



Standard Specification for Preformed Plastic Pavement Marking Tape for Extended Service Life¹

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1. Scope

1.1 This specification covers white or yellow preformed plastic pavement marking tape, that when applied to a road surface, will provide a service life normally greater than one year depending on the average daily traffic count (ADT).

1.2 The preformed plastic pavement tape is suitable for longitudinal markings and transverse markings including word/symbol markings. It is designed to be a pavement marking with extended service life.

1.3 The values stated in SI units are to be regarded as the standard.

2. Referenced Documents

2.1 ASTM Standards:

D 1000 Test Methods for Pressure-Sensitive Adhesive-Coated Tapes Used for Electrical and Electronic Applications²

D 1898 Practice for Sampling of Plastics³

D 4061 Test Method for Retroreflectance of Horizontal Coatings⁴

E 303 Test Method for Measuring Surface Frictional Properties Using the British Pendulum Tester⁵

E 313 Practice for Calculating Yellowness and Whiteness Indices from Instrumentally Measured Color Coordinates⁴

2.2 Federal Standards:

FHWA Highway Yellow Color Tolerance Chart, P.R. Color No. 1⁶

3. Terminology

3.1 Definitions:

3.1.1 *extended service life or period*—a minimum service period of 12 months when placed in accordance with the manufacturers' recommended procedures on pavement surfaces having a daily traffic count not to exceed 15 000 ADT per lane.

3.1.2 *retroreflection*—reflection in which radiation is returned in directions close to the direction from which it came and maintained over wide variations of the direction of the incident radiation.

3.1.3 *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.

4. Classification

4.1 *Preformed Plastic Pavement Striping Tape* shall be identified as:

4.1.1 Type I; Grade A, B, C, D, or E

4.1.2 Type II; Grade A, B, C, D, or E

4.1.3 Type III; Grade A, B, C, D, or E

4.1.4 Type IV; Grade A, B, C, D, or E

4.1.5 Type V; Grade A, B, C, D, or E

4.1.6 Type VI; Grade A, B, C, D, or E

4.1.7 Type VII; Grade A, B, C, D, or E

4.2 Types:

4.2.1 *Type I*—A tape that has retroreflective elements exposed in its surface and intermixed within its body.

4.2.2 *Type II*—A tape that has no retroreflective elements exposed in its surface but has retroreflective elements intermixed within its body.

4.2.3 *Type III*—A tape that has no retroreflective elements.

4.2.4 *Type IV*—A tape that has reflective elements exposed in its surface but no reflective elements in its body.

4.2.5 *Type V*—A tape that has a surface pattern with retroreflective elements exposed on the raised areas and faces and intermixed within its body.

4.2.6 *Type VI*—A tape that has retroreflective elements and skid resistant particles exposed in its surface and retroreflective elements intermixed within its body.

4.2.7 *Type VII*—A tape that has a surface pattern with retroreflective elements and skid resistant particles exposed on the patterned surface and retroreflective elements intermixed within its body.

4.3 Grades:

4.3.1 *Grade A*—A tape without precoat adhesive, for application with a liquid contact cement.

4.3.2 *Grade B*—A tape with precoat pressure sensitive

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² *Annual Book of ASTM Standards*, Vol 10.01.

³ *Annual Book of ASTM Standards*, Vol 08.01.

⁴ *Annual Book of ASTM Standards*, Vol 06.01.

⁵ *Annual Book of ASTM Standards*, Vol 04.03.

⁶ Available from Hale Color Charts, 11765 Old Frederic Rd., Marriotsville, MD 21104.

adhesive, for application without surface preparation adhesive or primer.

4.3.3 *Grade C*—A tape with precoated pressure sensitive adhesive for application where a surface preparation adhesive or primer is required.

4.3.4 *Grade D*—A tape with precoated pressure sensitive adhesive protectively covered by an easily removable film and requiring a surface preparation adhesive or primer.

4.3.5 *Grade E*—A tape with precoated pressure sensitive adhesive protectively covered by an easily removable film and not requiring a surface preparation adhesive or primer.

5. Requirements

5.1 Physical Requirements:

5.1.1 The striping tape shall be flexible and formable and shall conform to the typical road pavement surface.

5.1.2 The striping material 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).

5.2 Color:

5.2.1 The daylight color of white striping material shall be such that the whiteness index as determined in Practice E 313 is at least 40. Color shall be determined using 0/45 or 45/0 geometry.

5.2.2 The daylight color of yellow striping material shall conform to the requirements of FHWA Highway Yellow Color Tolerance Chart, PR Color No. 1.

5.3 *Dimensions*—The material as supplied shall be free of cracks, and have edges true, straight and unbroken.

5.4 *Retroreflection (Types I, IV, V, VI and VII)*—The striping material shall be retroreflective, reflecting white or yellow, respectively, and shall be readily visible when viewed with automobile headlights at night and shall have minimum initial retroreflectance values as shown in Table 1 when measured in accordance with the photometric testing procedures of Test Method D 4061. Retroreflectance values shall be expressed as coefficient of retroreflected luminance (R_L) in millicandelas per square metre per lux.

5.5 *Adhesion*—A sample of material, 25.4 mm in width, applied according to the manufacturer's recommended procedure and tested in accordance with Test Methods D 1000, shall have minimum adhesion values as shown in Table 2.

5.6 *Skid Resistance*—Type VI and Type VII materials shall have a minimum initial skid resistance value of 50 BPN when tested according to Test Method E 303.

6. Durability and Wear Resistance

6.1 The striping material, when applied in accordance with the manufacturer's recommended procedures shall show no appreciable fading, lifting, or shrinkage during the normal service life of the applied material.

6.2 When used as longitudinal lines or symbols and legends the average retroreflectance value of the Type V material in service after 24 months shall be 100 mcd/m²/lx when measured at 86.5° entrance and 1.0° observation angles. In service measurements shall be made using a portable reflectometer that has been properly correlated to laboratory Test Method D 4061.

7. Sampling

7.1 Statistically based sampling plans that are appropriate for each particular type or quantity may be used to obtain samples for use in determining compliance with this specification in accordance with Practice D 1898.

7.2 For purposes of developing purchase specifications, a lot size generally refers to the number of rolls in a lot. Sampling units are those rolls selected at random from the lot. A unit sample is the sample of tape taken from the roll.

8. Storage

8.1 *Storage*—The striping material as supplied shall have a minimum shelf life of one year from date of purchase when stored at temperatures under 38°C (100°F).

9. Packaging and Marking

9.1 The striping material shall be packaged in rolls and there shall be no more than three splice per 45.7 m (150 ft) of length.

9.2 The material shall be packaged in accordance with accepted commercial standards.

10. Keywords

10.1 pavement marking; pavement marking tape; retroreflectance; tape; pavement marking

TABLE 1 Retroreflectance Values for Dry Samples

Entrance Angle, °	Observation Angle, °	R_L , mcd/m ² /1×	
		White	Yellow
86.0	0.2 Type I, IV	500	400
	Type V	700	500
	Type VI, VII	350	200
86.5	1.0 Type I, IV	300	175
	Type V	400	300
	Type VI, VII	250	125

TABLE 2 Adhesion

Application Temperature, °C (°F)	Test Temperature, °C (°F)	Minimum Adhesion, N
10 (50)	10 (50)	4.88
24 (75)	24 (75)	4.88
46 (115)	46 (115)	4.88

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