

# Best Practice Specification

## PHOTOLUMINESCENT EXIT SIGNS

### Part 1 DESCRIPTION

#### 1.01 System Description

Approved photoluminescent exit signs shall identify the Means of Egress and shall be readily visible in all conditions of foreseeable use, including emergency conditions and darkness, and shall be provided in buildings as required by relevant building code.

#### 1.02 Photoluminescent Exit Signs

Photoluminescent exit signs shall be provided to identify all interior and exterior parts of the means of egress including, but not limited to, exit doors, exit stairways, exit ramps and exit passageways, in accordance with 1.02a. and 1.02b. below.

##### a. Locations

The Means of Egress shall be identified by photoluminescent exit signs which are readily visible and shall be located:

- (i) At each point in the Means of Egress where the exit is not immediately visible to occupants;
- (ii) To clearly indicate each door in the Means of Egress; and
- (iii) To clearly identify the direction of travel to reach the nearest exit door.

##### b. Position

Where photoluminescent exit signs are provided to identify a door in the Means of Egress, the sign shall be positioned on a vertical surface within 600 mm of the door and be positioned where it is least likely to be obscured from view and where it cannot be obscured when the door is open.

#### 1.03 Approved Photoluminescent Exit Signs

Approved photoluminescent exit signs shall:

- a) Have their performance verified by **EITHER**:
  - i. Independent luminance testing in accordance with ASTM E2073-19, except that the activation illumination in clause 8.3 is replaced with 54 lux, with the minimum luminance levels detailed in following clause 2.04(h);
  - OR**
  - ii. Testing and listing as per requirements of UL 924 Standard for Emergency Lighting and Power Equipment; **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 signs are installed, they shall be provided with not less than 54 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 exit signs**

### **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**

### **Photoluminescent Exit Signs**

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 Photoluminescent Exit Signs**

Exit signs for identifying Means of Egress shall consist of materials and be 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. UV Resistance**

ASTM G155-04 Cycle 1 1000hrs, Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-metallic Materials.

PC – Loss in luminance after exposure < 10%

### **b. 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.

### **c. 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.

### **d. 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.

### **e. 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.

### **f. Toxicity**

Bombardier Toxic Gas Generation Test SMP800-C.

PC - Pass

### **g. Radioactivity**

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

PC – Pass

### **h. Luminance**

ASTM E2073-19 Standard Test Method for Photopic Luminance of Photoluminescent (Phosphorescent) Markings.

PC - 30mcd/m<sup>2</sup> after 90 minutes of darkness.

#### **OR**

UL 924 Standard for Emergency Lighting and Power Equipment.

PC - visible from at least 50 feet (15.24 metres) after 90 minutes of darkness.

### **i. 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 Signs**

Exit signs shall be measured by the standard unit to determine the accepted quantity.

### **4.02 Accepted Quantity of Brackets**

Brackets shall be measured by the unit 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.