Designation: E2072 – 09

An American National Standard

Standard Specification for Photoluminescent (Phosphorescent) Safety Markings[1]

This standard is issued under the fixed designation E2072; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This specification covers minimum photometric requirements for newly applied photoluminescent (phosphorescent) safety materials used to provide supplemental markings of escape routes, emergency equipment, and obstructions along the escape route. (see also Test Method E2073 and Guide E2030).

1.2 This specification establishes minimum luminance values for photoluminescent (phosphorescent) markings.

1.3 This specification applies to all types of photoluminescent (phosphorescent) markings, including but not limited to plastics, coatings, ceramics, films, etc.

1.4 This specification does not cover potentially diminished performance due to wear and tear and aging.

1.5 This specification applies only to photoluminescent (phosphorescent) markings emitting the majority of spectral energy within the 515 to 535 nanometer range.

1.6 When reference is made regarding photoluminescence in the text of this standard, it implies phosphorescence.

1.7 The values stated in SI units are the standard. The values given in parentheses are provided for information purposes only.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

E284 Terminology of Appearance

E1316 Terminology for Nondestructive Examinations

E2030 Guide for Recommended Uses of Photoluminescent (Phosphorescent) Safety Markings

E2073 Test Method for Photopic Luminance of Photoluminescent (Phosphorescent) Markings

3. Terminology

3.1 Definitions of terms in Terminology E284 and Terminology E1316 are applicable to this specification.

4. Performance Requirements

4.1 *Optical Requirements*:

4.1.1 *Luminance in a Test Laboratory*—The photopic luminance of all three specimens of the photoluminescent marking, measured in compliance with Test Method E2073, shall be not less than: 20.0 mcd/m^2 at 10 min after activation has ceased; and 2.8 mcd/m^2 at 60 min after activation has ceased.

5. Installation Site

5.1 *On-Site Luminance*—The photopic luminance of on-site installed photoluminescent markings shall be measured in compliance with Test Method E2073. The on-site lighting shall be used as activation. Markings must be a minimum of 25.4-mm (1-in.) width. For markings of width *W*, the required photopic luminance shall, at all times, be not less than:

1500/*W* *mcd/m*^{2} *at* 10 *min after activation has ceased*

220/*W* *mcd/m*^{2} *at* 60 *min after activation has ceased*

For this calculation, the width *W* is measured in millimetres.

Examples of Required Luminance Values

Width of Marking	10 min after activation has ceased	60 min after activation has ceased
Minimum 25.4–mm	59.06 mcd/m^2	8.66 mcd/m^2
40–mm	37.50 mcd/m^2	5.50 mcd/m^2
75–mm	20.00 mcd/m^2	2.93 mcd/m^2
100–mm	15.00 mcd/m^2	2.20 mcd/m^2

5.2 *Activation*—The required recharging activation level for photoluminescent safety markings depends on the ambient luminance level, the type of light source utilized, and the duration of exposure to the activating light source. Consult manufacturers for performance levels under various lighting conditions.

6. Keywords

6.1 escape routes; luminance; photoluminescent safety markings

[1] This specification is under the jurisdiction of ASTM Committee E12 on Color and Appearance and is the direct responsibility of Subcommittee E12.13 on Photoluminescent Safety Markings.

Current edition approved July 1, 2009. Published July 2009. Originally approved in 2000. Last previous edition approved in 2004 as E2072 – 04. DOI: 10.1520/E2072-09.

[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.