

NEMA Standards Publication EM 1-2007

Exit Sign Visibility Testing Requirements for Safety and Energy Efficiency

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Foreword

The purpose of this NEMA Standards Publication is to promote safety by setting forth visibility testing procedures and requirements for exit signs. These procedures and requirements are based on the best available objective research by the National Institute of Standards and Technology and the Lighting Research Center and on independent testing by CSA International. For the purposes of this standard, the function of an exit sign is regarded as two-fold, for readability and to attract attention in an emergency situation.

This standard is based largely on the work done by CSA International and participating companies and organizations in developing CSA Standard C860-01, *Performance for Internally Lighted Exit Signs*. However, this NEMA Standards Publication is not intended for listing or certification of products covered in its scope. For listing and certification purposes, consult the appropriate publications of Underwriters Laboratories Inc. and/or CSA International.

This standard includes energy efficiency requirements for declaration as NEMA Premium rated products. All safety related requirements and energy efficiency requirements shall be met for NEMA Premium ratings.

In the preparation of this standards publication, input of users and other interested parties was sought and evaluated. Inquiries, comments, and proposed or recommended revisions should be submitted to the Emergency Lighting Subdivision of NEMA by contacting:

Vice President, Engineering
National Electrical Manufacturers Association
1300 North 17th Street, Suite 1752
Rosslyn, Virginia 22209

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The Emergency Lighting Section developed this standard. Section approval of the standard does not necessarily imply that all section members voted for its approval or participated in its development. At the time the standard was approved, the Emergency Lighting Section was comprised of the following members:

Acuity Brands Lighting
Cooper Lighting
Genlyte Thomas Group, LLC
Gilbert Industries, Incorporated
Hubbell Lighting, Incorporated
Ruud Lighting Incorporated
Technical Consumer Products, Incorporated
The Bodine Company, Incorporated
Thomas & Betts Corporation

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1 Scope

This standards publication contains performance requirements and test methods for evaluating exit sign visibility. Visibility requirements are based on an assumed normal visual acuity and normal color recognition in clear air at a maximum viewing distance of 30.5 m (100 ft). This scope does not imply that exit signs conforming to the requirements of this standard will be visible to all people under all environmental conditions.

This standards publication contains energy efficiency requirements and test methods for evaluating exit sign performance in order to declare a NEMA Premium rating.

These requirements apply to exit signs that illuminate an integral legally required legend for installation in accordance with the *National Electrical Code* (ANSI/NFPA 70) and the *Life Safety Code* (ANSI/NFPA 101), including exit signs intended for use near the floor.

2 Definitions

2.1 chevron, or directional indicator

A graphical symbol used in conjunction with a legend on an exit sign to indicate a preferred direction of egress.

2.2 edgelit sign

A type of exit sign, in which the light from an enclosed light source is directed through a light-transmitting plate that has the legend etched in or attached to its surface. The sign face appears luminous when light leaves disruptions in the plate.

2.3 exit sign

A device used in buildings to identify the most direct path of egress for emergency purposes. It contains a legend and optional directional indicator(s). The exit sign is considered to be internally illuminated if the legend and optional directional indicator or background, or both, are illuminated by a light source contained within the assembly supporting the legend and optional directional indicator.

2.4 legend

The word or words required to be contained on an exit sign.

2.5 legibility

The attributes of alphanumeric characters, including contrast, luminance, stroke width, and shape, that make it possible for each one to be distinguished and identified.

2.6 luminance

The luminance of a surface is the luminous intensity in a given direction per unit area of that surface as viewed from that direction. Luminance is measured in candelas per square meter (cd/m^2). An older unit for luminance is footlamberts ($1 \text{ fL} = 3.43 \text{ cd}/\text{m}^2$).

2.7 luminance contrast

Luminance contrast quantifies the relative brightness of an object against its background. For exit signs, the relevant contrast is between the luminance of the letters and the luminance of the rest of the sign face (background). Luminance contrast can vary from zero to one. The closer the