



Standard Test Method for Rate of Absorption of Water by Bibulous Papers¹

This standard is issued under the fixed designation D 824; 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 determination of the rate at which an unsized and absorbent paper will absorb water by measuring the time required for the paper to absorb completely a specified quantity of water **(1-4)**.²

1.2 This test method is not intended for sized papers or those having an absorption time of over 120 s. Such papers should be tested in accordance with Test Method D 779 or ISO 535.

1.3 For ink absorption of blotting paper, see Test Method D 2177.

1.4 *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:

D 585 Practice for Sampling and Accepting a Single Lot of Paper, Paperboard, Fiberboard, and Related Product³

D 685 Practice for Conditioning Paper and Paper Products for Testing³

D 779 Test Method for Water Resistance of Paper, Paperboard, and Other Sheet Materials by the Dry-Indicator Method³

D 1193 Specification for Reagent Water⁴

D 2177 Test Method for Ink Absorption of Blotting Paper³

E 122 Practice for Calculating Sample Size to Estimate, with a Specified Tolerable Error, the Average for a Characteristic of a Lot or Process⁵

2.2 Other Standard:

ISO 535 Paper and Board—Water Absorption (Cobb Test)⁶

3. Summary of Test Method

3.1 A measured drop of water is placed on the paper and the time to disappearance of the shine from the wet area is determined.

4. Significance and Use

4.1 The rate of water absorption is an extremely important property of most sanitary products such as paper toweling and tissues.

5. Apparatus

5.1 *Drop-Measuring Device*, for Delivery of 1-mL and 0.1-mL drops, with 1-mL capacity or more, for example, measuring pipet **(5)**, buret, or hypodermic syringe graduated in divisions of 0.01 mL.

5.2 *Drop-Measuring Device*, for Delivery of 0.01-mL drops, for example, microburet **(6)**, or syringe-style pipet, graduated in divisions of 0.001 mL.

5.3 *Specimen Support*—A nonabsorbent horizontal square surface, approximately 100 mm on a side and having at its center a hole approximately 40 mm in diameter.

NOTE 1—For a multi-ply specimen it may be necessary to modify the supporting surface by bending up two opposite edges to form a cylindrical trench. The curvature of the cylinder should be such that, when the specimen is held in place in the trench (for example, with weights near the ends), water applied to the top ply will cause it to expand downward and push against the underlying plies, wetting them as in normal use of the material.

5.4 *Timer*—Stopwatch or electric timer readable to 0.2 s or better.

5.5 *Light Source*, to reflect from the surface of unabsorbed water on the specimen, and situated far enough away so that its heat will not influence the absorption time; for example, a 1.5-V flashlight bulb, shaded from the eyes, placed about 200 mm above the end and to the rear of the support, and operated by a D-cell battery or bell transformer.

6. Test Liquid

6.1 *Reagent Water*, of Type II or better as defined in Specification D 1193.

¹ 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 Test Methods.

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This test method is related to TAPPI T 432 om-82, with which it is technically identical.

² The boldface numbers in parentheses refer to the list of references at the end of this standard.

³ *Annual Book of ASTM Standards*, Vol 15.09.

⁴ *Annual Book of ASTM Standards*, Vol 11.01.

⁵ *Annual Book of ASTM Standards*, Vol 14.02.

⁶ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.