



Designation: D8161 – 17

Standard Test Method for Impact Resistance of Thermoplastic Pavement Marking Materials over a Highway Substrate by Means of a Striker Impacted by a Falling Weight¹

This standard is issued under the fixed designation D8161; 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.

1. Scope

1.1 This test method covers the sample preparation over a road-type substrate and test methodology of thermoplastic pavement marking materials similar to the “Gardner Impact” method as listed in Test Method [D5420](#).

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

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

2. Referenced Documents

2.1 ASTM Standards:²

[D883](#) Terminology Relating to Plastics

[D2794](#) Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)

[D4796](#) Test Method for Bond Strength of Thermoplastic Pavement Marking Materials

[D5420](#) Test Method for Impact Resistance of Flat, Rigid Plastic Specimen by Means of a Striker Impacted by a Falling Weight (Gardner Impact)

[D5628](#) Test Method for Impact Resistance of Flat, Rigid Plastic Specimens by Means of a Falling Dart (Tup or Falling Mass)

[D7307](#) Practice for Sampling of Thermoplastic Traffic Marking Materials

[D7308](#) Practice for Sample Preparation of Thermoplastic Pavement Marking Materials

[E177](#) Practice for Use of the Terms Precision and Bias in ASTM Test Methods

[E284](#) Terminology of Appearance

[E691](#) Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

3. Terminology

3.1 Definitions:

3.1.1 The terms and definitions in Terminology [D883](#) and [E284](#) apply to this method.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *failure (of test specimen), n*—the presence of any crack or split created by the impact of the falling weight that can be seen by the naked eye under normal laboratory lighting conditions.

3.2.2 *Falling Weight (Gardner) Impact Tester, n*—impact tester designed as described in Test Method [D5420](#).

3.2.3 *thermoplastic pavement marking, n*—a highly filled 100 % total solids highway marking system that when heated to a molten state can be extruded or sprayed onto a road surface and when cooled forms a solid durable delineator or marking.

4. Summary of Test Method

4.1 In this test method, a weight falls through a guide tube and impacts a striker resting on top of a supported specimen. This test method is similar to Test Methods [D5420](#) and [D2794](#) except the impact occurs on thermoplastic pavement marking material applied over a solid road-type substrate with minimal deformation.

4.2 The test result is typically pass/fail, however maximum impact to cause material failure can be determined as shown by cracking, chipping, delaminating, etc.

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.

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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.