



Standard Test Method for Measurement of the Luminance Coefficient Under Diffuse Illumination of Pavement Marking Materials Using a Portable Reflectometer¹

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1. Scope

1.1 This test method covers measurement of the luminance coefficient under diffuse illumination of horizontal pavement markings, such as traffic stripes and surface symbols, and pavement surfaces, in a particular viewing direction using a portable reflectometer.

NOTE 1—The luminance coefficient under diffuse illumination is a measure of the reflection of horizontal pavement markings and pavement surfaces in a particular viewing direction in daylight or under road lighting. Diffuse illumination approximates daylight illumination from the overcast sky, and road lighting as an average of locations on the pavement surface.

1.2 The co-viewing angle of the reflectometer affects the readings. As specified by the European Committee for Standardization (CEN), the co-viewing angle shall be 2.29° .

1.3 This test method is intended to be used for field measurement of pavement markings and pavement surfaces but may be used to measure the performance of materials on sample panels before placing the marking material in the field.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

E284 Terminology of Appearance

E809 Practice for Measuring Photometric Characteristics of Retroreflectors

¹ This test method is under the jurisdiction of ASTM Committee E12 on Color and Appearance and is the direct responsibility of Subcommittee E12.10 on Retroreflection.

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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.

2.2 Other Standard:

CEN EN 1436 Road Marking Materials—Road Marking Performance for Road Users³

3. Terminology

3.1 The terminology used in this test method generally agrees with that used in Terminology E284.

3.2 Definitions:

3.2.1 *luminance coefficient under diffuse illumination; Q_d*, *n*—the ratio of luminance, *L*, in a particular viewing direction, of a projected surface to the illuminance of diffuse illumination, *E*, at the surface on the plane of the surface, expressed in candelas per square metre per lux ($\text{cd}\cdot\text{m}^{-2}\cdot\text{lx}^{-1}$).

3.2.1.1 *Discussion*—*Q_d* has a range from zero up to a maximum of $1/\pi = \text{approximately } 0.318 \text{ cd}\cdot\text{m}^{-2}\cdot\text{lx}^{-1}$. For convenience, the units used commonly are millicandelas per square metre per lux ($\text{mcd}\cdot\text{m}^{-2}\cdot\text{lx}^{-1}$) providing a range from zero up to $1000/\pi = \text{approximately } 318 \text{ mcd}\cdot\text{m}^{-2}\cdot\text{lx}^{-1}$.

3.2.2 *co-viewing angle, a, n*—the angle between the plane of the pavement marking surface and the observation axis.

3.2.3 *portable reflectometer, n*—a hand-held instrument that can be used in the field or laboratory for measurement of luminance coefficient under diffuse illumination.

3.2.4 *instrument standard, n*—working standard used to standardize the portable reflectometer.

4. Summary of Test Method

4.1 This test method involves the use of commercial portable reflectometers for determining the luminance coefficient under diffuse illumination in a particular viewing direction of horizontal coatings materials used in pavement markings.

4.2 The co-viewing angle is fixed at 2.29° .

4.3 The reflectometers use an external panel or other instrument standard of known luminance coefficient under diffuse illumination, *Q_d*.

³ Available from European Committee for Standardization (CEN), 36 rue de Stassart, B-1050, Brussels, Belgium, <http://www.cenorm.be>.