



Standard Test Method for Surface Wax Coating On Corrugated Board¹

This standard is issued under the fixed designation D 3521; 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 determination of the weight of wax that is present as a coating on the surface of corrugated board. This method is applicable to board to which wax has been applied by curtain coating, roll coating, or other methods; the substrate board may or may not contain impregnating (saturating) wax within its structure.

NOTE 1—If it is known that the specimen has coating wax only, with no internal saturating wax, the total coating wax applied may be determined by Test Method D 3344.

1.2 *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, or Related Product²
D 3344 Test Method for Total Wax Content of Corrugated Paperboard³

3. Terminology

3.1 Definition:

3.1.1 *weight of wax coating*—the weight of wax present as a surface film on corrugated paperboard, expressed as weight per unit area, usually grams per square metre or pounds of coating per thousand feet of board covered.

3.1.1.1 *Discussion*—This definition excludes any portion of wax that is located below the surface, that may have been permitted to soak into the fibrous paperboard structure.

4. Summary of Test Method

4.1 The amount of wax present as a coating on the surface is determined by delaminating the coated facing to obtain a ripple-free sheet, then scraping off the wax using a razor blade and calculating the wax removed.

¹ This test method is under the jurisdiction of ASTM Committee D-2 on Petroleum Products and Lubricants and is the direct responsibility of Subcommittee D02.10.0A on Physical and Chemical Properties.

Current edition approved Oct. 31, 1986. Published December 1986. Originally published as D 3521 – 76. Last previous edition D 3521 – 75 (1981) ^{ϵ 1}.

² *Annual Book of ASTM Standards*, Vol 15.09.

³ *Annual Book of ASTM Standards*, Vol 05.02.

5. Significance and Use

5.1 Wax coatings are applied to corrugated board to provide a better barrier against moisture or other agents or to provide improved appearance or abrasion resistance. These performance features are influenced by the amount of wax present on the surface.

5.2 During most coating operations, the major portion of the wax applied will congeal on the surface, while a minor proportion will migrate into and become embedded in the fibers of the facing. This method measures only the portion on the surface.

6. Apparatus

6.1 *Sample-Trimming Equipment*—A suitable trimming board or template arrangement equipped with a razor edge knife for even cutting of specimens to required size, with parallel sides. (A guillotine-type paper cutter is not recommended.)

6.2 *Measuring Rule*, steel edged, for measuring the size of specimen to within 0.5 mm.

6.3 *Razor Blades*, common single-edge, having a rigid rim for holding in the fingers. The blade is used for surface wax scraping and an adequate supply of fresh blades with sharp edges is required.

6.4 *Analytical Balance*, reading to nearest 1 mg.

7. Sampling and Test Specimen

7.1 From each test unit, obtained in accordance with Practice D 585, that is, each finished carton blank or paperboard sheet, cut specimens free from obvious defects. Each specimen should measure 100 by 100 mm, cut to the nearest 0.5 mm. Record the area of the surface to be tested, and whether it is an inside or outside facing. Duplicate specimens are required from each sample unit.

NOTE 2—The operator may be required to increase the replication and treatment of specimens to obtain a better estimate of “average” wax loading, (1) if the waxing is at an extremely low level, or (2) if the wax loading shows obvious wide variations in distribution over the board area.

NOTE 3—Optionally, specimens of other dimensions may be used if required by sampling limitations. In such cases, calculations need to be appropriately adjusted.

7.2 Condition all boards at 23°C (73°F) and 50 % relative humidity for a minimum of 48 h before beginning test procedure.

8. Procedure

8.1 Take each duplicate specimen and separate the coated