



## Standard Practice for Conditioning Plastics for Testing<sup>1</sup>

This standard is issued under the fixed designation D 618; 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 Department of Defense.*

### 1. Scope \*

1.1 In general, the physical and electrical properties of plastics are influenced by temperature and relative humidity in a manner that materially affects test results. In order that reliable comparisons may be made of different materials and between different laboratories, it is necessary to standardize the humidity conditions, as well as the temperature, to which specimens of these materials are subjected prior to and during testing. This practice defines procedures for conditioning plastics (although not necessarily to equilibrium) prior to testing, and the conditions under which they shall be tested.

1.2 For some materials, there may be a material specification that requires the use of this practice, but with some procedural modifications. The material specification takes precedence over this practice. Refer to the material specification before using this practice. Table 1 in Classification D 4000 lists the ASTM material specifications that currently exist.

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

NOTE 1—ISO 291 is related to this practice; however, ISO 291 describes only two temperature and humidity conditions for conditioning or testing, or both.

### 2. Referenced Documents

#### 2.1 ASTM Standards:

D 709 Specification for Laminated Thermosetting Materials<sup>2</sup>

D 756 Practice for Determination of Weight and Shape Changes of Plastics Under Accelerated Service Conditions<sup>3</sup>

D 4000 Classification System for Specifying Plastic Materials<sup>4</sup>

D 5032 Practice for Maintaining Constant Relative Humidity by Means of Aqueous Glycerin Solutions<sup>5</sup>

E 104 Practice for Maintaining Constant Relative Humidity by Means of Aqueous Solutions<sup>6</sup>

#### 2.2 ISO Standard:

ISO 291 Plastics—Standard Atmospheres for Conditioning and Testing<sup>7</sup>

### 3. Terminology

#### 3.1 Definitions:

3.1.1 *room temperature*—a temperature in the range from 20 to 30°C (68 to 85°F).

3.1.2 *standard laboratory atmosphere*—an atmosphere having a temperature of 23°C (73.4°F) and a relative humidity of 50 % with standard tolerances as specified in 3.2 shall be the standard laboratory atmosphere.

3.1.3 *standard laboratory temperature*—a temperature of 23°C (73.4°F) with standard tolerance as specified in 3.2 shall be the standard laboratory temperature.

#### 3.2 Tolerances:

3.3 *relative humidity*—standard tolerance shall be  $\pm 5\%$ .

3.3.1 *Discussion*—Where the closer tolerance  $\pm 2\%$  is required, it may be specified and the tolerance used reported.

3.4 *standard test temperatures other than standard laboratory temperature*—when data are to be obtained for comparison purposes at a specific temperature either above or below the standard laboratory temperature, the temperature should be selected from the following:

| Test Temperatures, °C (°F) | Tolerance, plus or minus, °C (°F) |
|----------------------------|-----------------------------------|
| -70 (-94)                  | 2.0 (3.6)                         |
| -55 (-67)                  | 2.0 (3.6)                         |
| -40 (-40)                  | 2.0 (3.6)                         |
| -25 (-13)                  | 2.0 (3.6)                         |
| 0 (32)                     | 2.0 (3.6)                         |
| 35 (95)                    | 1.0 (1.8)                         |
| 50 (122)                   | 2.0 (3.6)                         |
| 70 (158)                   | 2.0 (3.6)                         |
| 90 (194)                   | 2.0 (3.6)                         |
| 105 (221)                  | 2.0 (3.6)                         |
| 120 (248)                  | 2.0 (3.6)                         |

<sup>1</sup> This practice is under the jurisdiction of ASTM Committee D20 on Plastics and is the direct responsibility of Subcommittee D20.50 on Permanence Properties.

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<sup>2</sup> Annual Book of ASTM Standards, Vol 10.01.

<sup>3</sup> Annual Book of ASTM Standards, Vol 08.01.

<sup>4</sup> Annual Book of ASTM Standards, Vol 08.02.

<sup>5</sup> Annual Book of ASTM Standards, Vol 10.02.

<sup>6</sup> Annual Book of ASTM Standards, Vol 11.03.

<sup>7</sup> Available from American National Standards Institute, 11 W. 42nd St., 13th Floor, New York, NY 10036.

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