



## Standard Test Method for Book Bulk and Book Bulking Number of Paper<sup>1</sup>

This standard is issued under the fixed designation D2175; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This test method provides a means of determining the book bulk and bulking number of printing paper under a specified pressure.

1.2 For thickness of single sheets or small packs of sheets, see Test Method [D645/D645M](#).

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.*

### 2. Referenced Documents

2.1 *ASTM Standards:*<sup>2</sup>

[D585 Practice for Sampling and Accepting a Single Lot of Paper, Paperboard, Fiberboard, and Related Product](#)

[D645/D645M Test Method for Thickness of Paper and Paperboard](#)

[D685 Practice for Conditioning Paper and Paper Products for Testing](#)

[D1968 Terminology Relating to Paper and Paper Products](#)

### 3. Terminology

3.1 *Definitions*—Definitions shall be in accordance with Terminology [D1968](#) and the *Dictionary of Paper*.<sup>3</sup>

### 4. Summary of Test Method

4.1 A stack of sheets of a specified height or a specified number of sheets is placed between parallel platens, the specified pressure is applied, and the distance between the platen faces is read from an indicator.

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee [D06](#) on Paper and Paper Products and is the direct responsibility of Subcommittee [D06.92](#) on Standard Documents Relating to Paper and Paper Products.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

<sup>3</sup> Available from the Technical Association of the Pulp and Paper Industry, P.O. Box 105113, Atlanta, GA 30348.

### 5. Significance and Use

5.1 The measurement of book bulk by this test method is particularly useful to book manufacturers and printers for determining the probable thickness of a book consisting of a particular paper in a specified number of sheets or pages.

### 6. Apparatus

6.1 *Testing Instrument*, conforming to the following requirements:

6.1.1 *Two Metal Plane Parallel Circular Concentric Faces*, one movable, one fixed, and parallel to within  $\pm 0.1$  mm (0.004 in.). The movable face, or platen, is 20 cm<sup>2</sup> (about 3 in.<sup>2</sup>) in area. The fixed platen has a diameter equal to or larger than that of the movable platen.

6.1.2 Means by which the movable platen may be raised to separate the platen faces by a distance of over 25 mm (about 1 in.) and be lowered with a pressure of  $250 \pm 10$  kPa ( $36.3 \pm 1.4$  psi).

NOTE 1—It is convenient to be able to measure directly the bulk of books up to 51 mm (2 in.) in thickness. Hence, a platen separation of this amount is desirable. For some purposes, other pressures have been found useful; it should therefore be possible to apply, maintain, and indicate the pressure to the nearest 10 kPa (about 1.5 psi) throughout the range from 0 to 350 kPa (0 to about 50 psi).

6.1.3 Means by which the distance between the platen faces may be read, while under pressure, to the nearest 0.5 mm (0.02 in.), with an accuracy of  $\pm 0.25$  mm ( $\pm 0.01$  in.).

### 7. Sampling and Test Specimens

7.1 Obtain a sample of the paper in accordance with Practice [D585](#), except use separate sheets for a test pack (test specimen) when the test unit is in the form of cut sheets or cut them from locations at least 300 mm (about 12 in.) apart when the test unit is in the form of a roll.

7.2 The specimens may consist of sheets of any size convenient for handling, but not less than 64 mm (about 2.5 in.) square. The number of sheets required for each test pack is as follows:

7.2.1 For procedure [10.1](#), the number of which the total bulk is desired to be known.

7.2.2 For procedure [10.2](#), the approximate number that will bulk 25 mm (about 1 in.) under the specified pressure.