



Standard Practice for Injection Molding Test Specimens of Thermoplastic Molding and Extrusion Materials¹

This standard is issued under the fixed designation D3641; 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 practice covers the general principles to be followed when injection molding test specimens of thermoplastic molding and extrusion materials. This practice is to be used to obtain uniformity in methods of describing the various steps of the injection molding process and to set up uniform methods of reporting these conditions. The exact conditions required to prepare suitable specimens will vary for each plastic material. Any requirements or recommendations in the material specification that differ from this standard take precedence over those in this standard. Always consult the referenced material document for specimen preparation. If no referenced document exists, then consult the material supplier for specimen preparation guidance and note such in the test report.

1.2 The methodology presented assumes the use of reciprocating screw injection molding machines.

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

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

NOTE 1—This practice is equivalent to the following parts of ISO 294: Plastics—Injection Moulding of Test Specimens of Thermoplastic Materials; 294-1: Part 1—General Principles and Multipurpose Test Specimens (ISO Type A Mould) and Bars (ISO Type B Mould); ISO 294-2: Part 2—Small Tensile Bars (ISO Type C Mould); ISO 294-3: Part 3—Plates (ISO Type D Moulds).

2. Referenced Documents

2.1 ASTM Standards:²

¹ This practice is under the jurisdiction of ASTM Committee D20 on Plastics and is the direct responsibility of Subcommittee D20.09 on Specimen Preparation.

Current edition approved May 1, 2015. Published June 2015. Originally approved 1991. Last previous edition approved 2014 as D3641 – 14. DOI: 10.1520/D3641-15.

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.

D256 Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics

D570 Test Method for Water Absorption of Plastics

D638 Test Method for Tensile Properties of Plastics

D648 Test Method for Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position

D790 Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials

D883 Terminology Relating to Plastics

D955 Test Method of Measuring Shrinkage from Mold Dimensions of Thermoplastics

D957 Practice for Determining Surface Temperature of Molds for Plastics

D1525 Test Method for Vicat Softening Temperature of Plastics

D6110 Test Method for Determining the Charpy Impact Resistance of Notched Specimens of Plastics

2.2 ISO Standards:³

ISO 294-1: Plastics—Injection Moulding of Test Specimens of Thermoplastic Materials—Part 1: General Principles and Multipurpose Test Specimens (ISO Type A Mould) and Bars (ISO Type B Mould)

ISO 294-2: Plastics—Injection Moulding of Test Specimens of Thermoplastic Materials—Part 2: Small Tensile Bars (ISO Type C Mould)

ISO 294-3: Plastics—Injection Moulding of Test Specimens of Thermoplastic Materials—Part 3: Plates (ISO Type D Moulds)

ISO 20753 Plastics—Test Specimens

3. Terminology

3.1 *Definitions*—Definitions of terms applying to this practice appear in Terminology D883.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *average injection velocity, n* —the mean value of the velocity of the molten plastic flow front within a cavity during the injection time that is calculated from the shot volume and injection time. (See Terminology D883.)

³ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

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