

**Ecoglo International Limited**

Technical Manual  
for  
Photoluminescent Disaster Preparedness  
Signs



## **Contents:**

Photoluminescent Disaster Preparedness Signs MasterFormat Specification.....	3
Appendices.....	9

Section 10 45 00

Ecoglo Photoluminescent Disaster Preparedness Signs

This specification has been numbered, organized and formatted in accordance with the MasterFormat, Section Format and Page Format documents published jointly by Construction Specifications Institute (CSI).

It is offered as a guide to experienced and knowledgeable construction professionals who assume full responsibility for its interpretation and use.

**Square brackets [ ] containing text indicate an option to be considered/inserted by the specifier. Remove brackets and unused options before printing.**

## Section 10 45 00

## Photoluminescent Disaster Preparedness Signs

## Part 1 General

- 1.1 Summary
  - A Work Included: Supply and installation of photoluminescent disaster preparedness signs
- 1.2 Quality Assurance
  - A Manufacturer Qualifications: to have minimum of 25 years' experience with similar work.
- 1.3 Submittals
  - A Submit the following [in accordance with Section 01 33 00 – Submittal Procedures]:
    - 1 Product Data: Manufacturer's product data sheet.
    - 2 Manufacturer's Instructions: Pre-printed material describing installation of product, including special notices, safety data sheets outlining hazards and safety precautions and maintenance and cleaning instructions.
    - 3 Test Reports: Showing compliance with required standards, ordinances and codes.
    - 4 Substitutions: Substitutions must be submitted and approved prior to bid date. All requests shall include test results, product descriptions, confirmation of piece design and engineering calculations meeting design criteria.
- 1.4 Delivery, Storage and Handling
  - A Handle and store products in a manner to prevent damage, deterioration and soiling to products, other building components, assemblies, other products, the structure, the Site and surrounding property and in accordance with manufacturer's instructions.
  - B Store packaged or bundled products in original and undamaged containers and packaging with manufacturer's seals and labels intact. Do not remove from packaging or containers until ready to be installed.
  - C Store products subject to damage from weather in weatherproof enclosures.
- 1.5 Warranty
  - A Provide manufacturer's limited warranty. Warranty to cover defects in materials and workmanship.
    - 1 High Temperature Curing (HTC) Products: (5) years from the date of delivery.
    - 2 15 Year Warranty on photoluminescent performance of HTC outdoor Signs (specially coated for outdoor conditions) when positioned outdoors.

## Part 2 Products

## 2.1 Manufacturers

- A Contract Documents are based on products by Ecoglo International Ltd. ([www.ecoglo.com](http://www.ecoglo.com))
- B Substitutions: [Under provisions of Division 01.] [Not permitted.]

## 2.2 Materials

- A Photoluminescent pigment embedded in thermoset polyester manufactured using a High Temperature Manufacturing (HTC) process at a temperature exceeding 160°C to integrally bond the active ingredients to 5005 0.9mm aluminium (aluminum) sheet.
- B All HTC disaster preparedness signs 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 Nonmetallic Materials. PC – Loss in luminance after exposure < 10%
  - b. Salt Spray Resistance ASTM B117-97, 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  
Independent luminance testing shall be undertaken as follows:  
Excitation Condition (charging) – 20W Fluorescent lamp, 5000 lux for 60 minutes.  
PC – Minimum luminance of: PC – Minimum luminance of:  
4,900 mcd/m<sup>2</sup> after 2 minutes; and  
950 mcd/m<sup>2</sup> after 10 minutes; and  
250 mcd/m<sup>2</sup> after 30 minutes; and  
120 mcd/m<sup>2</sup> after 60 minutes; and  
10 mcd/m<sup>2</sup> after 480 minutes.
  - i. High Temperature Curing Independently tested by placing 3 samples in an oven at 150°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.

## 2.3 Components

- A Basis of design: Ecoglo Photoluminescent Disaster Preparedness

## Signs

## 1 Description:

- a. Stores energy from ambient light
- b. Non-toxic, non-radioactive
- c. No electricity or batteries required

[Click here](#) to view *Ecoglo Disaster Preparedness Signs*

Product Code	Product Name	Sign Definition	Sign Size
S20-TE315290-HTC	Tsunami Evacuate	Evacuate straight ahead from here	315mm x 290mm
S20-TE600475-HTC	Tsunami Evacuate	Evacuate straight ahead from here	600mm x 475mm
S20-TE945580-HTC	Tsunami Evacuate	Evacuate straight ahead from here	945mm x 580mm
S20-TER315290-HTC	Tsunami Evacuate Right	Evacuate right from here	315mm x 290mm
S20-TER600475-HTC	Tsunami Evacuate Right	Evacuate right from here	600mm x 475mm
S20-TER945580-HTC	Tsunami Evacuate Right	Evacuate right from here	945mm x 580mm
S20-TEL315290-HTC	Tsunami Evacuate Left	Evacuate left from here	315mm x 290mm
S20-TEL600475-HTC	Tsunami Evacuate Left	Evacuate left from here	600mm x 475mm
S20-TEL945580-HTC	Tsunami Evacuate Left	Evacuate left from here	945mm x 580mm
S20-SWS315290-HTC	Severe Weather Shelter	Severe Weather Shelter ahead	315mm x 290mm
S20-SWS600475-HTC	Severe Weather Shelter	Severe Weather Shelter ahead	600mm x 475mm
S20-SWS945580-HTC	Severe Weather Shelter	Severe Weather Shelter ahead	945mm x 580mm
S20-EA315290-HTC	Evacuation Area	Evacuation area straight ahead	315mm x 290mm
S20-EA600475-HTC	Evacuation Area	Evacuation area straight ahead	600mm x 475mm
S20-EA945580-HTC	Evacuation Area	Evacuation area straight ahead	945mm x 580mm
S20-EAR315290-HTC	Evacuation Area Right	Evacuation area right from here	315mm x 290mm
S20-EAR600475-HTC	Evacuation Area Right	Evacuation area Right from here	600mm x 475mm
S20-EAR945580-HTC	Evacuation Area Right	Evacuation area right from here	945mm x 580mm
S20-EAL315290-HTC	Evacuation Area Left	Evacuation area left from here	315mm x 290mm
S20-EAL600475-HTC	Evacuation Area Left	Evacuation area left from here	600mm x 475mm
S20-EAL945580-HTC	Evacuation Area Left	Evacuation area left from here	945mm x 580mm

S20-EC315290-HTC	Evacuation Center	Evacuation Center ahead	315mm x 290mm
S20-EC600475-HTC	Evacuation Center	Evacuation Center ahead	600mm x 475mm
S20-EC945580-HTC	Evacuation Center	Evacuation Center ahead	945mm x 580mm
S20-FHZ315290-HTC	Flood Hazard Zone Warning	Danger of flooding	315mm x 290mm
S20-FHZ600475-HTC	Flood Hazard Zone Warning	Danger of flooding	600mm x 475mm
S20-FHZ945580-HTC	Flood Hazard Zone Warning	Danger of flooding	945mm x 580mm
S20-LS315290-HTC	Landslide Warning	Danger of landslides	315mm x 290mm
S20-LS600475-HTC	Landslide Warning	Danger of landslides	600mm x 475mm
S20-LS945580-HTC	Landslide Warning	Danger of landslides	945mm x 580mm
S20-VHZ315290-HTC	Volcanic Hazard Zone Warning	Danger of volcanic activity	315mm x 290mm
S20-VHZ600475-HTC	Volcanic Hazard Zone Warning	Danger of volcanic activity	600mm x 475mm
S20-VHZ945580-HTC	Volcanic Hazard Zone Warning	Danger of volcanic activity	945mm x 580mm
S20-THZ315290-HTC	Tsunami Hazard Zone Warning	Danger of tsunami	315mm x 290mm
S20-THZ600475-HTC	Tsunami Hazard Zone Warning	Danger of tsunami	600mm x 475mm
S20-THZ945580-HTC	Tsunami Hazard Zone Warning	Danger of tsunami	945mm x 580mm
S20-EHZ315290-HTC	Earthquake Hazard Zone Warning	Danger of earthquake activity	315mm x 290mm
S20-EHZ600475-HTC	Earthquake Hazard Zone Warning	Danger of earthquake activity	600mm x 475mm
S20-EHZ945580-HTC	Earthquake Hazard Zone Warning	Danger of earthquake activity	945mm x 580mm
S20-WDG	Water Depth Gauge	Not applicable	115mm x 1000mm

**Note: Subject to minimum order quantities graphics can be customised for different provinces, regions or offices**

### Part 3 Execution

#### 3.1 Examination

- A Before installation, examine surfaces on which the work of this section depends. Notify [Contractor] if substrates do not comply with requirements of this section.
- B Do not proceed with work of this Section until all unsatisfactory conditions have been corrected, if any.
- C Commencement of Work will imply acceptance of surfaces.

#### 3.2 Preparation

- A Clean surfaces to remove dirt, dust, grease, oil, loose material, frost,

paint, coatings, or other matter that may affect bonding or installation of photoluminescent products.

- B Test substrates for fit with products before using adhesives or mechanical fastening.

### 3.3 Installation

- A Unless otherwise indicated in the specifications, install products in accordance with manufacturer's instructions. Obtain written instructions directly from manufacturer.

### 3.4 Cleaning

- A At completion of installation, clean soiled product surfaces in accordance with manufacturer's instructions.

### 3.5 Waste Management and Disposal

- A Separate waste materials for [reuse] [and] [recycling] at nearest used building materials facility.

### 3.6 Protection

- C Do not allow heavy objects to come into contact with installed products.

End of Section



Appendices to

**Ecoglo International Ltd**

**Technical Manual**

**for**

**Photoluminescent Disaster Preparedness**

**Signs**



**Contents:**

Appendix 1 – Product Data Sheets.....11  
Appendix 2 – Installation Instructions.....15  
Appendix 3 – Product Test Reports.....18  
Appendix 4 – Safety Data Sheet.....35  
Appendix 5 – Quality Assurance Document.....37  
Appendix 6 – Warranty.....39  
Appendix 7 - Maintenance and Cleaning Instructions.....41

## Appendix 1

Ecoglo International Ltd

### **Product Data Sheets**

Signs are available in 3 sizes as shown here. See the full range of signs with product codes on the next page.



315mm x 290mm



600mm x 475mm



945mm x 580mm

**Ecoglo S20 HTC Disaster Preparedness Signs are designed to be used to either warn of natural hazards or direct persons to safety when a natural hazard occurs. The signs will be clearly visible and readily understandable under all conditions of foreseeable use, including darkness.**

#### PERFORMANCE

Ecoglo S20 HTC Disaster Preparedness Signs will absorb enough natural daylight to remain visible throughout the night.

**Luminance** – S20 grade signs easily exceed PSPA class G

**UV Resistance** – Loss of luminance after 1000 hrs ASTM G-155 Cycle 1 exposure: <10%

**Salt Spray Resistance** – ASTM B117: Pass

**Washability** – ASTM D4828: Pass

**Rate of Burning** – ASTM D635: Pass

**Surface Flammability** – ASTM E162: Pass

**Toxicity** – Bombardier Toxic Gas Generation Test SMP800-C: Pass

**Radioactivity** – ASTM D3648: Pass

#### COMPOSITION

The high visibility flat panel is manufactured from 5005 0.9mm aluminium sheet. Custom made photoluminescent pigments are embedded in thermoset polyester carriers to integrally bond the active ingredients onto the aluminium sheet following curing at high temperature - a process known as HTC.



This sign also has HTC clear coating added to protect the print in outdoor environments.

**Note:** Customisation of the artwork is available for different provinces, regions or offices. Contact Ecoglo for more information.

#### WARRANTY

15 years outdoors

#### MOQ & LEAD TIME

Minimum order quantity: 50 pieces

Lead time: 120 days

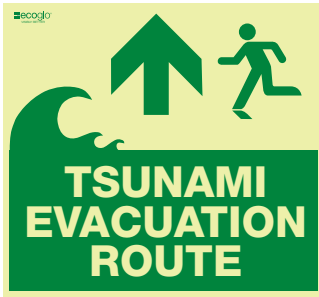
#### INSTALLATION

The sign should be installed using fixers (screws). Please note the sign is supplied without drill holes.

Contact Ecoglo for installation instructions.

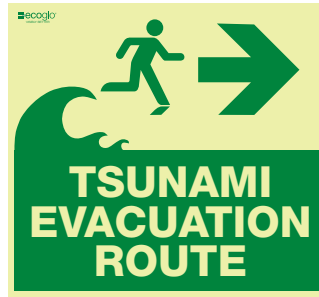
**See next page for signs and product codes**

## TSUNAMI EVACUATE



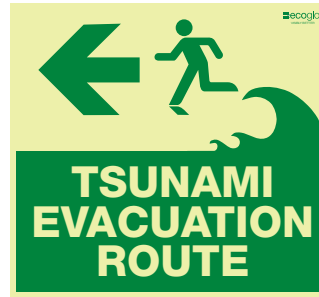
Product Codes  
S20-TE315290-HTC  
S20-TE600475-HTC  
S20-TE945580-HTC

## TSUNAMI EVACUATE RIGHT



Product Codes  
S20-TER315290-HTC  
S20-TER600475-HTC  
S20-TER945580-HTC

## TSUNAMI EVACUATE LEFT



Product Codes  
S20-TEL315290-HTC  
S20-TEL600475-HTC  
S20-TEL945580-HTC

## SEVERE WEATHER SHELTER



Product Codes  
S20-SWS315290-HTC  
S20-SWS600475-HTC  
S20-SWS945580-HTC

## EVACUATION AREA



Product Codes  
S20-EA315290-HTC  
S20-EA600475-HTC  
S20-EA945580-HTC

## EVACUATION AREA RIGHT



Product Codes  
S20-EAR315290-HTC  
S20-EAR600475-HTC  
S20-EAR945580-HTC

## EVACUATION AREA LEFT



Product Codes  
S20-EAL315290-HTC  
S20-EAL600475-HTC  
S20-EAL945580-HTC

## EVACUATION CENTER



Product Codes  
S20-EC315290-HTC  
S20-EC600475-HTC  
S20-EC945580-HTC

## FLOOD HAZARD ZONE



Product Codes  
S20-FHZ315290-HTC  
S20-FHZ600475-HTC  
S20-FHZ945580-HTC

## LANDSLIDE



Product Codes  
S20-LS315290-HTC  
S20-LS600475-HTC  
S20-LS945580-HTC

## VOLCANIC HAZARD ZONE



Product Codes  
S20-VHZ315290-HTC  
S20-VHZ600475-HTC  
S20-VHZ945580-HTC

## TSUNAMI HAZARD ZONE



Product Codes  
S20-THZ315290-HTC  
S20-THZ600475-HTC  
S20-THZ945580-HTC

## EARTHQUAKE HAZARD ZONE

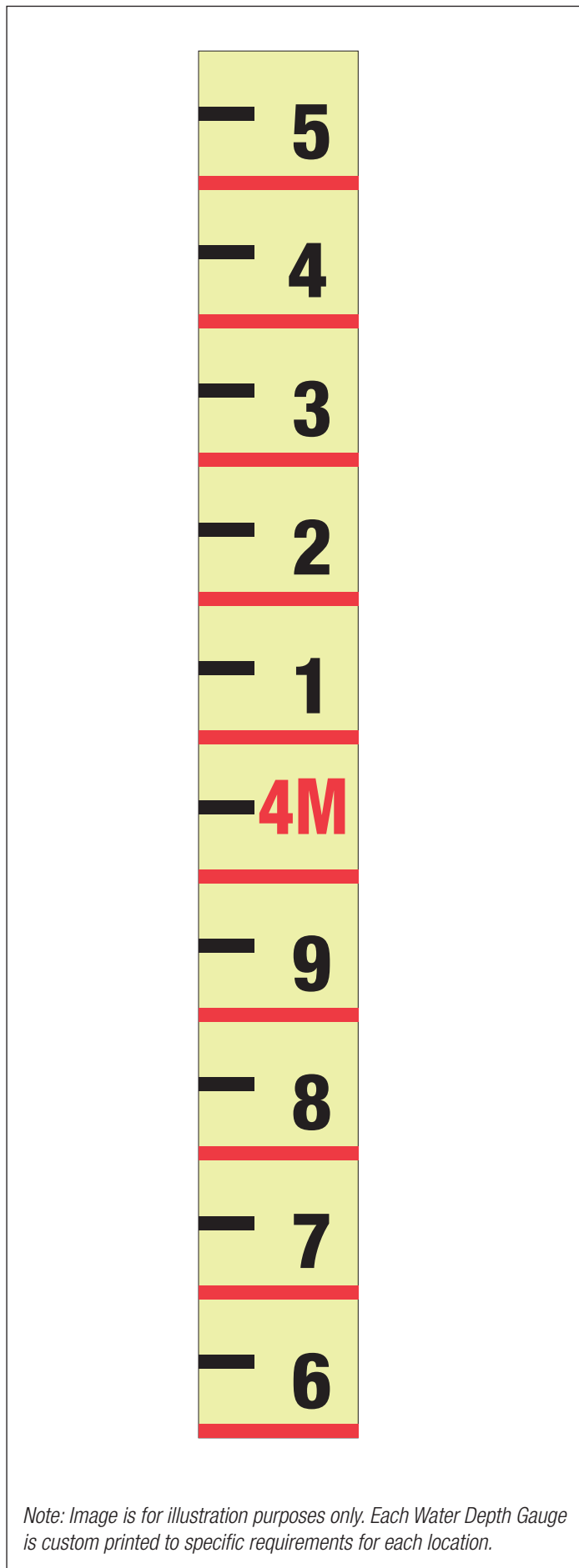


Product Codes  
S20-EHZ315290-HTC  
S20-EHZ600475-HTC  
S20-EHZ945580-HTC

## Contact

**Ecoglo International Limited**

Email: [info@ecoglo.com](mailto:info@ecoglo.com) Web: [www.ecoglo.com](http://www.ecoglo.com)



**Ecoglo S20 Water Depth Gauges are designed to be used in flood prone waterways to alert persons to danger of flooding. The signs will be clearly visible and readily understandable under all conditions of foreseeable use, including darkness.**

#### PERFORMANCE

Ecoglo S20 Water Depth Gauges will absorb enough natural daylight to remain visible throughout the night.

Luminance – S20 grade signs easily exceed PSPA class G

UV Resistance – Loss of luminance after 1000 hrs ASTM G-155

Cycle 1 exposure: <10% Salt Spray Resistance – ASTM B117: Pass

Salt Spray Resistance – ASTM B117: Pass

Washability – ASTM D4828: Pass

Rate of Burning - ASTM D635: Pass

Surface Flammability – ASTM E162: Pass

Toxicity – Bombardier Toxic Gas Generation Test SMP800-C: Pass

Radioactivity – ASTM D3648: Pass

#### SUPPLY

This product is made to order - print specifications are required at time of ordering. See order code below.

PRODUCT CODE	PRODUCT NAME	PRODUCT DEFINITION	PRODUCT SIZE
S20-WDG	Water Depth Gauge	Not applicable	115 X 1000mm

#### COMPOSITION

The high visibility flat panel is manufactured from 5005 0.9mm aluminium sheet. Custom made photoluminescent pigments are embedded in thermoset polyester carriers to integrally bond the active ingredients onto the aluminium sheet following curing at high temperature – a process known as HTC.



This product also has HTC Clear Coating added to protect the print in outdoor environments.

#### INSTALLATION

The Water Depth Gauge should be installed using fixers (screws). Please note the gauge is supplied without drill holes.

#### Contact

**Ecoglo International Limited**

Email: [info@ecoglo.com](mailto:info@ecoglo.com) Web: [www.ecoglo.com](http://www.ecoglo.com)

## Appendix 2

Ecoglo International Ltd

# **Installation Instructions**



*Installation Instructions For*

**Signs** (supplied without drill holes)

**Surface Mounted Disaster Preparedness Signs**

*Ecoglo signs are to be installed only where there will be sufficient natural or artificial light to keep them charged.*

*If unsure, contact Ecoglo*

**Ecoglo International Limited**  
Email: [info@ecoglo.com](mailto:info@ecoglo.com)  
[www.ecoglo.com](http://www.ecoglo.com)





# Installation Instructions for Disaster Preparedness Signs

## Surface Mounted

### 1. Positioning of Signs

- Mark position on the surface on which the sign is to be placed  
Ensure sign is mounted where it is least likely to be obscured from view.

### 2. Placement of Signs

- Line the sign up with the markings you made.
- Approximately 1.5cm diagonally in from each corner of the sign, make a drill hole and screw the sign to the surface.
- Use plastic anchors where necessary.

*Recommended screws - 6G x 25 Pan Square S/S S/Tap*

*For large signs ensure that a sufficient number of fixers of sufficient length to support the sign are used.*

### 3. Maintenance of Signs

- Regular wiping with a soft cloth or brush is recommended to keep the sign clean.
- If the sign is noticeably dirty, clean with a sponge or cloth.

*See Maintenance and Cleaning Instructions for more detailed information.*

*Note: Please contact Ecoglo for advice if installing signs which are not fully supported by a structure such as a wall.*



## Appendix 3

Ecoglo International Ltd

**Product Test Reports**  
**for Photoluminescent**  
**Disaster Preparedness Signs**

<b>Contents</b>	<b>Page</b>
ASTM G155-04 Cycle 1 1000hrs, Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Nonmetallic Materials	20
ASTM B117-97 1000hrs, Standard Practice for Operating Salt Spray (Fog) Apparatus	23
ASTM D4828-94 (2003), Standard Test Methods for Practical Washability of Organic Coatings	24
ASTM D635-03, Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position	25
ASTM E162-02, Standard Test Method for Surface Flammability of Materials using a Radiant Heat Energy Source	26
Bombardier Toxic Gas Generation Test SMP800-C.	29
ASTM D3648-2004, Standard Practices for Measurement of Radioactivity	26
Brightness Analysis of Photoluminescent Material	32
HTC (High Temperature Curing) Test (based on AS/NZS 1580.481.1)	33



SINCE 1886

# REPORT

**Intertek** ETL SEMKO

3933 US ROUTE 11 CORTLAND, NEW YORK 13045

Order No. 3078911

Date: November 15, 2005

REPORT NO. 3078911CRT-008

## TEST OF FOUR PHOTOLUMINESCENT MATERIAL MODELS

RENDERED TO

ECOGLO LTD.  
77 KINGSLEY ROAD  
CHRISTCHURCH, NEW ZEALAND 8002

### DATA REQUESTED

Luminance measurements after activation tests on four photoluminescent material models after UV exposure in accordance with New York City Building Code Reference Standards RS 6-1 and RS 6-1A: Photoluminescent Low-level Exit Path Markings.

### AUTHORIZATION

This test service was authorized by signed quote number 18761099.

### DEVICES SUBMITTED

The client submitted three photoluminescent material samples each of four Models: G3001C/E2071C, and G5001C/H5001C. The samples were received by Intertek on June 18, 2005 in undamaged condition, and tested as received. The sample designations are E2218Z through E2223Z.

### DATE OF TESTS

June 28, 2005 through November 13, 2005.

### TEST SUMMARY

NYC Building Code RS 6-1A Photoluminescent Low-level Exit Path Markings	Model G3001C/E2071C	Model G5001C/H5001C
Clause 1.0 Brightnes Rating Post UV Exposure	Complies	Complies

**An independent organization testing for safety, performance, and certification.**

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to copy or distribute this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program. Measurement uncertainty budgets have been determined for applicable test methods and are available upon request.

EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Calibration Date
Optronic Luminance Standard	455-6-2	Y174	09/30/04
Optronic based Luminance Meter consisting of:			
Optronic Photometer	730C	E290	06/23/05
Optronic Direct Viewing Module	600	--	--
Optronic Amplified Photodetector	730-5H-LED	--	--
Fisher Scientific Stopwatch	--	N853	05/05
UDT Illumination Meter	S371R	L060	09/02/04

TEST AND TEST METHODSelective Process

After evaluation at Intertek, it was determined that Models G3001C and E2071C are identical in regards to luminance performance and that Models G5001C and H5001C are identical in regards to luminance performance.

Luminance Measurements Before and After Weathering Test

The luminance measurements were made on the photoluminescent test samples with the Intertek License Plate Test Apparatus. The center of each test sample was measured at normal (0°) viewing angle. The aperture of the Optronic based luminance meter was adjusted in order to view the maximum area on the test sample. The Intertek License Plate Test Apparatus consists of a Optronic based luminance meter and a horizontal and vertical movement system. The luminance calibration of the luminance meter is traceable to the National Institute of Standards and Technology through the calibration of the Optronic Luminance Standard.

The test samples were conditioned for at least 16 hours at zero footcandle illumination. The photoluminescent material samples were then conditioned for 120 minutes (two hours) by 2 footcandle illumination from a 4100K fluorescent light source. Luminance measurements were made on each test sample at two minutes intervals after conditioning for a period of one hour and at ninety minutes after conditioning. Luminance measurements were reported for ten minutes, sixty minutes and ninety minutes after conditioning.

Weathering Tests

The test samples were sent to Canesis Network Limited for 1000 hours exposure to Xenon Arc light apparatus per ASTM G155 Cycle 1. The samples were returned to Intertek for the post UV luminance measurements. Average post UV luminance measurements must be at least 90% of the initial average luminance measurements at each time interval.

Checked by: 

RESULTS OF TESTLuminance Measurements After Two Hours Activation Period

Model No. G5001C/H5001C  
Intertek Sample Nos. E2220Z, E2218Z, E2219Z

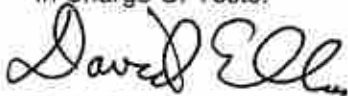
Time After Exposure	Luminance (mcd/m <sup>2</sup> )			Average	Specified Minimum
	Sample One	Sample Two	Sample Three		
<u>Pre UV Exposure</u>					
Ten Minutes	41.1	40.8	42.3	41.4	30
One Hour	9.96	9.66	10.25	9.96	7.0
Ninety Minutes	6.56	6.37	6.78	6.57	5.0
<u>Post UV Exposure</u>					
Ten Minutes	37.6	37.5	36.9	37.3	37.3*
One Hour	10.09	9.54	10.19	9.94	8.96*
Ninety Minutes	6.97	6.41	7.02	6.80	5.91*

Model No. G3001C/E2071C  
Intertek Sample Nos. E2222Z, E2221Z, E2223Z

Time After Exposure	Luminance (mcd/m <sup>2</sup> )			Average	Specified Minimum
	Sample One	Sample Two	Sample Three		
<u>Pre UV Exposure</u>					
Ten Minutes	105.6	104.7	107.3	105.9	30
One Hour	29.0	28.5	29.2	28.9	7.0
Ninety Minutes	20.2	19.7	20.1	20.0	5.0
<u>Post UV Exposure</u>					
Ten Minutes	99.1	97.2	100.0	98.8	95.3*
One Hour	27.3	28.4	27.6	27.8	26.0*
Ninety Minutes	18.1	19.4	18.4	18.6	18.0*

\* Specified minimum is 90% of average initial luminance value at each time interval

In Charge Of Tests:



David Ellis  
Project Engineer  
Photometric Testing

Report Reviewed By:



Ernest Dykeman  
Senior Project Engineer  
Photometric Testing

Attachment: None



Scientific Services  
Laboratory

Report No: XC2278/R1

## TEST REPORT

### SALT SPRAY TESTING OF STAIR NOSING

File: BPB/MISC

#### 1. SAMPLE DETAILS

**Client:** Delwyn Ralston  
LincLab Ltd  
Private Bag 4749  
Christchurch New Zealand

**Sample Details:** Five samples of aluminium stair nosings with anti-slip and photoluminescence inserts.

**Requirements:** To determine the salt spray resistance on the stair nosing.

#### 2 TEST DETAILS-NATA REGISTRATION 219

##### 2.1 Salt Spray

The samples were exposed in a Singleton Model 21 Salt Spray Cabinet for 500 hours. A second sample of 120201 J was kept as a reference sample. The salt spray testing was carried out in accordance with ASTM B117-97 'Standard Test Method of Salt Spray (Fog) Testing'.

##### 2.2 Evaluation

After exposure, the samples were evaluated in accordance with ASTM D1654-92 'Evaluation of Painted or Coated Specimens Subject to Corrosive Environment'. The degree of corrosion was determined in accordance with ASTM D610. The anti-slip properties were assessed visually at 10 x magnification. The photoluminescence of the exposed samples was compared with that of the reference sample in a dark room.

#### 3 RESULTS

Sample No	XC 2278/F	XC 2278/G	XC 2278/H	XC 2278/I	XC 2278/J
<b>Details</b>	Aluminium stair nosing Labelled 120201F	Aluminium stair nosing Labelled 120201G	Aluminium stair nosing Labelled 120201H	Aluminium stair nosing Labelled 120201I	Aluminium stair nosing Labelled 120201J
<b>Degree of Corrosion</b>	0.5 % (Rating 9)	0.3 % (Rating 9)	0.3 % (Rating 9)	0.2 % (Rating 9)	0.2 % (Rating 9)
<b>Anti Slip Properties</b>	No deterioration observed	No deterioration observed	No deterioration observed	No deterioration observed	No deterioration observed
<b>Photo - luminescence</b>	No deterioration observed	No deterioration observed	No deterioration observed	No deterioration observed	No deterioration observed

*G. Eccleston*

G Eccleston  
Senior Materials Scientist  
9 April 2001



NATA Endorsed Test Report  
This document may not be reproduced except in full.

*AS/NZS ISO 9001 Quality System Certified Organisation*

177 Salmon St, Port Melbourne, Vic, 3207 Telephone (03) 9248 4900 Fax (03) 9646 5165  
A Business Unit of the Australian Government Analytical Laboratories (AGAL)  
Industry, Science and Resources



### TEST REPORT

DATE: 07/07/2005

TEST NUMBER: 096346

CLIENT	Ecoglo Ltd
--------	------------

TEST METHOD CONDUCTED	ASTM D4828 Washability of Organic Materials
-----------------------	---

DESCRIPTION OF TEST SAMPLE	
IDENTIFICATION	E2071
COLOR	Photoluminescent
ROLL	-----
CONSTRUCTION	-----
FIBER	-----
BACKING	-----
REFERENCE	

#### GENERAL PRINCIPLE

This test method covers the determination of the relative ease of removal of common soil and stains from interior coatings. The stains used in this procedure include: crayon, pen, lipstick, and 3M soil. The soilants are applied to the material and are subsequently removed manually using a sponge and liquid cleaner. The area stained is rated for color change and the number of cleaning cycles reported at the point of complete removal. Three replicates of each stain were applied with the results reported as the average of all three ratings.

#### TEST RESULTS

	Crayon	Felt Tip Pen	Lipstick	3M soil
Gloss Change	None	None	None	None
Color Change	None	None	None	None
Erosion	None	None	None	None
Cycles to Clean	74	7	31	14
Rating	10	10	10	10

NOTE: This sample **PASSES** the requirements as listed in the New York Department of Buildings RS6-1A section 6-1A 2.0

APPROVED BY:

This report is provided for the exclusive use of the client to whom it is addressed. It may be used in its entirety to gain product acceptance from duly constituted authorities. This report applies only to those samples tested and is not necessarily indicative of apparently identical or similar products. This report, or the name of Professional Testing Laboratory Inc. shall not be used under any circumstance in advertising to the general public.





### TEST REPORT

DATE: 07/07/2005

TEST NUMBER: 096346

CLIENT	Ecoglo Ltd
--------	------------

TEST METHOD CONDUCTED	ASTM D635 Standard Test Method for Rate of Burning and or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position
-----------------------	---

DESCRIPTION OF TEST SAMPLE	
IDENTIFICATION	E2071
COLOR	Photoluminescent
ROLL	-----
CONSTRUCTION	-----
FIBER	-----
BACKING	-----
REFERENCE	

#### GENERAL PRINCIPLE

This method covers a small scale procedure for comparing the relative rate of burning and the extent and time of burning of self-supporting plastics that are tested in the horizontal position. A bar of the material is supported at one end. The free end is exposed to a gas flame for 30 seconds. The time and extent of burning are measured and reported. An average burn rate is reported over ten test specimens.

#### TEST RESULTS

	Burn Rate	Time of Burn	Extent of Burn
Specimen 1	No Burn Rate	0 Seconds	Did Not Ignite
Specimen 2	No Burn Rate	0 Seconds	Did Not Ignite
Specimen 3	No Burn Rate	0 Seconds	Did Not Ignite
Specimen 4	No Burn Rate	0 Seconds	Did Not Ignite
Specimen 5	No Burn Rate	0 Seconds	Did Not Ignite
Specimen 6	No Burn Rate	0 Seconds	Did Not Ignite
Specimen 7	No Burn Rate	0 Seconds	Did Not Ignite
Specimen 8	No Burn Rate	0 Seconds	Did Not Ignite
Specimen 9	No Burn Rate	0 Seconds	Did Not Ignite
Specimen 10	No Burn Rate	0 Seconds	Did Not Ignite
Average	No Burn Rate	0 Seconds	Did Not Ignite

APPROVED BY:

This report is provided for the exclusive use of the client to whom it is addressed. It may be used in its entirety to gain product acceptance from duly constituted authorities. This report applies only to those samples tested and is not necessarily indicative of apparently identical of similar products. This report, or the name of Professional Testing Laboratory Inc. shall not be used under any circumstance in advertising to the general public.

**CALIFORNIA INSTITUTE OF ELECTRONICS AND MATERIALS SCIENCE**  
 2115 Flame Tree Way, Hemet, CA 92545 • Phone: 951 929 2659; Fax: 951 929 1057 • www.ciems.com

JALITE USA P. O. No. APR 15 of APRIL 15, 2005

DIVISION OF ELECTRONIC MEASUREMENTS AND DEVICES

Page 1 of 2

**TEST REPORT**  
 NO. 850850821B of 20 MAY 2005

***BRIGHTNESS, RADIOACTIVITY AND FLAME SPREAD TEST***

Table 1. LUMINANCE TEST (Contact Method)

No.	Sample	Tested Area Geometry		Excitation		Luminance (Brightness), mcd/m <sup>2</sup> after the time period of		
		Diameter mm	Area cm <sup>2</sup>	Duration min	Illuminance lx	10 min	60 min	90 min
1	Ecoglo-G3001c	56.39	25.0	120.0	21.63	111	28.8	19.7

**CONCLUSION:** *1. The tested samples of Ecoglo-G3001c meet the requirements of NYC Building Code Ref. STD RS 6-1, para. 1.4.*  
*2. The material tested has the Brightness Rating of 111-29-20.*

Table 2. RADIOACTIVITY TEST

No.	Material	Test Result, μSv/hr			Comments
		α-count	β-count	γ-count	
1 radioactive	Ecoglo-G3001c	<0.01	<0.01	<0.01	Non-

**CONCLUSION:** *The tested samples of Ecoglo-G3001c meet the requirements of NYC Building Code Ref. STD RS 6-1, para. 4.2.*

(continued on page 2)

3. FLAME SPREAD TEST

No.	Material	Test Parameters		Flame Spread	Flame Spread	Comments
		Temperature Drop $\Delta T, K$	Spec. Temperature Rise, $\beta, K/kW$	Factor, $F_s$ 1	Index, $I_s$ 1	
1	Ecoglo-G3001c	21.5	31.4	1.51	7.59	Ignites with difficulties

**CONCLUSION:** *The tested samples of Ecoglo-G3001c meet the requirements of NYC Building Code Ref STD RS 6-1, para. 5.2.*

**TEST DESCRIPTION**

- The test per ISO 17398:2000, Clause 7.11 and NYC BC Ref. STD RS-1, para. 1.1 - 1.4 (brightness); ASTM D3648 and NYC BC Ref. STD RS-1, para. 4.1 - 4.2 (radioactivity); and ASTM E162 and NYC BC Ref. STD RS 6-1, para. 5.1 - 5.2 (flame spread). Test conditions: T=22°C, RH=47±2%, P=101.0±0.2 kPa.
- The samples were preconditioned for the luminance test in the dark chamber and being wrapped in the black photographic paper for 63 hours, and were removed from the chamber immediately before the test. The test was performed in the windowless room lighted with the red photo-processing light. The excitation fluorescent light source has the maximum equivalent radiation intensity of  $1.94 \cdot 10^7 \text{ W/m}^2$  ( $4.3 \cdot 10^3 \text{ K}$ ) with  $\lambda_{\text{max}}=674 \text{ nm}$ .
- The radiation intensity readings were taken at nine different points on the surface of each of the samples tested with the samples located inside and outside of the radiation insulation chamber and under twelve angles between the normal to the sample surface and the direction of the field of gravity. The data in Table 2 were processed to exclude both the cosmic and the earth radiation background noise.
- The experimental error evaluated by the partial derivatives and least squares methods does not exceed 5%, 4% and 6.5% for the luminance, radioactivity and flame spread measurements, respectively. The data on the standard deviation are kept on file at CIEMS.

**5. INSTRUMENTS AND DEVICES USED**

- Digital Photometer Model 840006 SSL (0 to 20,000 lx), Digital Scotopic/Photopic Meter Model SL-3101 SLC
- Radiometer/Photometer Model DR-2000 w/Si Detector GS
- Goniometer Model 3501-08 FD
- Moseley X-Y Recorder Model 7035B HP
- 50A, 6V Stabilized Power Supply Model SC-506FAVD HBC
- Precision Micrometer Model 25/100 Krupp/Hommelwerke
- Radiation Pyrometer Model ST-30 Raynger
- Digital Timer Model Labchron-1402 LLI
- Programmed Temperature/Humidity Controller Model 100
- Geiger-Mueller Counter Model SGM-49C PRI

(continued on page 3)

- Scintillator Counter Model 111 PRI
  - Digital Nuclear Radiation Monitor Model DX-1 ITS
  - Flame Spread Testing Device Model 394-19DI BD
  - Digital Pyrometer Model Metis-MP25 SensorTherm GmbH (100°C - 700°C, 2.0 µm - 2.8 µm)
  - Optical Pyrometer Model MX-2 Raytek
  - IR Thermometer Model IR550 DKS
  - Precision Potentiometer/Thermometer Model 8659-AZ L&N
  - Microscopes: Model 9700 TSC, Model 500 PH, Model Tukon-300 Wilson
  - Starrett Dial Indicator Model 25-109 (1.27 µm/div)
  - Digital Hydrothermometer Model 63-844 MI, Barometer Model 602650 SB.
6. Reference materials used for the test setup calibration:
- NIST SRM 4233C (Cs-137-Ba-137m) - for the radiation measurements
  - NIST SRM 1002d (I<sub>s</sub>=153, Q=36.5) - for the flame spread test.
7. The equipment used in the test meets the applicable NIST, ASTM, ASME, OSHA and State requirements and was calibrated with the standards traceable to the NIST. The calibration was performed per ANSI/ISO ASQ Q9004-2000, ISO 10012-1:1992, ISO 10012-2:1997, MIL-STD-45662, MIL-I-45208, NAVAIR-17-35-MTL-1, CSP-1/03-93 and the instruments manufacturers' specifications.
8. The equipment passed a periodic accuracy test in June 2004. The linear and volume measure instruments and equipment were calibrated in December 2004. Next test - June 2005.

**TEST ENGINEER: 51**

**DIVISION MANAGER: *Cynthia Smythe***



BODYCOTE • 2395 SPEAKMAN DRIVE, MISSISSAUGA, ONTARIO, CANADA L5K 1B3 • TEL: (905) 822-4111 • FAX: (905) 823-1446

## **Bombardier SMP 800-C Toxic Gas Generation on "Ecoglo E2071" HPPL Composite**

A Report To: **Professional Testing Laboratory, Inc.**  
714 Glenwood Place  
Dalton, GA 30721  
USA

Phone: (706) 226-3283  
Fax: (706) 226-6787

Attention: Lee Phillips

Submitted By: Fire Testing

Report No. 05-02-519  
3 pages + 1 appendix

Date: July 12, 2005

**ACCREDITATION** Standards Council of Canada, Registration #1.

**REGISTRATIONS**

- ISO 9001:2000, registered by QMI, Registration #001109.
- New York City Department of Buildings, MEA Division, Registration #110-05-L.

**SPECIFICATIONS OF ORDER**

Determine toxic gas production according to Bombardier SMP 800-C, as per your P.O. #2005-062905 dated June 29, 2005.

**IDENTIFICATION** (BMTc sample identification number 05-02-S0519)

Composite, abrasive strip and high performance photoluminescent (HPPL) material on aluminum tracking substrate, approximately 2.1 to 2.4 mm in total thickness, identified as "Ecoglo E2071".

**SAMPLE PREPARATION**

Specimens were supplied as a two-material composite strip with two separate, and compositionally different materials attached to an aluminum tracking substrate. Since this strip represents the final product, it was determined that this test procedure was appropriate. Requisite specimen sizes were created by butting two strips of the material together vertically in the specimen holders, in alternate stripes, in an attempt to offer maximum exposure to both materials.



Far Left. Composite marking system shown as supplied (cut to length).

Right: Test specimen (2 sections butted together vertically) shown in sample holder with abrasive strip and HPPL ridges alternating.

**TEST RESULTS**

**Bombardier SMP 800-C**

Toxic Gas Generation

		Flaming <u>Mode</u>	Non-Flaming <u>Mode</u>	Specified <u>Maxima</u>
Carbon Monoxide (CO ppm)	at 1.5 minutes	<10	<10	-
	at 4.0 minutes	10	<10	-
	at maximum	463	<10	3500
Carbon Dioxide (CO2 ppm)	at 1.5 minutes	<50	<50	-
	at 4.0 minutes	1850	<50	-
	at maximum	13400	<50	90000

**TEST RESULTS (Cont..)**

**Bombardier SMP 800-C**

Toxic Gas Generation

	<u>Flaming Mode</u>	<u>Non-Flaming Mode</u>	<u>Specified Maxima</u>
Nitrogen Oxides (as NO2 ppm)	2	1	100
Sulfur Dioxide (SO2 ppm)	<1	<1	100
Hydrogen Chloride (HCl ppm)	7	9	500
Hydrogen Fluoride (HF ppm)	<2	<2	100
Hydrogen Bromide (HBr ppm)	<1	<1	100
Hydrogen Cyanide (HCN ppm)	2	<1	100
Original Weight (g) (including substrate)	24.8	24.4	-
Final Weight (g) (including substrate)	<u>20.9</u>	<u>24.2</u>	-
Weight Loss (g)	3.9	0.2	-
Weight Loss (%)	15.86	0.78	-
Time to Ignition (s)	125	Did not ignite	-
Burning Duration (s)	Not determinable	-	-

**CONCLUSIONS**

The photoluminescent composite material on aluminum identified in this report, when tested at a total approximate thickness of 2.1 to 2.4 mm, meets Bombardier requirements as they pertain to toxic gas production (Bombardier SMP 800-C) and therefore meets the toxicity requirements of paragraph 3.0 of the New York City Building Code § 27-383(b) Reference Standard RS 6-1A (Photoluminescent exit path markings).

***Note: This is an electronic copy of the report. Signatures are on file with the original report.***

I. Smith,  
Fire Testing.

Richard J. Lederle,  
Fire Testing.

*Note: This report consists of 3 pages, including the cover page, that comprise the report "body". It should be considered incomplete if all pages are not present. Additionally, the Appendix of this report comprises a cover page, plus 1 page.*



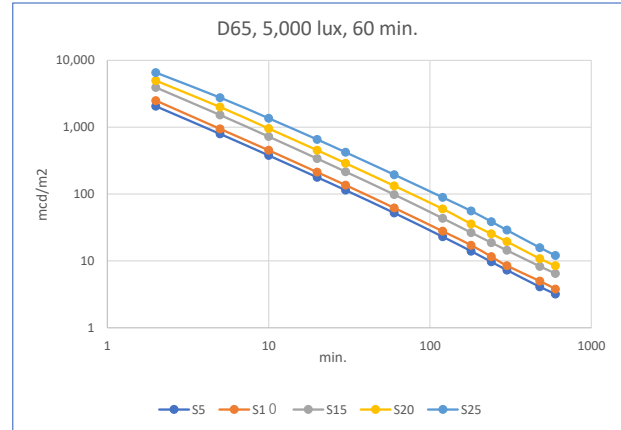
## Brightness Analysis of Photoluminescent Rigid Sheet Manufactured by Ecoglo International Ltd.

Reporting date: September 26, 2018

Analyzer: Topcon BM-5AS  
 Excitation Source: TOSHIBA 20W Fluorescent Lamp FL20S-D-EDL-D65  
 Excitation Condition: D65 5,000 lux, 60 minutes

(mcd/m<sup>2</sup>)

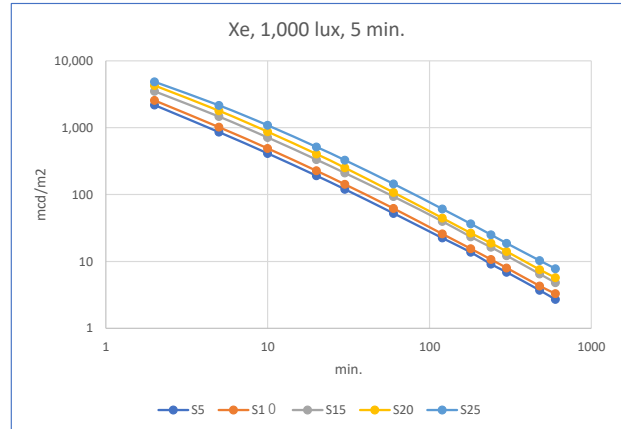
Time after removal of ex. (min.)	S5	S10	S15	S20	S25
2	2,058	2,504	3,930	4,971	6,556
5	794	944	1,522	2,006	2,772
10	379	452	725	956	1,362
20	178	212	339	453	656
30	114	136	216	289	422
60	52.3	62.2	98.5	132.9	195.3
120	23.0	27.8	43.4	60.0	89.2
180	14.0	17.2	26.5	35.8	55.9
240	9.7	11.6	18.8	25.5	38.7
300	7.3	8.5	14.4	19.5	28.9
480	4.1	5.0	8.3	10.8	15.8
600	3.2	3.8	6.5	8.5	12.1



Analyzer: Topcon BM-5AS  
 Excitation Source: Hamamatsu Photonics 150W Xenon lamp L2175  
 Excitation Condition: Xe 1,000 lux, 5 minutes

(mcd/m<sup>2</sup>)

Time after removal of ex. (min.)	S5	S10	S15	S20	S25
2	2,179	2,559	3,505	4,284	4,861
5	860	1,019	1,468	1,794	2,160
10	413	491	714	871	1,087
20	192	227	334	405	517
30	120	142	210	252	327
60	52.4	62.0	93.4	107.5	144.4
120	22.4	25.8	39.8	44.6	61.1
180	13.7	15.5	23.3	26.6	36.5
240	9.1	10.7	16.3	18.8	25.1
300	6.9	8.0	12.2	14.1	18.7
480	3.7	4.3	6.5	7.5	10.3
600	2.7	3.3	4.8	5.7	7.8







# Allunga Exposure Laboratory

Tel: + 61 7 4778 1697  
Fax: +61 7 4422 0009  
Lat 19°S, 147°E

Email: test@allunga.com.au  
Web: www.allunga.com.au

Mail: Locked Bag 369, Aitkenvale  
Mail Centre, Queensland,  
AUSTRALIA 4814

**Attention** Delwyn Ralston  
Ecoglo International Ltd  
77 Kingsley St  
Sydenham Christchurch 8023  
New Zealand

**Report Name** Samples / 1-6 @ 20 min @ 150°C  
**Duration** 20 min @ 150°C  
**Your Reference** Samples / 1-6  
**Our Reference** 20D06WW1-6  
**Report Date** 07-Apr-2020

**Exposure Type:** See Below  
**Date Exposed** 06-Apr-2020

**Book & Page:** 909/66  
**Site:** Townsville (Main)

**Authorised AEL Signatory:** Chris Cooper

## Notes:

### EXPOSURE

Expose samples for 20 minutes at 150°C, as per client instructions.

Instrument: WiseVen WOF-105 Precision Laboratory Oven.

## REPORT STANDARDS

### VISUAL ASSESSMENT OF CHANGE

Based on Standard: AS/NZS 1580.481.1:1998 Coatings Exposed to Weathering (12 Parameters of Change)

Degree of colour change - AS/NZS 1580.481.1.12

Degree of Blistering - AS/NZS 1580.481.1.9 Blistering

Degree of distortion/shrinkage

AS/NZS, ISO Rating scale: 0-5. 0 = No change, 5 = Complete change

NOTE: AS/NZS 1580.481.1.9 Degree of Blistering

Rating is in two parts, Density (D) and Size (S)

Method 481.1.1.9: Degree of Blistering

0 = None

1 = Less than few

2 = Few

3 = Medium

4 = Medium-dense

5 = Dense

Note: Report prepared >24 Hours post exposure to allow any colour changes associated with energy absorption/radiation to dissipate. Photos taken at 45 minutes and at 24 hours.

Exposure conducted: 06 April 2020.

Report Prepared: 07 April 2020.

Evaluation based on As 1580.481

		Colour: D65/10
1.1	General Appearance	1.9 (J) Blistering
1.2	Discolouration	(K) Visible Rusting
1.3	Dirt Collection	1.11 (L) Chalking
1.4	Dirt Retention	1.13 Mould, Algae, Fungus
1.5	Change of Gloss	FIC Ford Image Clarity
1.6 (E)	Erosion	FD Film Defects
1.7 (F)	Checking	d Darker
1.8 (G)	Cracking	l lighter
1.9 (H)	Flaking & Peeling	r redder

All Samples Tested As Received

b	bluer
y	yellow
g	greyer
wh	whiter
f	fade
i	increase
c	continued
w	wide variation
t	trace

length measurements in mm

m	includes mould
loc	localized
nnc	no noticeable change
sd	surface distortion
ws	water spotting
af	adhesion failure
S	slight
md	moderate
sv	severe



# Allunga Exposure Laboratory

**DURABILITY**

Tel: + 61 7 4778 1697  
Fax: +61 7 4422 0009  
Lat 19°S, 147°E

Email: test@allunga.com.au  
Web: www.allunga.com.au

Mail: Locked Bag 369, Aitkenvale  
Mail Centre, Queensland,  
AUSTRALIA 4814

**Attention** Delwyn Ralston  
Ecoglo International Ltd  
77 Kingsley St  
Sydenham Christchurch 8023  
New Zealand

**Report Name** Samples / 1-6 @ 20 min @ 150°C  
**Duration** 20 min @ 150°C  
**Your Reference** Samples / 1-6  
**Our Reference** 20D06WW1-6  
**Report Date** 07-Apr-2020

**Exposure Type:** See Below  
**Date Exposed** 06-Apr-2020

**Book & Page:** 909/66  
**Site:** Townsville (Main)

**Authorised AEL Signatory:** Chris Cooper

Client Ref	Colour Change	Blistering	Distortion
Hazard tape	0 t	0	1-2
G3-001	0	0	0
S5 sign (1)	0	0	0
S5 sign (2)	0	0	0
S20	0	0	0
A20	1 d g	-	5

Client Ref.	Comments
Hazard tape	Tape has an 'orange peel' wrinkling across whole surface. See photographs
A20	Sample melted onto substrate trapping air in small voids that subsequently expanded giving appearance of blistering, substrate distorted as sample cooled. Exposed material appears a trace darker and greener 24 hours after exposure. See photographs.

Evaluation based on As 1580.481

1.1 General Appearance  
1.2 Discolouration  
1.3 Dirt Collection  
1.4 Dirt Retention  
1.5 Change of Gloss  
1.6 (E) Erosion  
1.7 (F) Checking  
1.8 (G) Cracking  
1.9 (H) Flaking & Peeling

1.9 (J) Blistering  
(K) Visible Rusting  
1.11 (L) Chalking  
1.13 Mould, Algae, Fungus  
FIC Ford Image Clarity  
FD Film Defects  
d Darker  
l lighter  
r redder

Colour: D65/10

All Samples Tested As Received

b bluer  
y yellower  
g greyer  
wh whiter  
f fade  
i increase  
c continued  
w wide variation  
t trace

length measurements in mm

m includes mould  
loc localized  
nnc no noticeable change  
sd surface distortion  
ws water spotting  
af adhesion failure  
S slight  
md moderate  
sv severe

## Appendix 4

Ecoglo International Ltd

# **Safety Data Sheet**

## 1. Identification

### Product Name

Ecoglo S20-HTC Disaster Preparedness Flat Panel Signs including: S20-TE315290-HTC, S20-TE600475-HTC, S20-TE945580-HTC, S20-TER315290-HTC, S20-TER600475-HTC, S20-TER945580-HTC, S20-TEL315290-HTC, S20-TEL600475-HTC, S20-TEL945580-HTC, S20-SWS315290-HTC, S20-SWS600475-HTC, S20-SWS945580-HTC, S20-EA315290-HTC, S20-EA600475-HTC, S20-EA945580-HTC, S20-EAR315290-HTC, S20-EAR600475-HTC, S20-EAR945580-HTC, S20-EAL315290-HTC, S20-EAL600475-HTC, S20-EAL945580-HTC, S20-EC315290-HTC, S20-EC600475-HTC, S20-EC945580-HTC, S20-FHZ315290-HTC, S20-FHZ600475-HTC, S20-FHZ945580-HTC, S20-LS315290-HTC, S20-LS600475-HTC, S20-LS945580-HTC, S20-VHZ315290-HTC, S20-VHZ600475-HTC, S20-VHZ945580-HTC, S20-THZ315290-HTC, S20-THZ600475-HTC, S20-THZ945580-HTC, S20-EHZ315290-HTC, S20-EHZ600475-HTC, S20-EHZ945580-HTC, S20-WDG

### Manufacturer Details

**Company:** Ecoglo International Ltd  
**Address:** 77 Kingsley St, Christchurch 8440, New Zealand  
**Phone No:** +64 3 348 3781

## 2. Hazard Identification

Not classified as hazardous or dangerous as per GHS.

## 3. Composition/information on ingredients

Component	CAS No.	Proportion
Aluminium Alloy (5005)	-	40-70%
Strontium Aluminate based photoluminescent pigment	-	10-40%
Cross-linked thermoset polyester based resins	-	10-30%
Other components	-	< 1%

**4. First-aid measures** No special measures required.

**5. Fire-fighting measures** No special measures required.

**6. Accidental release measures** Not applicable.

**7. Handling and storage** Cut edges may be sharp. No special storage requirements.

**8. Exposure controls and personal protection** Wear gloves when handling.

## 9. Physical and chemical properties

Appearance:	Solid sheet material
Odour:	N/A
Melting point:	N/A
Specific gravity:	2.2-2.7 g/cc
Volatile:	N/A
Vapour pressure:	N/A
Vapour density:	N/A
Solubility in water:	Insoluble
Flammability:	Not easily combustible. Passes Bombardier SMP 800-C Toxic gas generation test
Explosivity:	Not explosive

## 10. Stability and reactivity

Hazardous reactions:	None known
Radioactivity:	Not Radioactive

**11. Toxicological information** No toxicological properties.

**12. Ecological information** No ecological hazards.

**13. Disposal considerations** Offcuts can be sent for aluminium recycling.

**14. Transport information** Not restricted.

**15. Regulatory information** None applicable to product.

**16. Any other relevant information** None.

## Appendix 5

Ecoglo International Ltd

# **Quality Assurance Document**

# Ecoglo International Ltd

## QUALITY POLICY

**E.I.L** is a world leader in the manufacture of photoluminescent signage and path marking. We pride ourselves on our strong focus on compliance and durability. Our policy is to achieve sustainable growth by offering quality products and service. All of our staff are committed to continual quality improvement. The company has earned respect and credibility, at an international level, as a result of our contributions to building code development around photoluminescent system design.

**E.I.L** maintains an ISO 9001:2015 compliant Business Management System. Management will ensure that all staff are committed to the principles of this system and its continual development.

Our key objectives are:

- To ensure that all products meet contractual and relevant regulatory obligations, both national and international.
- To offer a cost effective and sustainable alternative to traditional electrical lighting that all areas of industry can adopt in a safe and practical manner.
- To offer the most durable photoluminescent products on the market and back them with the best warranty and after-sales support.
- To identify and implement new processes to reduce our product cost without increasing our environmental impact.

Our strategy to achieve these goals is:

- Maintain a high level of staff input on quality control.
- Focus on keeping our staff fully aware of our expected quality output.
- Explore all opportunities to improve our products and processes.
- Effectively recognise the limitations of our product range and work with our clients and competitors to deliver the best result for our clients.
- Be active and engaged in the wider fire safety industry.
- Review any complaints or criticism and use them to construct educational material that assists all levels of industry, both national and international.

**Ecoglo International Ltd.**

77 Kingsley Street  
Christchurch, New Zealand  
www.ecoglo.com

Signed: Trevor Dimond  
 Name: Trevor Dimond  
 Date: 31 March 2023



## Appendix 6

Ecoglo International Ltd

# **Warranty**

## Ecoglo International Limited

### Warranty for Photoluminescent Performance of HTC\* Signs and Products

1. We warrant the photoluminescent performance of both Signs and Products, manufactured using our High Temperature Curing (HTC) process, for a period of:  
  
**thirty** years from the date of installation for standard Signs and Products which are positioned **indoors**; and  
  
**fifteen** years from the date of installation for **outdoor** Signs (specially coated for **outdoor** conditions) and Products which are positioned **outdoors**.
2. This warranty assumes correct installation and normal conditions of use and maintenance but does not cover normal wear and tear. This warranty does not cover deterioration due to abuse, mistreatment, natural disasters (e.g. fire, flood), exposure to harmful chemicals or environments or any other use or exposure not recommended in our product literature. In particular, this warranty is void in the following circumstances:
  - 2.1 The Signs and/or Products have been misused, neglected, damaged, abused or involved in an accident.
  - 2.2 The Signs and/or Products have been improperly installed, operated, repaired or maintained.
  - 2.3 The Signs and/or Products have been modified.
  - 2.4 The Signs and/or Products have been used outside their stated specifications, capacity and operating parameters.
3. If you have a claim that, in our reasonable judgement, satisfies the terms of this warranty, we shall replace the defective Sign or Product (material only).
4. This is an express warranty. It is your sole and exclusive remedy. We disclaim any other express or implied warranties, including warranties of merchantability or fitness for purpose, to the maximum extent permitted by law. Under no circumstances shall we accept liability for any injury to persons, damage to property, loss of profits, loss of operations or other direct, indirect, special, incidental, or consequential losses, costs and damages whether incurred by you, your guests, licensees, invitees or other third parties. Our liability under any circumstance, whether in contract, tort or otherwise, shall not, in the aggregate, exceed the price that you paid for the Sign and/or Product.
5. Some countries do not allow certain disclaimers, limitations or exclusions in warranties. Therefore, the above disclaimers, limitations and exclusions may not apply to you. This warranty gives you specific legal rights. You may have other rights or remedies pursuant to the laws of your country. Nothing in this limited warranty should be construed as limiting or restricting any other right or remedy available to you, except as allowed by the law in your country.



## Appendix 7

Ecoglo International Ltd

# **Maintenance and Cleaning Instructions**

*Instructions For*

# Maintenance and Cleaning

Exit Signs and Escape Path Markings



# Maintenance and Cleaning Instructions For Exit Signs and Escape Path Markings

## Overview

- Regular maintenance and cleaning to remove any obstructions or built up dirt and deposits will ensure the Ecoglo products continue performing to expectation.
- The photoluminescence will continue performing even after UV exposure or exposure to moisture.

## Floor Mounted Products

- Check nothing is covering up the product.
- Visually inspect for any sign of damage.
- Vacuuming or brushing with a stiff bristle head brush (dry or wet) is often enough to keep the strips clean.
- The glowing strip can also be wiped clean with a (dry or wet) sponge or cloth.
- High-pressure water (but not steam cleaning) can also be used.
- Observation will determine if cleaning is required however a regular clean every 4 to 6 weeks or after particularly heavy use should ensure correct performance.

## Wall Mounted Products

- Check nothing is covering up the sign.
- Visually inspect for any sign of damage.
- Dusting with a soft cloth or brush is often enough to keep the signs clean.
- The glowing material can also be wiped clean with a (dry or wet) sponge or cloth.
- Observation will determine if cleaning is required.

## Note

- Do not use highly alkaline or acidic cleaning agents. The pH of the cleaning agents should be between pH 5 and pH 12.
- If cleaning agents are applied at more than pH 10, the Ecoglo material should be rinsed with pH neutral (pH 6 to pH 8) solution afterwards.

*For more detailed information re inspection and maintenance procedures for signs please see Photoluminescent Lighting Council Standard PLCS 101 2019, Part C - Inspection and Maintenance (available for download from the Homepage at [www.plcouncil.com.au](http://www.plcouncil.com.au))*

## **Ecoglo International Limited**

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

Web: [www.Ecoglo.com](http://www.Ecoglo.com)

