



Designation: D1708 – 18

Standard Test Method for Tensile Properties of Plastics by Use of Microtensile Specimens¹

This standard is issued under the fixed designation D1708; 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 certain material specifications for which a history of data has been obtained using the standard microtensile specimen. In general, this test method is superseded for general use by either Test Method [D882](#) or Test Method [D638](#). The very small Type V specimen in Test Method [D638](#) is the recommended specimen when limited amounts of material are available.

1.2 This test method covers the determination of the comparative tensile strength and elongation properties of plastics in the form of standard microtensile test specimens when tested under defined conditions of pretreatment, temperature, humidity, and testing machine speed. This method is applicable when using specimens of any thickness up to 3.2 mm ($\frac{1}{8}$ in.), including thin films.

1.3 This test method cannot be used for the determination of modulus of elasticity. For the determination of modulus, see Test Method [D638](#) or Test Methods [D882](#).

1.4 Data obtained by this test method are relevant and appropriate for use in engineering design.

NOTE 1—Tensile properties provide useful data for plastics engineering design purposes. However, because of the high degree of sensitivity exhibited by many plastics to rate of straining and environmental conditions, data obtained by this test method cannot be considered valid for applications involving load-time scales or environments widely different from those of this test method. In cases of such dissimilarity, no reliable estimation of the limit of usefulness can be made for most plastics. This sensitivity to rate of straining and environment necessitates testing over a broad load-time scale (including impact and creep) and range of environmental conditions if tensile properties are to suffice for engineering design purposes.

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

¹ This test method is under the jurisdiction of ASTM Committee [D20](#) on Plastics and is the direct responsibility of Subcommittee [D20.10](#) on Mechanical Properties.

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1.6 *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 2—There is no known ISO equivalent to this standard.

1.7 *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](#)
- [D638 Test Method for Tensile Properties of Plastics](#)
- [D882 Test Method for Tensile Properties of Thin Plastic Sheet](#)
- [D883 Terminology Relating to Plastics](#)
- [D4000 Classification System for Specifying Plastic Materials](#)
- [D5947 Test Methods for Physical Dimensions of Solid Plastics Specimens](#)
- [D6988 Guide for Determination of Thickness of Plastic Film Test Specimens](#)
- [E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method](#)
- [E2935 Practice for Conducting Equivalence Testing in Laboratory Applications](#)

3. Terminology

3.1 *Definitions*—Definitions of terms applying to this test method appear in Terminology [D883](#) and Test Method [D638](#), Annex A2.

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.

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