



Designation: D7192 – 20

Standard Test Method for High Speed Puncture Properties of Plastic Films Using Load and Displacement Sensors¹

This standard is issued under the fixed designation D7192; 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 determination of puncture properties of plastic films, over a range of test velocities.

1.1.1 ASTM Terminology Standard [D883](#) has defined film as having a thickness not greater than 0.25 mm. Plastic materials having a thickness above this limit are not to be excluded from use unless shown to be rigid (see [3.2.1](#)). Test Method [D3763](#) is the recommended method for instrumented puncture testing of rigid plastics.

1.2 Test data obtained by this test method is relevant and appropriate for use in engineering design.

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

1.4 *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.*

NOTE 1—This test method does not closely conform to ISO 7765-2. The only similarity between the two tests is that they are both instrumented impact tests. The differences in striker, fixture, specimen geometries and in test velocity can produce significantly different test results.

1.5 *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

[D618 Practice for Conditioning Plastics for Testing](#)

¹ This test method is under the jurisdiction of ASTM Committee [D20](#) on Plastics and is the direct responsibility of Subcommittee [D20.19](#) on Film, Sheeting, and Molded Products.

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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.

[D883 Terminology Relating to Plastics](#)

[D3763 Test Method for High Speed Puncture Properties of Plastics Using Load and Displacement Sensors](#)

[D4000 Classification System for Specifying Plastic Materials](#)

[D6988 Guide for Determination of Thickness of Plastic Film Test Specimens](#)

[E456 Terminology Relating to Quality and Statistics](#)

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

3. Terminology

3.1 *Definitions*—Terms used in this standard are defined in accordance with Terminology [D883](#), unless otherwise specified. For terms relating to precision and bias and associated issues, the terms used in this standard are defined in accordance with Terminology [E456](#).

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *rigid, adj*—any plastic specimen that, when placed on the support component of the open clamp assembly, does not deflect into the center of the unsupported region (under its own weight) by more than 0.05 mm from the horizontal plane of the support component.

3.2.1.1 *Discussion*—This definition is provided as a guideline to allow testing of soft, pliable plastic materials that are thicker than 0.25 mm.

4. Significance and Use

4.1 This test method is designed to provide load versus deformation response of plastic films under essentially multi-axial deformation conditions at impact velocities. This test method further provides a measure of the rate sensitivity of the plastic films to impact.

4.2 Multi-axial impact response, while partly dependent on thickness, does not necessarily have a linear correlation with specimen thickness. Therefore, results should be compared only for specimens of essentially the same thickness, unless specific responses versus thickness formulae have been established for the plastic films being tested.

4.3 For many plastic films, it is possible that a specification exists that requires the use of this test method, but with some procedural modifications that take precedence when adhering

*A Summary of Changes section appears at the end of this standard