



Designation: D 731 – 95 (Reapproved 1999)

Standard Test Method for Molding Index of Thermosetting Molding Powder¹

This standard is issued under the fixed designation D 731; 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 covers the measurement of the molding index of thermosetting plastics ranging in flow from soft to stiff by selection of appropriate molding pressures within the range from 4.1 to 31.9 MPa.

1.2 The values stated in SI units are to be regarded as standard.

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—There is no ISO standard equivalent to this test method.

2. Referenced Documents

2.1 ASTM Standards:

D 256 Test Methods for Impact Resistance of Plastics and Electrical Insulating Materials²

D 883 Terminology Relating to Plastics²

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

E 691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method³

3. Terminology

3.1 *Definitions:* Definitions are in accordance with Terminology D 883, unless otherwise specified.

4. Summary of Test Method

4.1 A cup mold is mounted in a semi-automatic type press. A predetermined quantity of test sample is charged into the mold, controlled at a temperature dependent upon the test material. The minimum force required to mold a cup having a flash or fin thickness within a specified tolerance is determined. This force along with the mold closing time is reported as molding index.

¹ This test method is under the jurisdiction of ASTM Committee D-20 on Plastics and is the direct responsibility of Subcommittee D 20.30 on Thermal Properties (Section D20.30.08).

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

³ *Annual Book of ASTM Standards*, Vol 08.03.

5. Significance and Use

5.1 This test method provides a guide for evaluating the moldability of thermosetting molding powders. This test method does not necessarily denote that the molding behavior of different materials will be alike and trials may be necessary to establish the appropriate molding index for each material in question.

5.2 The sensitivity of this test diminishes when the molding pressure is decreased below 66 MPa, so pressures lower than this are not ordinarily recommended. This is due to the friction of moving parts and the insensitivity of the pressure switch actuating the timer at these low pressures.

6. Apparatus

6.1 *Mold*—A cup mold⁴ of the flash type, to produce a molded cup as shown in Fig. 1, operated under controlled pressure and temperatures and provided with stops so that flash or fin thickness cannot be less than 0.14 mm. The area of the mold casting creating the molded flash shall be located on top of the cup, flat, perpendicular to the axis of the cup, and in the form of an annular ring 3.17 mm (0.125 in.) in width.

6.2 *Thermometer*—A 32-mm partial-immersion mercury thermometer having a diameter just under 4.8 mm and a temperature scale of not more than 20°C/25.4 mm of length. A pyrometer may be used to determine the temperature of the mold surfaces. For properly measuring mold temperatures, reference should be made to Practice D 957.

6.3 *Heating System*—Any conventional means for heating the press platens, provided the heat source is constant enough to maintain the molding temperature within $\pm 1^\circ\text{C}$ of the specified temperature (see 9.2).

6.4 *Pressure System*—A semiautomatic press with a fixed mold and fully insulated to minimize heat losses shall be used. The use of hand molds is not recommended but may be used to give an estimate of the molding index. The hydraulic system shall be provided with a means of pressure regulation so that the load on the mold shall differ by not more than ± 56.2 N from the stated value. The capacity of the hydraulic system shall permit a ram travel of approximately 25 mm/s. It is recommended that the ram diameter not exceed 100 mm.

⁴ A detailed drawing of the mold design is available from ASTM Headquarters. Order Adjunct: ADJD0731.