

N-56-42



Designation: D 958 - 88

AMERICAN SOCIETY FOR TESTING AND MATERIALS
1916 Race St., Philadelphia, Pa. 19103
Reprinted from the Annual Book of ASTM Standards, Copyright ASTM
If not listed in the current combined index, will appear in the next edition.

Standard Practice for Determining Temperatures of Standard ASTM Molds for Test Specimens of Plastics¹

This standard is issued under the fixed designation D 958; 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 two optional procedures for determining the temperature condition of standard ASTM molds for test specimens of plastics by means of either a thermometer or a pyrometer.

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.*

2. Referenced Documents

2.1 ASTM Standards:

D 647 Practice for Design of Molds for Test Specimens of Plastic Molding Materials²

D 957 Practice for Determining Mold Surface Temperature of Commercial Molds for Plastics²

E 1 Specification for ASTM Thermometers³

3. Significance and Use

3.1 The properties of molded parts and the ease of producing satisfactory specimens are influenced by the temperature of the mold. It is desirable to know the actual mold temperature which may be different from the mold temperature control medium.

3.2 The user should be aware of temperature differences across the mold/thermocouple interface and at leads and should take precautions to minimize such differences.

4. Molds

4.1 Requirements for the design of standard ASTM molds for test specimens of plastics are covered by Practice D 647.

PROCEDURE USING THERMOMETER

5. Apparatus

5.1 *Thermometer*—A 76-mm (3-in.) immersion, mercury-filled thermometer having a temperature scale of not more than 25°C (45°F) per 25 mm (1 in.) of length shall be used.

NOTE 1—The following ASTM standard thermometers (see Specification E 1) are considered satisfactory: 95C, 96C, 100C, and 101C.

6. Procedure

6.1 The chase of the mold shall be equipped with an immersion well 76 mm (3 in.) in depth. The base of the well shall be located at a point not more than 6.3 mm (¼ in.) from the surface of the cavity. Insert the thermometer into the well as far as possible. Allow the thermometer to remain in the well until the mercury no longer moves in the column. The thermometer reading at this point shall be considered the mold temperature. In recording the temperature reading, state that the thermometer procedure was used.

PROCEDURE USING PYROMETER

7. Apparatus

7.1 *Pyrometer*—A calibrated surface pyrometer (Note 2) accurate within $\pm 1.5^\circ\text{C}$ (2.7°F) shall be used.

NOTE 2—For the procedure for calibration of surface pyrometers, see the Appendix to Practice D 957.

8. Procedure

8.1 Place the thermocouple of the pyrometer at any point on the surface of the cavity and plunger of the mold, making certain good contact is maintained (Note 3). Maintain contact until the needle on the dial scale reaches equilibrium. Record the temperature reading on the dial scale at this point. Take temperature readings at at least four points each on the surfaces of the cavity and plunger of the mold. In recording temperature readings, state that the pyrometer procedure was used.

NOTE 3—Wax may be used to ensure intimate contact between the mold surface and the thermocouple of the pyrometer. This is accomplished by allowing a small portion of wax, or any suitable material with a low melting point, to melt at the point where the temperature reading is to be taken. The thermocouple is then placed in the puddle of molten material.

¹ This practice is under the jurisdiction of ASTM Committee D-20 on Plastics and is the direct responsibility of Subcommittee D 20.09 on Specimen Preparation.

Current edition approved March 25, 1988. Published May 1988. Originally published as D 958 - 48 T. Last previous edition D 958 - 72 (1987) ^{ϵ 1}.

² *Annual Book of ASTM Standards*, Vol 08.01.

³ *Annual Book of ASTM Standards*, Vols 05.03 and 14.01.