



Designation: D711 – 23

Standard Test Method for No-Pick-Up Time of Pavement Markings¹

This standard is issued under the fixed designation D711; 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 (ϵ) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope

1.1 This test method covers a laboratory procedure for determining the no-pick-up time of pavement markings. The method uses a wheel consisting of a metal cylinder with rubber O-rings. The wheel is rolled down a ramp over a freshly applied pavement marking film repeatedly until there is no transfer of the marking material to the rubber rings. The elapsed time from pavement marking film application to point of no marking material transfer is the no-pick-up time. Key variables to be controlled during testing are wet film thickness, temperature, humidity, air flow, and use of retroreflective optics. This standard provides three options for the testing of the no-pick-up time for pavement markings. The first option, Method A, specifies controls for temperature, humidity, and air flow during testing; a second option, Method B, specifies controls for temperature and humidity during testing, and a third option, Method C, provides guidance for performing this with a drop on application of retroreflective optics such as glass beads. Waterborne and Solvent Borne pavement markings are typically tested using Procedure A or Procedure B, without the application of drop on retroreflective optics. Pavement markings that are two component 100 % solids are typically tested using Method C.

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

1.3 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recom-*

mendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.

2. Referenced Documents

2.1 *ASTM Standards:*²

- D823 Practices for Producing Films of Uniform Thickness of Paint, Coatings and Related Products on Test Panels
- D1212 Test Methods for Measurement of Wet Film Thickness of Organic Coatings
- D1414 Test Methods for Rubber O-Rings
- D2000 Classification System for Rubber Products in Automotive Applications
- D4414 Practice for Measurement of Wet Film Thickness by Notch Gages
- D5741 Practice for Characterizing Surface Wind Using a Wind Vane and Rotating Anemometer
- D8367 Practice for Making a Laboratory Pavement Marking Sample Using a Pavement Marking and Drop-on Particles

3. Significance and Use

3.1 This test method serves as a laboratory control test. Types of pavement markings that can be tested with this method are waterborne traffic paint, solvent borne traffic paint, and some two component 100 % solids liquid pavement markings, such as epoxy and modified epoxy pavement markings. If wet film thickness, temperature, and humidity are controlled within the tolerances specified herein, this method can be useful for relative testing of pavement markings and potentially for qualification of pavement markings for field application in approved specifications. For improved repeatability and meaningful comparison of pavement markings samples being tested, consistent air flow over the pavement marking films during testing is important. The buyer and seller should agree upon the air flow conditions, whether it be static or carefully regulated air flow (see 4.6.1 and 4.6.2). Because of the many variables operative in the field application of pavement markings (for example, wet film thickness, air temperature, humidity, wind speed, pavement type (asphalt or

¹ This test method is under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.44 on Traffic Coatings.

Current edition approved June 1, 2023. Published July 2023. Originally approved in 1943. Last previous edition approved in 2020 as D711 – 20. DOI: 10.1520/D0711-23.

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.

concrete), film profile over pavement, pavement temperature, pavement porosity, pavement moisture content, and the presence or absence of direct sunlight during striping), a direct correlation between the results of this test and field applications is difficult to obtain. However, relative field performance can be predicted using this method if the testing protocol is adhered to. For testing of two component 100 % solids liquid pavement markings an application of drop on retroreflective optics are typically applied at a specified rate to the markings prior to testing. For these types of pavement markings the regulation of air flow is not necessary due to the drying mechanics of the product.

4. Apparatus

4.1 The apparatus³ as shown in Fig. 1 shall consist of a steel

³ The sole source of supply of the apparatus known to the committee at this time that meets the requirements is available from Paul N. Gardner Co., Inc., 316 NE 1st St., Pompano Beach, FL 33060. If you are aware of alternative suppliers, please provide this information to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee,¹ which you may attend.

cylinder of the shape and dimensions as indicated, fitted with two replaceable O-rings and a ramp of shape and dimensions as shown.

4.2 The detailed dimensional requirements of the steel cylinder are given in Fig. 1. The total weight of the assembly complete with O-rings shall be $5386 \text{ g} \pm 28 \text{ g}$ (11 lb 14 oz $\pm$ 1 oz).

4.3 The detailed dimensional requirements of the ramp are shown in Fig. 1 and a picture of the apparatus with pavement marking film being tested is shown in Fig. 2.

4.4 The replaceable O-rings shall be made of synthetic rubber or rubber-like material meeting the requirements of HK 715 of Classification D2000. Standards for O-rings and rubber products are also found in Test Methods D1414 and Classification D2000.

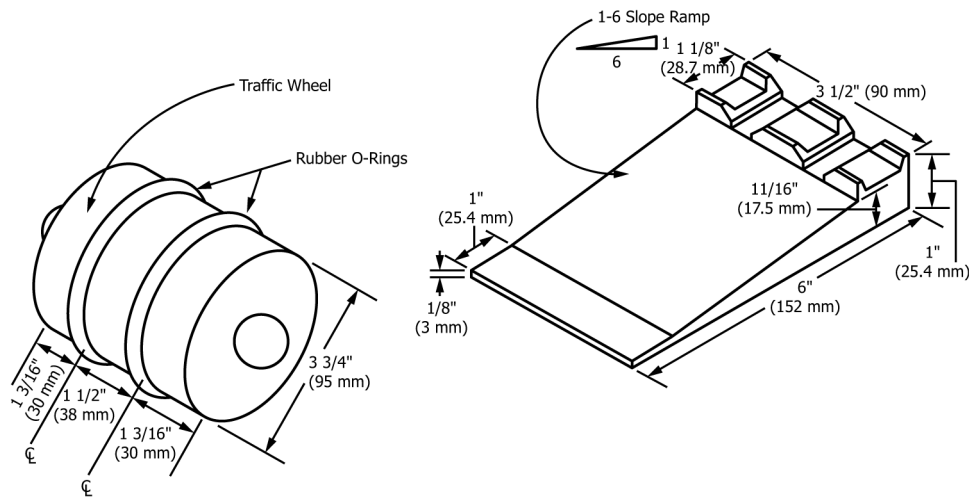


FIG. 1 Pavement Marking Drying Time Wheel and Ramp—Dual Model