



Standard Specification for Color of Pavement Marking Materials¹

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1. Scope

1.1 This specification covers the daytime and nighttime color of retroreflective pavement marking materials used for traffic control lane markings and symbols on road surfaces. It is intended to apply throughout the service life of the material.

1.2 This specification applies to both painted and tape lines, including thermoplastic, epoxy and other types.

1.3 This specification is not applicable to the testing, for quality control purposes, of marking material without added drop-on beads.

1.4 In addition, it does not describe requirements other than color such as retroreflectance.

2. Referenced Documents

2.1 ASTM Standards:

D 4061 Test Method for Retroreflectance of Horizontal Coatings²

D 6359 Specification for Minimum Retroreflectance of Newly Applied Pavement Marking Using Portable Hand-Operated Instruments³

E 284 Terminology of Appearance²

E 308 Practice for Computing the Colors of Objects by Using the CIE System²

E 808 Practice for Describing Retroreflection²

E 811 Practice for Measuring Colorimetric Characteristics of Retroreflectors Under Nighttime Conditions²

E 1349 Test Method for Reflectance Factor and Color by Spectrophotometry Using Bidirectional Geometry²

2.2 CIE Publications:

No. 15.2 Colorimetry⁴

No. 39.2 Recommendations for Surface Colours for Visual Signalling⁴

3. Terminology

3.1 Definitions:

3.1.1 Definitions of appearance terms in Terminology E 284 are applicable to this specification.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *pavement marking structured materials*— a pavement marking material with a pattern or other texture which can cause the material to change in appearance at near grazing viewing angles significantly from its appearance at 45° viewing angle.

4. Significance and Use

4.1 This specification is intended for use during the lifetime of the retroreflective pavement marking on the road surface. Specifications for characteristics other than color are found in other ASTM documents.

5. Performance Requirements

5.1 *Chromaticity Limits*—The material must plot within the boundaries described by the four corner points listed in Tables 1 and 2 when measured in accordance with the test methods in Section 7.

5.1.1 *Table 1*—Daytime (x,y) chromaticity coordinate's of the corners of the regions for the colors of white, yellow, blue and red pavement markings.

NOTE 1—Daytime color testing of pavement markings excludes structured materials. They must be tested at the viewing angle encountered in usage using diffuse illumination and 87.71° viewing angle.

5.1.2 *Table 2*—Nighttime (x,y) chromaticity coordinates of the corners of the regions for the colors of white and yellow pavement markings.

5.1.3 *Chromaticity and Retroreflectance*— The third dimension of the perceived appearance of the road marking at night is the retroreflectance. This quantity is specified in other ASTM documents on pavement markings and is not part of pavement marking nighttime color specification. Research has shown that the nighttime color as specified by chromaticity is sufficient and adequate for the color naming of the material as viewed under nighttime conditions.

5.2 *Daytime Lightness Limits (Y Tristimulus Coordinate)*— The lightness limits shall conform to Table 3. (The 45/0 and 0/45 geometry is the current standard practice for these measurements.

NOTE 2—Daytime luminance factor testing of pavement markings excludes structured materials. They must be tested at the viewing angle encountered in usage using diffuse illumination and 87.71° viewing angle.

6. Specimen Preparation

6.1 The test specimen shall be measured mounted on a flat test panel with a minimum test area of 0.1 m² in size. Typical

¹ This specification is under the jurisdiction of ASTM Committee D04 on Road and Paving Materials and is the direct responsibility of Subcommittee D04.38 on Highway Traffic Control Materials.

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² *Annual Book of ASTM Standards*, Vol 06.01.

³ *Annual Book of ASTM Standards*, Vol 04.03.

⁴ Available from USNC-CIE Publications Office, TLA Lighting Consultants, Inc., 7 Pond Street, Salem, MA 01970.