



Designation: D2444 – 19

Standard Practice for Determination of the Impact Resistance of Thermoplastic Pipe and Fittings by Means of a Tup (Falling Weight)¹

This standard is issued under the fixed designation D2444; 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 practice covers the determination of the impact resistance of thermoplastic pipe and fittings under specified conditions of impact by means of a tup (falling weight). Three interchangeable striking noses are used on the tup, differing in geometrical configuration. Two specimen holders are described.

NOTE 1—Appendix X1 shows the procedure to determine impact strength.

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

D618 Practice for Conditioning Plastics for Testing

D1600 Terminology for Abbreviated Terms Relating to Plastics

D2122 Test Method for Determining Dimensions of Ther-

moplastic Pipe and Fittings

F412 Terminology Relating to Plastic Piping Systems

3. Terminology

3.1 *Definitions*—Definitions are in accordance with Terminology F412, and abbreviations are in accordance with Terminology D1600, unless otherwise specified.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *tup*—The striking part of a falling hammer like mechanism.

4. Significance and Use

4.1 The impact resistance of thermoplastic pipe and fittings relates to suitability for service and to quality of processing. Impact resistance may also provide a relative measure of a material's resistance to breakage during handling and installation and, for non-buried applications, to in-service breakage. See Appendix X5 for guidelines for selecting testing combinations.

4.2 Results obtained by use of this practice can be used in three ways:

4.2.1 As the basis for establishing impact test requirements in product standards,

4.2.2 To measure the effect of changes in materials or processing, and

4.2.3 To measure the effect of the environment.

5. Apparatus

5.1 *General*—One type of impact tester is illustrated in Fig. 1.

5.2 *Tup:*

5.2.1 The tup nose shall be as shown in Fig. 2. When used with the 0.50 in. (12.7 mm) radius nose, it is designated as Tup A. When used with the 2.00 in. (51 mm) radius nose, it is designated as Tup B. When used with the 0.25 in. (6.3 mm) radius nose, it is designated as Tup C.

NOTE 2—It is suggested that tups be made of scratch-resistant steel to reduce damage to the nose. Badly scarred noses may affect test results.

5.2.2 The mass of the tup shall be 6, 12, 20, or 30 lb (2.7, 5.4, 9.1, or 13.6 kg).

¹ This practice is under the jurisdiction of ASTM Committee F17 on Plastic Piping Systems and is the direct responsibility of Subcommittee F17.40 on Test Methods.

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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.

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