



Designation: **D4592 – 05 D4592 – 12**

## Standard Specification for Preformed Retroreflective Pavement Marking Tape for Limited Service Life<sup>1</sup>

This standard is issued under the fixed designation D4592; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This specification covers white or yellow preformed retroreflective pavement marking tapes that are designed to provide a service life of typically 3 to 6 months, ~~on roads with up to 15 000 average daily traffic count (ADT) depending on wear and durability factors.~~

1.2 The tapes are intended for use as longitudinal, transverse, or word/symbol pavement markings that provide delineation day and night. The tapes may be either removable or nonremovable.

1.3 The values stated in inch-pound units are to be regarded as the standard except where noted in the document. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

### 2. Referenced Documents

#### 2.1 ASTM Standards:<sup>2</sup>

[D1000 Test Methods for Pressure-Sensitive Adhesive-Coated Tapes Used for Electrical and Electronic Applications](#)

[D4061 Test Method for Retroreflectance of Horizontal Coatings](#)

[D6628 Specification for Color of Pavement Marking Materials](#)

[E303 Test Method for Measuring Surface Frictional Properties Using the British Pendulum Tester](#)

[E1710 Test Method for Measurement of Retroreflective Pavement Marking Materials with CEN-Prescribed Geometry Using a Portable Retroreflector](#)

#### 2.2 Federal Standard:<sup>3</sup>

[Fed Std Test Method 141](#)

#### 2.3 CIE Publications:<sup>4</sup>

[No. 15.2 Colorimetry](#)

[No. 39.2 Recommendations for Surface Colours for Visual Signaling](#)

### 3. Terminology

#### 3.1 Definitions:

3.1.1 *limited service life or period*—a minimum service period of three months when placed in accordance with the manufacturer's recommended procedures on pavement ~~surfaces having no more than 15 000 average daily traffic/lane surfaces.~~

NOTE 1—~~15 000 ADT~~See Section 7 per lane is typical of heavily traveled roads such as interstate highways through major urban areas; ~~for factors affecting durability.~~

3.1.2 *preformed tape*—continuous, flexible pavement marking material that is essentially complete and that may be affixed to or imbedded in the road surface without fundamentally altering its configuration.

3.1.3 *retroreflection*—reflection in which radiation is returned in directions close to the direction from which it came, this property being maintained over wide variations of the direction of the incident radiation.

<sup>1</sup> 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.

Current edition approved June 1, 2005Dec. 15, 2012. Published July 2005January 2013. Originally approved in 1986. Last previous edition approved in 20032005 as D4592 – 03.D4592 – 05. DOI: 10.1520/D4592-05.10.1520/D4592-12.

<sup>2</sup> 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.

<sup>3</sup> Available from Naval Publications and Forms Center, 5801 Tabor Ave, Philadelphia, PA 19120.

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

3.1.4 *retroreflector*—surface or device that reflects and returns a relatively high proportion of light in a direction close to the light source. This characteristic is maintained over a wide variation of the angle made by the incident light ray and the normal to the retroreflective surface.

3.1.5 *surface pattern*—a pattern on the surface, in which the raised areas are a minimum of 0.8 mm (31 mils) high and occupy approximately 50 % of the surface area, presenting a substantial area of nearly vertical face to traffic from any approach surface with areas of raised surface area.

**4. Classification**

4.1 Pavement marking tape manufactured according to this specification shall be identified as Type I or Type II:

4.1.1 *Type I (Removable)*—Marking tapes, after serving the intended limited service life, shall be removable from asphalt or portland cement concrete surfaces at pavement temperatures above 4°C (40°F) intact or in pieces no less than about 600 93 in.<sup>2</sup> (600 cm<sup>2</sup>) in area, either manually or with a mechanical device without the use of heat, solvents, grinding, or blasting that would damage or discolor the pavement so as to leave an impressed traffic lane mark.

4.1.2 *Type II (Non-Removable)*—This type of tape shall not be required to have removal characteristics as in 4.1.1.

NOTE 2—Type II tapes are most often used for short term applications in which markings are paved over during successive road construction operations.

**5. Ordering Information**

5.1 The purchaser using this specification shall include the following information:

- 5.1.1 ASTM designation (D4592),
- 5.1.2 Classification Type (I or II; see 4.1),
- 5.1.3 Daytime color (See 6.3),
- 5.1.4 Width and length of rolls, and
- 5.1.5 Any additional information.

**6. Requirements**

6.1 *Physical Requirements:*

6.1.1 The marking tape shall be a reflective film coated with a pressure-sensitive adhesive with or without a protective liner.

6.1.2 The marking tape shall be flexible and shall conform to the typical road pavement surface.

6.1.3 The marking tape shall adhere to asphalt or portland cement concrete roadway surfaces when applied according to the manufacturer’s recommended procedures on pavement surfaces having temperatures down to 10°C (50°F) at the time of application.

6.1.4 Immediately following application, the tape shall not require a cure or set time prior to opening to traffic.

6.1.5 The tape as supplied shall be free of cracks, and have true, straight, and unbroken edges. The actual width of rolls of preformed marking tape used for striping shall be no less than the nominal (stated) width and no more than 3 mm (1/8 in.) greater than the nominal width. The length shall be no less than the stated length.

6.2 *Retroreflection:*

6.2.1 The marking tape shall be retroreflective, reflecting white or yellow, respectively, and shall be readily visible when viewed with automobile headlights at night and shall have minimum reflective values as shown in Table 1 when measured in accordance with the photometric testing procedures of Test Method D4061 or E1710.

NOTE 3—Retroreflectance may be dependent on the direction in which the material is manufactured (in other words, upweb R<sub>L</sub> may differ from downweb R<sub>L</sub>.)

6.2.2 The retroreflectance of the marking tape shall be measured in one roll-winding direction and then re-measured in the opposite direction. Both measured values shall comply with the stated R<sub>L</sub> minimum.

**TABLE 1 Reflective Values for Dry Samples (cd m<sup>-2</sup>) lx<sup>-1</sup> (cd ft<sup>-2</sup> (fc)<sup>-1</sup>)**

Entrance Angle	Observation Angle	Minimum Reflective Value, (RL)	
		White	Yellow
88.76°	1.05°	500	300

**TABLE 1 Reflectivity Values for Dry Samples<sup>A</sup>**

Entrance Angle	Observation Angle	Minimum Reflective Value, (RL)	
		White	Yellow
88.76°	1.05°	500	300

<sup>A</sup>Minimum Retroreflectivity (RL) cd m<sup>-2</sup>) lx<sup>-1</sup> (cd ft<sup>-2</sup> (fc)<sup>-1</sup>)