Data Sheets for product number verification.

#### **b. Manufacturer's Installation Instructions**

Submit installation instructions.

#### **c. Test Reports**

Submit independent test reports to verify compliance with relevant standards as detailed in Section 2.04 Performance Criteria.

### **1.06 Quality Assurance**

Submit copy of Manufacturer's ISO 9001-2016 Quality Assurance documentation.

## **1.07 Warranty**

Submit warranty for luminance characteristics for a minimum 30 years of indoor use.

## **Part 2 MATERIALS REQUIREMENTS**

### **2.01 Photoluminescent path markings to meet UL 1994**

#### **a. Acceptable Manufacturer**

The manufacturer of the products shall have at least 20 years experience manufacturing photoluminescent materials.

#### **b. Authorised Representative**

The manufacturer shall have a suitably trained and accredited regional representative.

### **2.02 Materials Composition**

#### **a. Aluminium Base Products**

(i) Extruded aluminium nosing profile:

6060T5 or 6063T5 aluminium extrusion.

(ii) Extruded aluminium inserts for bonding into in nosing profile:

Powder coated 6060T5 or 6063T5 aluminium extrusion.

(ii) Photoluminescent and anti-slip material in aluminium extrusion:

Photoluminescent pigment and silicon carbide anti-slip materials embedded in thermoset polyester manufactured using a High Temperature Curing (HTC) process at a temperature exceeding 160°C to integrally bond the active ingredients into the powder coated aluminium insert resulting in the photoluminescent material being recessed into the protective channels of the powder coated aluminium extrusion.

(iii) Photoluminescent signs and markers:

Photoluminescent pigment embedded in thermoset polyester manufactured using a High Temperature Curing (HTC) process at a temperature exceeding 160°C to integrally bond the active ingredients to 5005 0.9mm aluminium sheet.

### **2.03 Approved Products**

#### **a. Steps and b. Landings**

Step nosings and step edgings for marking step edges and the leading edge of landings consisting of materials and manufactured using processes as defined in section 2.02.

#### **c. Handrails**

##### Rounded Handrails

Handrail markers for marking of rounded handrails consisting of materials and manufactured using processes as defined in section 2.02.

The handrail strip extrusion is formed to the curvature of the handrail and each end should be finished with an endcap.

### Flat Handrails

Guidance Strip for marking flat handrails consisting of materials and manufactured using processes as defined in section 2.02.

### **d. Perimeter Demarcation Lines**

Guidance strips and path markers for path marking on stair landings, corridors and other floor areas within all interior and exterior exit stairways, interior and exterior exit ramps and exit passageways consisting of materials and manufactured using processes as defined in section 2.02.

### **e. Obstacles**

Hazard Marking Tape\* for outlining obstacles projecting into the egress path. Manufactured from high quality vinyl.

*\*Non-HTC product due to irregular shape of obstacles.*

### **f. Doors**

#### (i) Emergency Exit Symbol

Directional Sign for identifying doors leading to an emergency exit consisting of materials and manufactured using processes as defined in section 2.02 (iii).

#### (ii) Door Hardware Markings

Door Handle Marker consisting of materials and manufactured using processes as defined in section 2.02 (iii).

EXCEPTION: For rounded push bars non-HTC products may be used and may consist of high quality vinyl.

#### (iii) Door Frame Markings

Guidance Strip for marking flat handrails consisting of materials and manufactured using processes as defined in section 2.02.

## **2.04 Performance Criteria**

All HTC products to meet or exceed the performance criteria specified in the following tests or standards. PC = Performance Criteria

### **a. Slip Resistance**

AS/NZS 4586-2004, Slip Resistance Classification of New Pedestrian Surface Materials.

PC – Dry slip resistance classification F, wet slip resistance classification V, slip resistance assessment group R12 AS 4586-2013 PC - Classification: P5

### **b. UV Resistance**

ASTM G155-04 Cycle 1 1000hrs, Standard Practice for Operating Xenon Arc Light

Apparatus for Exposure of Nonmetallic Materials.

PC – Loss in luminance after exposure < 10%

### **c. Salt Spray Resistance**

ASTM B117-97 1000hrs, Standard Practice for Operating Salt Spray (Fog) Apparatus.

PC – Slight corrosion build up along scribes, no blistering or filiform growth along scribes.

### **d. Washability**

ASTM D4828-94(2003), Standard Test Methods for Practical Washability of Organic Coatings.

PC – crayon, pen, 3M soil: all rating 10, being complete removal of soilant.

#### **e. Rate of Burning**

ASTM D635-03, Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position.

PC – Time of burn 0 seconds, does not burn.

#### **f. Surface Flammability**

ASTM E162-02, Standard Test Method for Surface Flammability of Materials Using a Radiant Heat Energy Source.

PC – Flame spread index 7.6, ignites with difficulty.

#### **g. Toxicity**

Bombardier Toxic Gas Generation Test SMP800-C.

PC - Pass

#### **h. Radioactivity**

ASTM D3648-2004, Standard Practices for the Measurement of Radioactivity.

PC – Pass

#### **i. Luminance**

UL 1994 Standard for Luminous Egress Path Marking Systems.

PC – Pass

#### **j. High Temperature Curing**

Independently tested by placing 3 samples in an oven at 180°C for 20 minutes and then examining the samples after removing from the oven.

PC – the samples shall have no shrinkage, delamination, distortion, or yellowing.

## **Part 3 CONSTRUCTION REQUIREMENTS**

### **3.01 Manufacturer's Instructions**

Comply with manufacturer's product data, installation instructions and maintenance and cleaning instructions.

### **3.02 Examination**

Site verification of conditions is required to verify installation surface and appropriate installation method.

### **3.03 Installation**

Installation must be as per manufacturer's installation instructions.

### **3.05 Cleaning**

Maintenance and cleaning should be carried out as per manufacturer's maintenance and cleaning instructions.

## **Part 4 METHOD OF MEASUREMENT**

### **4.01 Accepted Quantity of Products**

Egress path marking products shall be measured by the standard unit, or part-there-of, to determine the accepted quantity.

## **Part 5 BASIS OF PAYMENT**

### **5.01 Contract Unit Price**

The accepted quantities, as determined in Part 4 Method of Measurement, shall be paid at the contract unit prices plus any % loading for customisation of lengths.