



Designation: D 796 - 87a

Standard Practice for Compression Molding Test Specimens of Phenolic Molding Compounds¹

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1. Scope

1.1 This practice describes procedures for compression molding of Izod or Charpy impact, flexure, tension, compression, water absorption, modulus in tension or flexure, heat aging, electrical tests, and heat-deflection temperatures (Note).

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

1.3 *This standard may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety problems 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—The utility of this practice has been demonstrated for the molding of phenolic molding compounds exhibiting higher-viscosity, non-Newtonian flow.

2. Referenced Documents

2.1 ASTM Standards:

- D 638 Test Method for Tensile Properties of Plastics²
- D 647 Practice for Design of Molds for Test Specimens of Plastic Molding Materials²
- D 651 Test Method for Tensile Strength of Molded Electrical Insulating Materials³
- D 958 Practice for Determining Temperatures of Standard ASTM Molds for Test Specimens of Plastics²

3. Significance and Use

3.1 The conditions under which samples are molded influence the properties of the specimens. In determining whether a given compound meets the specification requirements, it is important to hold to a standard set of conditions. This is also necessary for a valid comparison of properties obtained with different compounds, or between lots of the same compound.

3.2 If the molded specimens show evidence of low-density areas due to trapped gases, the specimens should be discarded. In molding new specimens, the mold should be opened slightly just after it is closed. It should be closed again within 2 to 3 s. It is critical to keep this mold reopening step

to a minimum to avoid precuring the material in the mold before full pressure is reapplied. Precured material in the molded specimen would cause poorly knitted areas that would not have the potential full strength. This mold reopening, commonly known as a "breathe" step, allows any excess gases to be vented.

4. Apparatus

4.1 Molds:

4.1.1 Chrome plating of compression molding cavities is recommended, but not necessary.

4.1.2 For molding impact and flexure specimens, use the single-bar, single-cavity positive mold shown in Practice D 647.

4.1.3 For molding tension specimens, use the positive mold shown in the Mold for Tension Test Specimen figure in Practice D 647 to make specimens required for Test Method D 651. Use the positive mold shown in the Five-Cavity Transfer Mold figure in Practice D 647 to make specimens required for Test Method D 638.

4.1.4 For molding water absorption specimens, use the 50.8-mm (2-in.) positive mold shown in the Mold for Disk Test Specimens figure of Practice D 647.

4.1.5 For molding specimens for electrical tests, use the 101.6-mm (4-in.) positive mold shown in the Mold for Disk Test Specimens figure of Practice D 647.

4.2 *Press*—The hydraulic press shall be such that the molding pressure on the specimen can be maintained at 13.8 to 34.5 MPa (2000 to 5000 psi).

4.3 *Heating System*—Use any convenient method of heating the press platens or molds, provided the heat source is constant enough to maintain the mold temperature within $\pm 3^\circ\text{C}$ (5°F) across molding surface.

4.4 Either a thermometer or pyrometer as specified in Practice D 958 may be used to record mold temperature.

5. Conditioning

5.1 Except for referee tests, prior conditioning of phenolic molding materials is required only for electrical tests (see 5.2). For referee tests, condition a sufficient sample of the molding material, spread to a maximum depth of 12.7 mm ($\frac{1}{2}$ in.) in an open container, for 72 h in a Standard Laboratory Atmosphere ($23 \pm 1^\circ\text{C}$, $50 \pm 2\%$ relative humidity) for flexure, impact, tension, and water-absorption test specimens.

5.2 For molding electrical test specimens, condition a sufficient sample of the molding material in loose-powder form for 30 min at $90 \pm 3^\circ\text{C}$ ($194 \pm 5^\circ\text{F}$) in a circulating-air oven and mold it immediately after conditioning. While

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² Annual Book of ASTM Standards, Vol 08.01.

³ Annual Book of ASTM Standards, Vol 10.01.