



**Designation: D 5937 – 96**

AMERICAN SOCIETY FOR TESTING AND MATERIALS  
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## **Standard Test Method for Determination of Tensile Properties of Moulding and Extrusion Plastics<sup>1</sup>**

This standard is issued under the fixed designation D 5937; 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 specifies the test conditions for determining the tensile properties of moulding and extrusion plastics.

1.2 This test method is selectively suitable for use with the following range of materials:

1.2.1 Rigid and semirigid thermoplastics moulding, extrusion and cast materials, including compounds filled and reinforced by, for example, short fibers, small rods, plates, or granules, but excluding textile fibers, in addition to unfilled types,

1.2.2 Rigid and semirigid thermosetting moulding and cast materials, including filled and reinforced compounds, but excluding textile fibers as reinforcement, and

1.2.3 Thermotropic liquid crystal polymers.

1.3 This test method is not suitable for use with materials reinforced by textile fibers with rigid cellular materials or sandwich structures containing cellular material.

1.4 This test method is applied using specimens that may be either moulded to the chosen dimensions or machined, cut, or punched from injection- or compression-moulded plates. The multipurpose test specimen is preferred (see ISO 3167:1993 (Specification D 5936)).

1.5 This test method is identical to ISO 527-2. This standard is comparable to Test Method D 638 but neither standard should be substituted for the other. The two standards may differ with respect to test specimen dimensions, test specimen conditioning, test equipment, testing conditions, etc. The two methods may not give the same results.

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

### **2. Referenced Documents**

#### **2.1 ASTM Standards:**

D 638 Test Method for Tensile Properties of Plastics<sup>2</sup>

D 5936 Specification for Multipurpose Test Specimens

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee D-20 on Plastics and is the direct responsibility of Subcommittee D20.61 on USA Technical Advisory Group for ISO/TC 61 on Plastics.

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<sup>2</sup> Annual Book of ASTM Standards, Vol 08.01.

#### **Used for Testing Plastics<sup>3</sup>**

D 5938 Guide Describing the General Principles for Determination of Tensile Properties of Plastics<sup>3</sup>

D 5939 Practice for Preparing Multipurpose Test Specimens and Bars of Thermoplastics by Injection Moulding<sup>3</sup>

D 5940 Practice for Preparing Small Plate Test Specimens of Thermoplastics by Injection Moulding<sup>3</sup>

#### **2.2 ISO Standards:<sup>4</sup>**

ISO 37:1977 Rubber, Vulcanized—Determination of Tensile Stress-Strain Properties

ISO 293:1986 Plastics—Compression Moulding Test Specimens of Thermoplastic Materials

ISO 294 Plastics—Injection Moulding of Test Specimens of Thermoplastic Materials

ISO 295:1991 Plastics—Compression Moulding of Test Specimens of Thermosetting Materials

ISO 527-1:1993 Plastics—Determination of Tensile Properties—Part 1: General Principles

ISO 527-2 Determination of Tensile Properties—Part 2: Test Conditions for Moulding and Extrusion Plastics

ISO 1926:1979 Cellular Plastics—Determination of Tensile Properties of Rigid Materials

ISO 2818 Plastics—Preparation of Test Specimens by Machining

ISO 3167:1993 Plastics—Multipurpose Test Specimens

**3. Terminology**—See Guide D 5938, Section 3.

**4. Principle**—See Guide D 5938, Section 4.

**5.**

**6. Apparatus**—See Guide D 5938.

### **7. Test Specimens**

7.1 *Shape and Dimensions*—Wherever possible, ensure that the test specimens are dumb bell-shaped, Types 1A and 1B as shown in Fig. 1. Type 1A is preferred for directly-moulded multipurpose test specimens, and Type 1B is preferred for machined specimens.

NOTE 1—Types 1A and 1B test specimens having 4-mm thickness are identical to the multipurpose test specimens according to ISO 3167

<sup>3</sup> Annual Book of ASTM Standards, Vol 08.03.

<sup>4</sup> Available from ANSI, 11 West 42nd Street, 13th Floor, New York, NY 10036.